Jefferson County Department of Health
Environmental Health Services
Air Pollution Control Program

Statement of Basis for Title V Renewal Permit
Big Sky Environmental, LLC

Facility Information

Plant Location	Mailing Address	Responsible Official
5100 Flat Top Road Adamsville, Alabama 35005	5100 Flat Top Road Adamsville, Alabama 350005	John Click Executive Vice President 205-743-0080

Description of Permit Action

This action is pursuant to the 40 CFR Part 70 requirement that Title V permits to be reviewed, updated if applicable, and reissued every 5 years. The current permit for Big Sky Environmental Solid Waste Facility (Big Sky), 4-07-1037-04, was issued on February 6, 2020. The physical boundaries of the landfill are defined by ADEM Solid Waste Disposal Facility Permit 37–48, effective from February 10, 2025 to February 9, 2035. Plans for the processing of scrap tires were included in the October 2024 draft posting for Permit 37-48. At this time, the facility does not anticipate any associated air emissions from scrap tire processing. The solid waste permit allows disposal of municipal solid waste (MSW) within an area of 66.24 acres and disposal of construction and demolition (CD) waste within an area of 95 acres. Any expansion of the landfilled areas must be approved by ADEM and is not within the scope of the Title V air permit.

The applicable regulations have changed since the last permit revision. On June 21, 2021, EPA promulgated 40 CFR 62, Subpart OOO to cover facilities that were not covered by an approved state implementation plan (SIP) for the implementation of 40 CFR 60, Subpart Cf, “Emissions Guidelines and Compliance Times for Municipal Solid Waste Landfills.” Subpart Cf required SIP submissions to lower the non-methane organic compound (NMOC) threshold from 50 megagrams per year to 34. A SIP has been submitted by ADEM, and has been adopted by the Department via revisions to Chapter 21 of the Rules and Regulations, to become effective upon approval by EPA. As of the date of this report, EPA has not approved the submission.

Landfill operations have not changed since the last permit revision and will continue in the same manner as the amount of waste-in-place increases. However, Big Sky has requested to remove the gasoline dispensing facility and tank (Emissions Unit No. 002) from the permit, on the basis that the facility no longer stores and dispenses gasoline and that responsibility for the equipment has been transferred to another company. To the best available knowledge of the Department, the gasoline dispensing and storage equipment has not been removed from the property, and is still capable of storing or dispensing gasoline. Further, the draft renewal of ADEM Solid Waste Disposal Facility Permit 37–48 has not proposed a change in the landfill boundaries. As the equipment is still located on the landfill, as defined by Permit 37-48, and is still capable of storing or dispensing gasoline, the Department has determined that Emissions Unit No. (EU) 002 shall remain in the permit, at this time.

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The following revisions have been made:

- Added additional definitions from 40 CFR 62, Subpart OOO and 40 CFR 60, Subpart OOO
- Removed the Emergency definition and provision to reflect the removal of the provision from the Rules and Regulations on August 14, 2024
- Updated wording and citations of General Conditions with most up-to-date wording where needed
- Added a facility-wide General Condition to specify that storage of any VOC with a vapor pressure of greater than 1.5 psia is subject to the requirements of Part 8.3 of the Rules and Regulations
- Added a facility-wide General Condition to specify that engines powering portable or transportable pieces of equipment that remain at the facility for longer than 12 consecutive months or for a full annual operating period will be considered stationary and subject to the stationary RICE NSPS/NESHAP, as applicable
- Updated the wording of the requirements for reporting of deviations, malfunctions, and violations to better align with the wording of Section 1.12.2 of the Rules and Regulations
- Changed references and citations to 40 CFR 60, Subpart WWW to 40 CFR 62, Subpart OOO, adding additional wording or conditions, where needed, throughout the permit
- EU 001 Revisions
    - Added additional wording to the conditions under which 40 CFR 63, Subpart AAAA would become applicable
        - Specified that if the NMOC or HAP emissions exceed the applicable threshold, Big Sky is required to notify the Department within 2 working days of discovery and submit a permit application
        - Specified that NMOC emissions will be monitored through the required recordkeeping of 40 CFR 62, Subpart OOO and HAP emissions will be monitored through the annual production and emissions reports required by the Department
    - Added additional control measures under the fugitive dust provision, including additional reporting requirements
    - Included the requirements under 40 CFR 61, Subpart M more explicitly
    - Specified that to demonstrate compliance with the no visible emissions requirement of 40 CFR 61, Subpart M, Big Sky must comply with its solid waste permit and the appropriate ADEM code
    - Included the requirements under 40 CFR 60, Subpart OOO more explicitly
        - Specified that materials are not saturated, as defined under Subpart OOO, if wetted only by a wet suppression system
- EU 002 Revisions
    - Specified that Big Sky must continue recording the gas throughput and certifying compliance with 40 CFR 63, Subpart CCCCCC until such time that the associated equipment of EU 002 is removed from the facility or rendered incapable of causing air emissions

- Specified that Big Sky must maintain records of repairs or any other corrective actions conducted in response to the detection of a leak
- Specified that Big Sky must report leaks and subsequent repairs to the Department

Description of Operations

The initial design capacity of the MSW landfill is approximately 3.7 million megagrams. Waste was first accepted by the facility on December 1, 2009. Big Sky accepts waste 365 days/year. Municipal solid waste decomposes over time and releases landfill gas, which consists mostly of carbon dioxide and methane. Construction and demolition wastes are disposed of separately from MSW, and are generally expected to not decompose. Non-friable asbestos is accepted, subject to requirements for GPS location, immediate cover, and permanent retention of disposal and location records.

Landfill gas is a mixture, containing approximately 50-55% methane, 45-50% carbon dioxide, and 2-5% of other gases.[1] Some examples of these gases include sulfides, carbon monoxide, ammonia, and non-methane organic compounds (NMOC). NMOC from landfill gas commonly consists of hazardous air pollutants (HAP), such as benzene, hexane, toluene, vinyl chloride, among others. Regulatory limits are based on the NMOC portion of landfill gas.

Organic waste (municipal solid waste) accepted by landfills is decomposed by bacteria over time, producing landfill gas. This decomposition occurs in four phases. In Phase I, aerobic (in the presence of or requiring oxygen) bacteria break down complex carbohydrates, proteins, and lipids in organic waste. The primary gas byproduct in this phase is carbon dioxide. Phase I continues until all available oxygen is depleted. In Phase II, anaerobic (not in the presence of or not requiring oxygen) bacteria convert the compounds created by Phase I into acetic, lactic, and formic acids and alcohols. The acids mix with the moisture in the landfill and react with nitrogen to produce carbon dioxide and hydrogen. In Phase III, the anaerobic bacteria consume the organic acids produced in Phase II to form acetate, another organic acid. Phase III causes the landfill to become a more pH-neutral environment, which allows methane-producing bacteria to establish themselves. These bacteria consume the carbon dioxide and acetate, producing methane. In Phase IV, the decomposition of organic waste and the production of landfill gas are at a relatively constant rate. Phase IV typically lasts around 20 years. Different portions of the landfill may be in different phases at the same time, depending on when the waste was accepted

Moisture content, oxygen concentration, and temperature all affect the rate of landfill gas production. Moisture encourages bacterial growth by transporting nutrients throughout the landfill. Waste compaction (i.e. higher density of the landfill) will decrease the rate of water infiltration and subsequently, the rate of landfill gas production. Oxygen concentration allows for decomposition to remain in Phase I for longer. Methane production will only begin once decomposition has progressed to Phase III, where anaerobic, methane-producing bacteria will begin to proliferate. Oxygen concentration is affected by the compaction of the waste and in shallow areas of the landfill, higher barometric pressures can cause increased oxygen concentrations. Higher temperatures encourage bacterial growth and an increased rate of

[1] Source for landfill gas composition and production information: ASTDR: Landfill Gas Primer: An Overview for Environmental Health Professionals, https://www.atsdr.cdc.gov/HAC/landfill/html/intro.html.

chemical reactions and volatilization. Shallow areas of the landfill will be more sensitive to temperature changes, since there is not the insulation provided by layers of soil or waste.

Waste composition and age is a major factor in landfill gas production. The composition of the organic waste can inhibit or encourage bacterial growth, resulting in decreased or increased landfill gas production, as appropriate. For example, waste with higher concentrations in nutrients, such as phosphorus or nitrogen, will encourage bacterial growth, whereas waste with higher concentrations in sodium will inhibit the growth of methane-producing bacteria. Newer waste will produce more landfill gas, and decrease over time as the decomposition progresses. Gas production is expected to peak after about 5 to 7 years and all gas is expected to be produced within 20 years after acceptance of the waste. For the landfill as a whole, landfill gas emissions are expected to increase ever year, as more waste is accepted and will decrease after closure. It is expected landfill gas emissions will peak the year or year after the landfill reaches capacity.

Big Sky is permitted to operate a crusher, allowing stone to be removed in constructing waste cells at the facility to be processed into gravel that can be used at the facility to line waste cells. Fugitive particulate matter emissions results from vehicle traffic, as well as disposal and daily cover operations. Diesel combustion in mobile equipment at the facility is also expected to result in air emissions.

Big Sky stores and dispenses gasoline for use in plant vehicles. There are other VOC storage tanks at the facility that store diesel fuel and oil, which are expected to have insignificant emissions due to their low vapor pressure.

Permitting, Application, and Construction History

Planning of the landfill began in 2005 or earlier, based on submissions to ADEM related to the first solid waste disposal facility permit, issued on August 6, 2007. The initial solid waste permit included only the MSW cell. The CD cell was added to the permit, effective July 9, 2010. ADEM also issued a National Pollutant Discharge Elimination System General Permit for the facility on September 12, 2006. ADEM granted approval to accept waste on November 10, 2009. The current Solid Waste Permit was issued to Big Sky on July 12, 2018 and is in the process of being renewed.

The current Title V renewal application was submitted on August 6, 2024. The application was determined to be complete on October 5, 2024. Consistent with Section 18.12.2 of the Rules and Regulations, Big Sky’s right to operate will extend past the expiration of the current Title V permit on February 5, 2025.

The table below summarizes the Title V permitting history for the facility.

Application	Purpose	Department Action
10/30/2009	Initial Title V	4-07-1037-01 issued 04/19/2010
10/09/2014	Title V Renewal (timely)	4-07-1037-02 issued 03/19/2015
08/24/2015	Administrative Modification – Change of Ownership from Green Mountain Management Solid Waste Facility to Big Sky Environmental Solid Waste Facility	4-07-1037-03 issued 08/27/2015
12/13/2019	Title V Renewal	4-07-1037-04 issued 02/06/2020
08/06/2024	Title V Renewal (timely)	This application is for the current draft permit to be numbered 4-07-1037-05.

Compliance and Enforcement (Air Emissions Only)

The facility is in compliance with the current Title V Operating Permit based on the most recent annual inspection and full compliance evaluation (dated November 12, 2024). There are no outstanding consent decrees, court judgements, administrative orders or other enforcement orders for air emissions which have been issued against the facility at the time of this draft permit which are not properly addressed in the permit. The most recent annual compliance certification was received on May 17, 2024. The company reported status was in compliance without deviations. No compliance schedule is required at this time.

List of All Units and Emissions Generating Activities

Emissions Unit No.	Emissions Unit Description
001	Municipal Solid Waste Landfill – 3,675,550 Megagrams Design Capacity – Subject to FIP, 40 CFR 62, Subpart OOO– Location Defined by ADEM Solid Waste Permit 37–48
002	Stage I Controlled Gasoline Dispensing Facility with 6,000-Gallon Tank & Dispensing Nozzle

Sources Not Assigned an Emission Unit Number

- Facility-wide fugitive dust, including but not limited to vehicle traffic and daily cover operations
- CD landfill cell, including crushing operations
  - NMOC emissions are not expected from the CD landfill cell
- Storage tanks containing diesel, leachate, and/or used oil (Insignificant)
- Fuel combustion in mobile equipment (Facility-Wide).

Facility-Wide Potential to Emit (PTE)

The potential to emit is calculated using the maximum capacity of the facility under its physical and operational design. The calculation includes federally enforceable limits, restrictions or requirements, including but not necessarily limited to air pollution control equipment, and restrictions on the hours of operation, types of materials combusted or amounts of materials processed. The most recent permit application may include adjustments to the PTE calculation which incorporate better information than was available when previous applications were submitted. The potential or projected emissions calculated by the Department, incorporating the best available information at this time, is summarized below to put the size of the facility in context and to aid in understanding which regulations apply. The independent calculations performed by the Department may differ from those submitted by the facility. Differences will not be discussed unless an issue of applicability is presented. The Department's full calculations of potential emissions for the facility using the best available information is attached to this report. Potential to emit is meant to be a worst-case emissions calculation. Actual emissions are lower.

Landfill emissions presented in this report are calculated using Landfill Gas Emissions Model (LandGEM) Version 3.03 and Beta Version 3.1, a program developed by EPA. In December 2023, EPA released LandGEM Version 3.1, available from the following EPA website: https://www.epa.gov/system/files/other-files/2023-12/landgem-v3.1beta-dec-2023.xlsm. The update to LandGEM includes Equation HH-1 from 40 CFR 98.343(a)(1) and its selectable parameters, as well as the theoretical first-order kinetic model of methane production found in LandGEM Version 3.03. Data from both versions is included to demonstrate the differences in projections, based off the equation updates.

LandGEM serves as a screening tool, using a first order decomposition rate equation and default values, which are likely to be higher than the values that would be calculated based on site-specific testing. Regulatory defaults are used for determining compliance with the applicable NSPS and NESHAP. For emission inventory purposes, AP-42 recommends site-specific information be used, when available.

The recommended value, from Table HH-1 in 40 CFR 98, Subpart HH, for the methane generation rate (k) is 0.057 per year, for an area such as Jefferson County that receives greater than 40 feet of rainfall per year. The value for the methane generation potential is (L_o) is 100 m^3/Mg, when calculating for emissions inventory purposes. The site-specific NMOC concentration is 214 ppmv as hexane, as demonstrated by site-specific Tier 2 testing conducted in March 2022. LandGEM reuses the waste acceptance rate from the most recent year to calculate for future years until the design capacity of the landfill is met or 80 years of waste acceptance has occurred.

The summary report from LandGEM generated by the Department and the Department's calculations for fugitive dust and fuel combustion are attached to this report. The input values as described in the previous paragraph and the full design capacity of the landfill (3,675,500 megagrams) were used.

The following tables include data from LandGEM Version 3.03 and Beta Version 3.1 for potential emissions from 2025-2030.

LandGEM Version 3.03						
Year	**NMOC (Mg/yr)**	**VOC (tons/yr)**	**Total HAP (tons/yr)**	**Toluene (tons/yr)**	**Xylenes (tons/yr)**	**Methylene chloride (tons/yr)**
2025	8.21	5.94	3.30	1.76	0.62	0.58
2026	9.47	6.85	3.80	2.03	0.72	0.67
2027	10.66	7.72	4.28	2.28	0.81	0.76
2028	11.78	8.53	4.73	2.52	0.90	0.84
2029	12.84	9.30	5.16	2.75	0.98	0.91
2030	13.84	10.02	5.56	2.97	1.05	0.98

LandGEM Beta Version 3.1						
Year	**NMOC (Mg/yr)**	**VOC (tons/yr)**	**Total HAP (tons/yr)**	**Toluene (tons/yr)**	**Xylenes (tons/yr)**	**Methylene chloride (tons/yr)**
2025	7.96	5.68	3.14	1.71	0.61	0.56
2026	9.24	6.59	3.64	1.98	0.70	0.66
2027	10.44	7.45	4.12	2.24	0.79	0.74
2028	11.57	8.26	4.56	2.48	0.88	0.82
2029	12.65	9.03	4.99	2.71	0.96	0.90
2030	13.66	9.75	5.39	2.93	1.04	0.97

Fugitive particulate matter emissions are expected from vehicle traffic and landfill cover operations. Potential emissions due to fugitive dust generated by vehicle travel based on AP-42 factors for paved roads (Section 13.2.1), unpaved roads (Section 13.2.2), and material handling without accounting for the effectiveness of controls and rainfall are included in the table below. AP-42 Section 13.2.3 recommends the dozer overburden equation in Tables 11.9-1 and 11.9-2 for calculating fugitive dust from bulldozing operations.

	PM (tons/year)	**PM_{10} (tons/year)**	**$PM_{2.5}$ (tons/year)**
Paved Roads	25.2	5.0	1.2
Unpaved Roads	274	73.9	7.4
Cover Operations	17.3	12.9	1.7
Total	317	91.8	10.3

Diesel-powered, heavy equipment is used at the facility, for cover and material handling operations. Potential emissions due to the combustion of diesel fuel using AP-42 Section 3.3 factors and information provided by the facility are included in the table below.

VOC (tons/year)	**NO_X (tons/year)**	**SO_X (tons/year)**	**CO (tons/year)**	**$PM/PM_{10}/PM_{2.5}$ (tons/year)**	**Total HAP (tons/year)**
5.6	68.5	4.5	14.8	4.8	0.060

VOC emissions are expected from gasoline dispensing and the gasoline storage tank, due to evaporation of the liquid during storage and changes in the liquid level in the tank. For fixed roof tanks, losses are expected during storage (breathing losses) and during filling (working losses).

Expected VOC losses from gasoline dispensing (using AP-42 Chapter 5.2) and storage (using the EPA Tanks 5.1 program) are included in the table below. Emissions from the storage of diesel fuel and motor oil are expected to be minimal, due to the low vapor pressure of the material.

Gasoline Dispensing (tons/year)	Gasoline Storage Tank (tons/year)	Total (tons/year)
0.6	1.9	2.6

NAAQS Attainment Status & Major Source Thresholds

Jefferson County is designated attainment for all National Ambient Air Quality Standards (NAAQS) currently in effect. The provisions of Part 2.4, "Air Permits Authorizing Construction in Clean Areas (Prevention of Significant Deterioration Permitting (PSD))" of the Rules and Regulations determine the major source threshold for all NSR regulated pollutants. Landfills are not listed sources under Subdivision 2.4.2(a)(1)(i) of the Rules and Regulations. Therefore, fugitive emissions are not considered in the area/major source determination for Big Sky. The major source threshold for Big Sky is 250 tons for regulated NSR pollutants (excluding lead). The significance level for municipal solid waste landfill emissions, measured as NMOC, is 45 Megagrams/yr (50 short tons/yr). Under Title V (Paragraph 18.1.1(q)), the major source threshold for regulated NSR pollutants is 100 tons. The Title V major source thresholds for HAPs are 10 tons/year single HAP and 25 tons/year total HAP.

An insignificant activity means an air emissions unit at the facility which has the potential to emit less than 5 tons per year of any criteria pollutant or less than 1,000 pounds per year of any HAP (Paragraph 18.1.1(o) of the Rules and Regulations). However, activities which have applicable requirements cannot be considered insignificant.

Facility-wide potential and projected emissions are less than the major source thresholds for all criteria pollutants when only point sources are included in the total, which is the rule for NSR and Title V applicability determinations. However, there are applicable requirements for landfill operations and for gasoline storage and dispensing. 40 CFR 62, Subpart OOO for landfills subjects Big Sky to Title V based on design capacity alone. The Department also has discretion to require a permit because the potential fugitive PM_{10} emissions are very near the Title V threshold and more than six times the PSD significance level.

Determination of Applicable Requirements

New Source Review (NSR) / Prevention of Significant Deterioration (PSD) permitting requirements are applicable to the construction of any new major source, as defined in Paragraph 2.4.2(a) or 2.5.2(a) of the Rules and Regulations, or any major modification at an existing major stationary source.

Applicable requirements under New Source Performance Standards (NSPS) are determined by date of construction and other details including but not limited to the equipment capacity, material stored, and/or fuel combusted, but are generally not determined directly from the PTE of individual equipment or of the entire facility.

Applicable requirements under the State Implementation Plan (SIP) apply based on the activity or equipment generating emissions, although some exemptions based on (low) PTE or actual emissions are incorporated into some rules.

The PTE for HAP is often relevant to the determination of which National Emission Standards for Hazardous Air Pollutants (NESHAP) are applicable. In general, NESHAPs apply to specifically defined source categories based on equipment or type of activity. For 40 CFR Part 61 NESHAP, PTE is not considered. For 40 CFR Part 63 NESHAP, some subparts are applicable only to major sources of HAP, others are applicable only to area sources of HAP, and some subparts include requirements for both major and area sources of HAP.

Applicable Requirements

The following discussions address applicable requirements for processes and equipment at this facility, requirements that typically apply to Title V facilities, and requirements that may appear applicable but are not.

New Source Review (NSR) & Prevention of Significant Deterioration (PSD)

The facility is an existing area source of NSR/PSD pollutants. There is no modification (a physical change or a change in the method of operation which increases the amount of air pollutant emitted or causes the emission of a pollutant not previously emitted by the facility) included in or associated with this permit renewal. No increase in the size of the landfill has been requested. Evaluation under the PSD program for NSR requirements, including but not limited to Best Available Control Technology (BACT), has not been triggered.

Compliance Assurance Monitoring (CAM)

The requirements of 40 CFR Part 64 apply to a pollutant-specific emissions unit at a major source that is required to obtain a part 70 or 71 permit if the unit satisfies all of the following criteria per §64.2:

(1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under §64.2(b)(1);
(2) The unit uses a control device to achieve compliance with any such emission limitation or standard; and
(3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. For purposes of this paragraph, "potential pre-control device emissions" shall have the same meaning as "potential to emit," as defined in §64.1, except that emission reductions achieved by the applicable control device shall not be taken into account.

No emission unit at Big Sky satisfies all of the above criteria. CAM does not apply.

Landfill Operations

State Implementation Plan

ADEM has proposed a revision to ADEM Administrative Code (AAC) Section 335-3-19 to implement 40 CFR 60, Subpart Cf, "Emissions Guidelines and Compliance Times for Municipal Solid Waste Landfills," which required SIP submissions to lower the NMOC threshold from 50

megagrams per year to 34. The Department adopted these changes via revisions to Chapter 21 of the Rules and Regulations on August 14, 2024. As of the date of this report, EPA has not taken final action on the proposed revisions.

Federal Implementation Plan

40 CFR 62, Subpart OOO, "Federal Plan Requirements for Municipal Solid Waste Landfills That Commenced Construction On or Before July 17, 2014 and Have Not Been Modified or Reconstructed Since July 17, 2014" is the federal implementation plan (FIP) for 40 CFR 60, Subpart Cf. Big Sky is subject to Subpart OOO as construction, reconstruction, or modification began on or before July 17, 2014 and it is not currently subject to a SIP implementing 40 CFR 60, Subpart Cf.

The design capacity of Big Sky is 3,675,550 megagrams. Landfills with a design capacity equal to or greater than 2.5 million megagrams or 2.5 million cubic meters must either install a gas collection and control system (GCCS) or calculate the NMOC emission rate each year, according to a tiered procedure, and submit an annual report, demonstrating the emission rate is under 34 megagrams per year.

The NMOC emission rate is calculated according to the equations in §62.16718. The regulatory default value for the methane generation rate (k) is 0.05 per year, the methane generation potential (L_o) is 170 cubic meters per megagram, and the NMOC concentration is 4,000 parts per million by volume hexane.

For Tier 1 calculations, the regulatory default values are used for calculation of the NMOC emission rate and compared to the 34 megagrams per year standard. If the emission rate is lower, an NMOC emission rate report must be submitted, and the emission rate must be recalculated annually. If the emission rate is greater, a GCCS must be designed and installed. Alternatively, the landfill owner or operator may attempt to demonstrate an NMOC emission rate lower than the threshold via Tier 2 procedures.

Tier 2 testing involves the determination of a site-specific NMOC concentration. Landfill gas is collected, using the sampling method as provided in §62.16718(a)(3), and analyzed for NMOC concentration by EPA Method 25 or 25C. The NMOC emission rate is then recalculated using the site-specific concentration rather than the regulatory default value. If the recalculated rate is lower than 34 megagrams per year, an NMOC emission rate report must be submitted, the emission rate must be recalculated annually, and Tier 2 testing must be conducted again every 5 years. If the recalculated rate is greater than 34 megagrams per year, a GCCS must be designed and installed. Alternatively, the landfill owner or operator may attempt to demonstrate an NMOC emission rate lower than the threshold via Tier 3 procedures.

Big Sky initially conducted Tier 2 testing on May 9, 2013 and most recently conducted testing again on March 14-18, 2022, in accordance with the procedures of 40 CFR 60, Subpart WWW. The Tier 2 procedures specified in Subpart WWW and Subpart OOO are the same. The site-specific NMOC concentration determined in March 2022 was 214 ppmv hexane. The recalculated NMOC emission rate, as reported in March 2022, was 6.07 megagrams per year. Tier 2 testing will next be required in 2027.

Tier 3 testing involves the determination of site-specific methane generation constant using EPA Method 2E. The NMOC emission rate is recalculated using the site-specific constant and the

site-specific concentration from Tier 2 testing. If the recalculated rate is lower than 34 megagrams per year, an NMOC emission rate report must be submitted, and the emission rate must be recalculated annually. Tier 3 testing is only required once; however, Tier 2 testing must still be conducted every 5 years. If the recalculated rate is greater than 34 megagrams per year, a GCCS must be designed and installed.

Tier 4 testing may be used to demonstrate that surface methane emissions are below 500 parts per million, only if the NMOC emissions are demonstrated to be greater than or equal to 34 megagrams per year but less than 50 megagrams per year, using Tier 1 or Tier 2. Surface emission monitoring is conducted on a quarterly basis, using the procedures specified in §62.16718(a)(4). A Tier 4 surface emissions rate report must be submitted, along with other records as specified in §62.16726(g). If the measured concentration is greater than or equal to 500 parts per million, a GCCS must be designed and installed.

The NMOC emission rate report must be submitted annually and contain an annual or 5-year estimate of the NMOC emission rate and all data, calculations, sample reports, and measurements used to estimate the annual or 5-year emissions. If the estimated NMOC emission rate as reported is less than 34 megagrams per year in each of the next 5 consecutive years, Big Sky can elect to submit an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. The estimate must be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year in the 5-year estimate, a revised estimate must be submitted.

If Big Sky's NMOC emissions cannot be determined to be less than 34 megagrams per year and Tier 4 testing is not performed or does not demonstrate that surface methane emissions are below 500 ppm, a design plan for a GCCS must be submitted within 1 year of the exceedance. A closure report must be submitted within 30 days of ceasing waste acceptance and no additional wastes may be accepted without filing a notification of modification under §60.7(a)(4). Big Sky must maintain records of the design capacity report, the current amount of solid waste-in-place, and the year-by-year waste acceptance rate.

New Source Performance Standards (NSPS)

40 CFR 60, Subpart IIII, "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines," applies to stationary compression ignition (CI) internal combustion engines (ICE) that commenced construction after the applicable date in §60.4200.

A stationary ICE is defined in §60.4219 as, "any internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Stationary ICE differ from mobile ICE in that a stationary internal combustion engine is not a nonroad engine as defined at 40 CFR 1068.30 (excluding paragraph (2)(ii) of that definition), and is not used to propel a motor vehicle, aircraft, or a vehicle used solely for competition."

A nonroad engine is defined in 40 CFR 1068.30 as follows:

> "*(1) Except as discussed in paragraph (2) of this definition, a nonroad engine is an internal combustion engine that meets any of the following criteria:*
>
> *(i) It is (or will be) used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers).*

(ii) It is (or will be) used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers).

(iii) By itself or in or on a piece of equipment, it is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

(2) An internal combustion engine is not a nonroad engine if it meets any of the following criteria:

(i) The engine is used to propel a motor vehicle, an aircraft, or equipment used solely for competition.

(ii) The engine is regulated under 40 CFR part 60, (or otherwise regulated by a federal New Source Performance Standard promulgated under section 111 of the Clean Air Act (42 U.S.C. 7411)). Note that this criterion does not apply for engines meeting any of the criteria of paragraph (1) of this definition that are voluntarily certified under 40 CFR part 60.

(iii) The engine otherwise included in paragraph (1)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. For any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced, include the time period of both engines in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year."

The heavy equipment currently used by Big Sky all fall under Paragraph (1) of the definition. Regulation of emissions from nonroad compression-ignition engines is addressed under 40 CFR 1039, 40 CFR 1065, and 40 CFR 1068 (among others) which are all administered by EPA. If Big Sky has a portable or transportable piece of equipment using a RICE engine, such as a crusher or grinder, that remains on-site for longer than 12 months or a full annual operating period, the engine would be considered a stationary RICE and subject to the RICE NSPS and/or NESHAP, as applicable.

40 CFR 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills" applies to each municipal solid waste landfill that commenced construction, reconstruction or modification on or after May 30, 1991 but before July 18, 2024. Pursuant to §60.750(d)(1), Big Sky will comply with the more stringent requirements of 40 CFR 62, Subpart OOO.

40 CFR 60, Subpart OOO, "Standards of Performance for Nonmetallic Mineral Processing Plants" applies to portable nonmetallic mineral processing plants that commenced construction, reconstruction or modification on or after August 31, 1983 with a capacity that exceeds 150 tons/hour of material processed. Big Sky does not make use of a capture system to capture and transport particulate matter to a control device. Pursuant to §60.672(b), Big Sky will comply

with the fugitive emission limits and compliance requirements in Table 3 of 40 CFR 60, Subpart OOO. The wet suppression systems built into newer units are sufficient to meet the opacity limits, whenever they are maintained properly. If Big Sky installs and operates a capture system, as specified in §60.672(a), then the requirements of Table 2 will apply. If Big Sky saturates the processed materials sufficiently as to satisfy the definitions of "saturated material" and "wet material processing operation(s)" under §60.671, the requirements of 40 CFR 60, Subpart OOO will not apply, pursuant to §60.670(a)(2).

National Emission Standards for Hazardous Air Pollutants (NESHAP)

40 CFR 61, Subpart M, "National Emission Standard for Asbestos" contains applicable provisions for landfills that accept asbestos. Big Sky must follow the provisions of §61.154, "Standard for Active Waste Disposal Sites," for the segregation of asbestos-containing materials, recordkeeping, prevention of visible emissions, prevention of access by the public, and notification of any disturbance of buried asbestos. Additionally, asbestos-containing materials may not be used to construct roadways except as allowed by §61.143, "Standard for Roadways."

40 CFR 63, Subpart AAAA, "National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills," would be applicable under any one of the following conditions:

- If Big Sky were to exceed major source thresholds for HAP (10 tons/year single HAP and/or 25 tons/year total HAP);
- If uncontrolled NMOC emissions were to exceed 50 megagrams/year, calculated according to 40 CFR 40 CFR 63.1959(a); or
- If Big Sky were to install a bioreactor, defined in 40 CFR 63.1990 to mean the controlled addition of any liquid other than leachate to raise the moisture content of the cell by at least 40% by weight to enhance anaerobic biodegradation.

On-Site Fuel Dispensing

State Implementation Plan

Part 8.3 of the Rules and Regulations applies to loading and storage of VOC with a true vapor pressure of 1.5 psia or greater under actual storage conditions. Tanks which exceed 1,000 gallons in storage capacity are required to have a submerged fill pipe if at any time the true vapor pressure of the contents exceeds 1.5 psia. This provision applies only to the 6,000-gallon gasoline storage tank, as gasoline has a maximum true vapor pressure of 7.0 psia.

Part 8.7 of the Rules and Regulations applies to the on-site gasoline dispensing facility, which is subject to the Stage I vapor control requirements of Section 8.7.4 of the Rules and Regulations and the work practice and spill prevention provisions of Sections 8.7.5 and 8.7.6 of the Rules and Regulations.

Part 8.20 of the Rules and Regulations applies to all vapor collection and control systems at gasoline dispensing facilities. Big Sky can only accept gasoline from tank trucks that have a valid Jefferson County Department of Health Air Sticker visibly attached. The vapor collection system must also be designed and operated within the standards of Section 8.20.5 and Section 8.20.6 of the Rules and Regulations.

New Source Performance Standards (NSPS)

40 CFR 60, Subpart K, "Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978," 40 CFR 60, Subpart Ka, "Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984," 40 CFR 60, Subpart Kb, "Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984, and On or Before October 4, 2023," and 40 CFR 60, Subpart Kc, "Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023," do not apply either based on construction date or on vessel capacity.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

40 CFR 63, Subpart CCCCCC, "National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities" applies to gasoline dispensing facilities at area sources of HAP. Big Sky has a monthly throughput of less than 10,000 gallons of gasoline, and so is subject only to the management practices intended to minimize gasoline emissions.

Facility-Wide Operations

SIP

State Implementation Plan, Part 6.2 of the Rules and Regulations applies to fugitive dust emissions throughout the facility, including but not limited to road traffic and daily landfill cover operations. Specific measures for dust control due to landfill operations are included under the conditions of EU 001.

Permit Shield

No permit shield under Section 18.10 of the Rules and Regulations has been included in this permit. A permit shield under Section 18.10 would include a statement that compliance with the permit will be considered compliance with all applicable requirements as of the date of permit issuance.

Alternative Operating Scenarios

An alternative operating scenario is a change to an emission unit that either results in the unit being subject to one or more applicable requirements which differ from those applicable to the emission unit prior to the implementation of the change or renders inapplicable one or more requirements previously applicable to the emission unit prior to the implementation of the change. There are no reasonably anticipated alternative operating scenarios for any emission unit at the facility.

Title V Monitoring

Pursuant to §70.6(a)(3)(i), Title V operating permits must contain all monitoring and analysis procedures, or test methods required under applicable monitoring and testing requirements. Where the applicable requirement does not require periodic testing or instrumental or non-instrumental monitoring (which may consist of recordkeeping designed to serve as monitoring), periodic monitoring sufficient to yield reliable data from the relevant period that are

representative of the source's compliance with the permit must be included. These monitoring requirements must assure use of terms, test methods, units, averaging periods, and other statistical conventions consistent with the applicable requirement. Periodic monitoring can take the form of direct measurements of emissions or can be achieved through indirect measures, such as recordkeeping or permit limitations. NSPS and NESHAPs are typically written to have periodic monitoring built into their requirements. State regulations, however, often do not have such requirements inherent to them and, so, the Department must design them. The Department relies on knowledge of the facility and process, EPA guidance, and engineering judgment in determining periodic monitoring requirements. This determination is often a case-by-case, unit-specific, pollutant-specific analysis, considering the specific operations of the emissions source, economic and technical feasibility, and risk, among other factors.

Facility-Wide Operations

A condition has been added for storage tanks to specify that storage of VOC with a true vapor pressure greater than 1.5 psia is subject to the requirements of Part 8.3 of the Rules and Regulations.

A condition has been added to specify that any RICE-powered, portable or transportable equipment that remain at the facility for longer than 12 consecutive months or a full annual operating period will be considered stationary and subject to the RICE NSPS and/or NESHAP, as applicable. If such conditions are met, Big Sky will be required to notify the Department and revision to the Permit could be required.

Landfill Operations

Compliance with 40 CFR 62, Subpart OOO will be monitored through submittal of the NMOC emissions rate report, demonstrating that the emission rate is under 34 megagrams per year. Big Sky is further required to submit and maintain records of Tier 2, 3, and/or 4 testing procedures and results. If the NMOC emission rate cannot be demonstrated to be less than 34 megagrams per year, Big Sky is required to notify the Department (and EPA) within 2 working days of discovery and within 30 days, submit a compliance schedule for meeting the GCCS requirements, and proceed with the design and installation of a GCCS, according to the progress increments outlined in §62.16712.

The permit includes specific measures that Big Sky must undertake to minimize fugitive dust, in order to comply with Part 6.2 of the Rules and Regulations. Additional dust control measures and monitoring requirements have been added to the fugitive dust provision (under EU 001) to include the following:

- Use of vegetive cover
- Paving of plant roads
- Additional requirements for wet suppression
    - Specifying that observation of visible emissions from fugitive dust from vehicle traffic and/or wind is the indicator for the need of water application
    - Specifying that wet suppression is effective when it prevents fugitive dust from crossing property lines
    - Requiring inspection of the water truck and corrective action, as needed

- Requiring recordkeeping of inspection of the water truck and additional records surrounding the application of water
- Requiring reporting of the days when the water truck was not able to be used effectively in the Title V semi-annual report

· Specifying use of daily compaction of landfill cover and minimizing of drop heights
- Requiring the documentation of training of employees who participate in or supervise cover activities in work practices to prevent fugitive dust
- Requiring reporting of when a work practice was not properly performed and the corrective actions taken in the Title V semi-annual report.

The Department will investigate any complaints of fugitive dust and could require specific measures or monitoring if the fugitive dust originating at the facility is observed crossing property lines.

Big Sky makes use of wet suppression to reduce particulate matter and dust from stone-crushing and earth-moving operations. 40 CFR 60, Subpart OOO requires monthly periodic inspections to check that water is flowing to discharge spray nozzles. It is further required that corrective action is initiated within 24 hours and completed as expediently as practical if it is determined that water is not flowing properly during an inspection. Records must be maintained of each inspection, including the date and any corrective action taken, in a logbook. It has now been specified that, according to the definition of saturated materials in Subpart OOO, materials are not considered saturated if only wetted by a wet suppression system. The corrective action requirements for the wet suppression system and the reporting and recordkeeping requirements for Subpart OOO are now included explicitly.

For all asbestos-containing waste materials received, records of waste shipments and the location, depth, area, and quantity of asbestos-containing materials within the disposal site on a map or diagram of the disposal area must be maintained to demonstrate compliance with 40 CFR 61, Subpart M. The recordkeeping and reporting requirements to demonstrate compliance with Subpart M have been included explicitly. A requirement has also been added that Big Sky certify its compliance with §61.154 in the Title V semi-annual report, if asbestos has been accepted during the reporting period. Wording has been included to specify that Big Sky must comply with its solid waste permit and ADEM Administrative Code r. 335-13-4.26(2) in order to comply with §61.154(a).

It has been specified that Big Sky must notify the Department within 2 working days of discovery of an exceedance of NMOC or HAP emissions that would trigger 40 CFR 63, Subpart AAAA, and submit an application for revision of the permit. NMOC emissions will be monitored through the annual NMOC emissions rate report required under 40 CFR 62, Subpart OOO. HAP emissions will be monitored through the annual production and emissions report required by the Department.

On-Site Fuel Dispensing

Big Sky is required to maintain records of the monthly throughput of gasoline, to demonstrate compliance with §63.11116 and that it has not become subject to additional requirements of 40 CFR 63, Subpart CCCCCC. A requirement to certify compliance with §63.11116 and report the monthly throughput in the Title V semi-annual report has been added.

Big Sky must maintain delivery records of gasoline, including the Reid vapor pressure and Air Sticker number of the tank truck, to demonstrate compliance with the applicable gasoline dispensing requirements of Chapter 8 of the Rules and Regulations.

In the event that Big Sky is not receiving or storing gasoline in a given month, it has now been specified that Big Sky must document this, and include any months with no gasoline throughput in the semi-annual Title V monitoring report. It has been specified that Big Sky must continue to comply with all applicable requirements for EU 002 until the equipment has been removed from the landfill (as defined under ADEM Solid Waste Disposal Facility Permit 37–48) or rendered physically incapable of causing air emissions. Big Sky will be required to notify the Department prior to the removal of the equipment or alteration of the equipment.

Public Participation & Comment Periods

There will be a 30-day public comment period for this draft permit. Comments should be limited to only the current permitting action. Any person may request a public hearing during the public comment period. Public notice will be given by publication in a local newspaper regarding the availability of the draft permit, application and statement of basis on the Department's website. Additional community outreach measures for this permit renewal include providing a copy of the public notice to the appropriate city and county executives, and to other persons who have submitted a written request to be notified of permit actions.

The ADEM will have the opportunity to comment during the 30-day public comment period. EPA will have 45 days to comment on the proposed permit, beginning when the proposed permit is submitted. EPA may elect to treat the draft for public comment as a proposed permit for concurrent review unless there are substantial comments which result in changes to the draft.

The deadline for submitting a citizen petition asking EPA to object to the permit will be determined as if EPA's 45-day review period is performed after the public comment period has ended (i.e. sequentially), even if EPA actually reviews the permit concurrently with the public notice period. Refer to EPA's website for accurate information on the petition deadline: https://www.epa.gov/caa-permitting/alabama-proposed-title-v-permits.

The Department has established an email list for persons who wish to be notified of public comments periods by email. To request to be added to this list, send an email to airpermitcomments@jcdh.org.

Changes Made As a Result of Comments Received

If changes are made to the draft permit and/or Statement of Basis as a result of public comments received, this section will be updated to describe them. The revised Statement of Basis will accompany the proposed permit as re-submitted to EPA if significant public comments are received.

No comments were received.

Summary Report

Landfill Name or Identifier: Big Sky Environmental

Date: Tuesday, February 25, 2025

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_{CH4} = 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_0 = 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	**2010**	
Landfill Closure Year (with 80-year limit)	**2037**	
Actual Closure Year (without limit)	***2037***	
Have Model Calculate Closure Year?	**Yes**	
Waste Design Capacity	**3,675,550**	*megagrams*

MODEL PARAMETERS

Methane Generation Rate, k	**0.057**	$year^{-1}$
Potential Methane Generation Capacity, L_0	**100**	m^3/Mg
NMOC Concentration	**214**	*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)*
2010	60,092	66,101	0	0
2011	54,519	59,971	60,092	66,101
2012	25,639	28,203	114,611	126,072
2013	25,606	28,167	140,250	154,275
2014	32,049	35,254	165,856	182,442
2015	36,509	40,160	197,905	217,696
2016	37,028	40,731	234,414	257,855
2017	47,767	52,544	271,442	298,586
2018	69,217	76,139	319,209	351,130
2019	82,660	90,926	388,426	427,269
2020	104,408	114,849	471,086	518,195
2021	104,505	114,956	575,494	633,043
2022	128,331	141,164	679,999	747,999
2023	201,012	221,113	808,330	889,163
2024	201,012	221,113	1,009,342	1,110,276
2025	201,012	221,113	1,210,354	1,331,389
2026	201,012	221,113	1,411,366	1,552,503
2027	201,012	221,113	1,612,378	1,773,616
2028	201,012	221,113	1,813,390	1,994,729
2029	201,012	221,113	2,014,402	2,215,842
2030	201,012	221,113	2,215,414	2,436,955
2031	201,012	221,113	2,416,426	2,658,069
2032	201,012	221,113	2,617,438	2,879,182
2033	201,012	221,113	2,818,450	3,100,295
2034	201,012	221,113	3,019,462	3,321,408
2035	201,012	221,113	3,220,474	3,542,521
2036	201,012	221,113	3,421,486	3,763,635
2037	53,052	58,357	3,622,498	3,984,748
2038	0	0	3,675,550	4,043,105
2039	0	0	3,675,550	4,043,105
2040	0	0	3,675,550	4,043,105
2041	0	0	3,675,550	4,043,105
2042	0	0	3,675,550	4,043,105
2043	0	0	3,675,550	4,043,105
2044	0	0	3,675,550	4,043,105
2045	0	0	3,675,550	4,043,105
2046	0	0	3,675,550	4,043,105
2047	0	0	3,675,550	4,043,105
2048	0	0	3,675,550	4,043,105
2049	0	0	3,675,550	4,043,105

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2050	0	0	3,675,550	4,043,105
2051	0	0	3,675,550	4,043,105
2052	0	0	3,675,550	4,043,105
2053	0	0	3,675,550	4,043,105
2054	0	0	3,675,550	4,043,105
2055	0	0	3,675,550	4,043,105
2056	0	0	3,675,550	4,043,105
2057	0	0	3,675,550	4,043,105
2058	0	0	3,675,550	4,043,105
2059	0	0	3,675,550	4,043,105
2060	0	0	3,675,550	4,043,105
2061	0	0	3,675,550	4,043,105
2062	0	0	3,675,550	4,043,105
2063	0	0	3,675,550	4,043,105
2064	0	0	3,675,550	4,043,105
2065	0	0	3,675,550	4,043,105
2066	0	0	3,675,550	4,043,105
2067	0	0	3,675,550	4,043,105
2068	0	0	3,675,550	4,043,105
2069	0	0	3,675,550	4,043,105
2070	0	0	3,675,550	4,043,105
2071	0	0	3,675,550	4,043,105
2072	0	0	3,675,550	4,043,105
2073	0	0	3,675,550	4,043,105
2074	0	0	3,675,550	4,043,105
2075	0	0	3,675,550	4,043,105
2076	0	0	3,675,550	4,043,105
2077	0	0	3,675,550	4,043,105
2078	0	0	3,675,550	4,043,105
2079	0	0	3,675,550	4,043,105
2080	0	0	3,675,550	4,043,105
2081	0	0	3,675,550	4,043,105
2082	0	0	3,675,550	4,043,105
2083	0	0	3,675,550	4,043,105
2084	0	0	3,675,550	4,043,105
2085	0	0	3,675,550	4,043,105
2086	0	0	3,675,550	4,043,105
2087	0	0	3,675,550	4,043,105
2088	0	0	3,675,550	4,043,105
2089	0	0	3,675,550	4,043,105

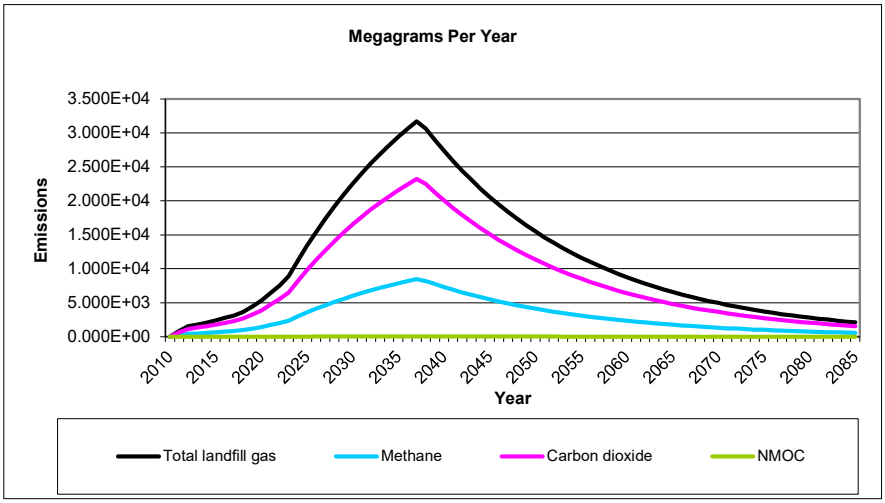
Pollutant Parameters

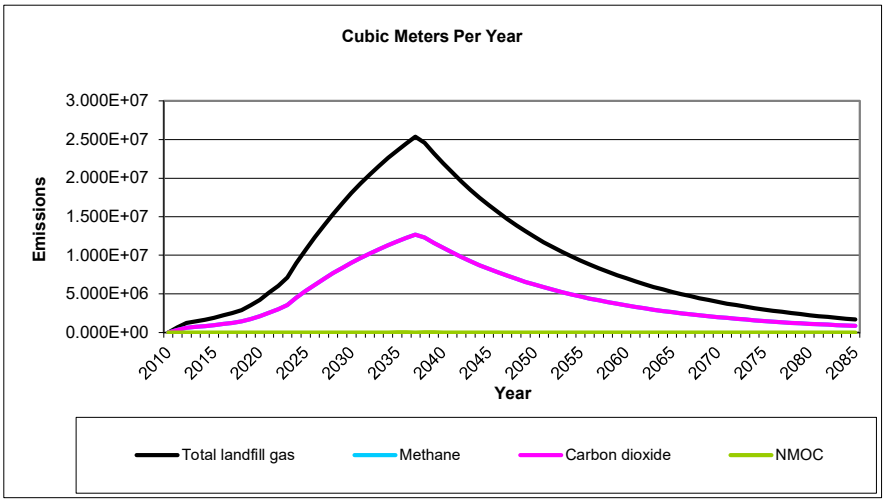
		Gas / Pollutant Default Parameters:		*User-specified Pollutant Parameters:*	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41	0.10	133.41
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

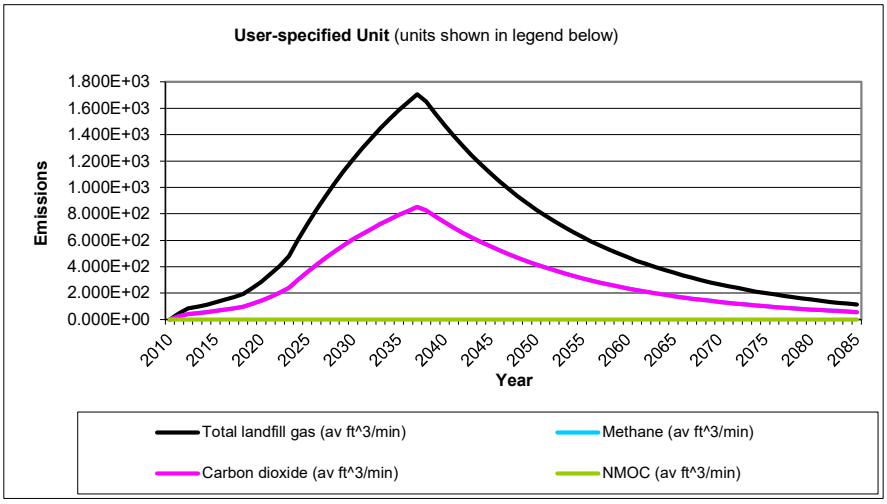
Pollutant Parameters (Continued)

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

Graphs


Megagrams Per Year
Emissions
3.500E+04
3.000E+04
2.500E+04
2.000E+04
1.500E+04
1.000E+04
5.000E+03
0.000E+00
2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060 2065 2070 2075 2080 2085
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
Emissions
3.000E+07
2.500E+07
2.000E+07
1.500E+07
1.000E+07
5.000E+06
0.000E+00
2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060 2065 2070 2075 2080 2085
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
1.800E+03
1.600E+03
1.400E+03
1.200E+03
1.000E+03
8.000E+02
6.000E+02
4.000E+02
2.000E+02
0.000E+00
2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060 2065 2070 2075 2080 2085
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2010	0	0	0	0	0	0
2011	8.340E+02	6.678E+05	4.487E+01	2.228E+02	3.339E+05	2.243E+01
2012	1.544E+03	1.237E+06	8.309E+01	4.125E+02	6.183E+05	4.155E+01
2013	1.815E+03	1.453E+06	9.763E+01	4.847E+02	7.265E+05	4.882E+01
2014	2.069E+03	1.657E+06	1.113E+02	5.528E+02	8.285E+05	5.567E+01
2015	2.400E+03	1.921E+06	1.291E+02	6.409E+02	9.607E+05	6.455E+01
2016	2.773E+03	2.221E+06	1.492E+02	7.408E+02	1.110E+06	7.460E+01
2017	3.133E+03	2.509E+06	1.686E+02	8.370E+02	1.255E+06	8.429E+01
2018	3.623E+03	2.901E+06	1.949E+02	9.677E+02	1.450E+06	9.746E+01
2019	4.383E+03	3.509E+06	2.358E+02	1.171E+03	1.755E+06	1.179E+02
2020	5.287E+03	4.234E+06	2.845E+02	1.412E+03	2.117E+06	1.422E+02
2021	6.443E+03	5.159E+06	3.466E+02	1.721E+03	2.580E+06	1.733E+02
2022	7.536E+03	6.035E+06	4.055E+02	2.013E+03	3.017E+06	2.027E+02
2023	8.900E+03	7.126E+06	4.788E+02	2.377E+03	3.563E+06	2.394E+02
2024	1.120E+04	8.965E+06	6.024E+02	2.991E+03	4.483E+06	3.012E+02
2025	1.337E+04	1.070E+07	7.191E+02	3.570E+03	5.351E+06	3.596E+02
2026	1.541E+04	1.234E+07	8.293E+02	4.117E+03	6.172E+06	4.147E+02
2027	1.735E+04	1.389E+07	9.335E+02	4.634E+03	6.947E+06	4.667E+02
2028	1.918E+04	1.536E+07	1.032E+03	5.123E+03	7.679E+06	5.159E+02
2029	2.091E+04	1.674E+07	1.125E+03	5.584E+03	8.370E+06	5.624E+02
2030	2.254E+04	1.805E+07	1.213E+03	6.020E+03	9.023E+06	6.063E+02
2031	2.408E+04	1.928E+07	1.295E+03	6.431E+03	9.640E+06	6.477E+02
2032	2.553E+04	2.045E+07	1.374E+03	6.820E+03	1.022E+07	6.869E+02
2033	2.691E+04	2.155E+07	1.448E+03	7.188E+03	1.077E+07	7.239E+02
2034	2.821E+04	2.259E+07	1.518E+03	7.534E+03	1.129E+07	7.588E+02
2035	2.943E+04	2.357E+07	1.584E+03	7.862E+03	1.178E+07	7.918E+02
2036	3.059E+04	2.450E+07	1.646E+03	8.172E+03	1.225E+07	8.230E+02
2037	3.169E+04	2.537E+07	1.705E+03	8.464E+03	1.269E+07	8.524E+02
2038	3.067E+04	2.456E+07	1.650E+03	8.192E+03	1.228E+07	8.250E+02
2039	2.897E+04	2.320E+07	1.559E+03	7.738E+03	1.160E+07	7.793E+02
2040	2.736E+04	2.191E+07	1.472E+03	7.309E+03	1.096E+07	7.361E+02
2041	2.585E+04	2.070E+07	1.391E+03	6.904E+03	1.035E+07	6.953E+02
2042	2.442E+04	1.955E+07	1.314E+03	6.522E+03	9.775E+06	6.568E+02
2043	2.306E+04	1.847E+07	1.241E+03	6.160E+03	9.234E+06	6.204E+02
2044	2.178E+04	1.744E+07	1.172E+03	5.819E+03	8.722E+06	5.860E+02
2045	2.058E+04	1.648E+07	1.107E+03	5.497E+03	8.239E+06	5.536E+02
2046	1.944E+04	1.556E+07	1.046E+03	5.192E+03	7.782E+06	5.229E+02
2047	1.836E+04	1.470E+07	9.879E+02	4.904E+03	7.351E+06	4.939E+02
2048	1.734E+04	1.389E+07	9.331E+02	4.633E+03	6.944E+06	4.666E+02
2049	1.638E+04	1.312E+07	8.814E+02	4.376E+03	6.559E+06	4.407E+02
2050	1.547E+04	1.239E+07	8.326E+02	4.134E+03	6.196E+06	4.163E+02
2051	1.462E+04	1.170E+07	7.865E+02	3.904E+03	5.852E+06	3.932E+02
2052	1.381E+04	1.106E+07	7.429E+02	3.688E+03	5.528E+06	3.714E+02
2053	1.304E+04	1.044E+07	7.017E+02	3.484E+03	5.222E+06	3.509E+02
2054	1.232E+04	9.865E+06	6.628E+02	3.291E+03	4.933E+06	3.314E+02
2055	1.164E+04	9.319E+06	6.261E+02	3.108E+03	4.659E+06	3.131E+02
2056	1.099E+04	8.802E+06	5.914E+02	2.936E+03	4.401E+06	2.957E+02
2057	1.038E+04	8.315E+06	5.587E+02	2.774E+03	4.157E+06	2.793E+02
2058	9.808E+03	7.854E+06	5.277E+02	2.620E+03	3.927E+06	2.639E+02
2059	9.265E+03	7.419E+06	4.985E+02	2.475E+03	3.709E+06	2.492E+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)*
2060	8.751E+03	7.008E+06	4.708E+02	2.338E+03	3.504E+06	2.354E+02
2061	8.267E+03	6.619E+06	4.448E+02	2.208E+03	3.310E+06	2.224E+02
2062	7.809E+03	6.253E+06	4.201E+02	2.086E+03	3.126E+06	2.101E+02
2063	7.376E+03	5.906E+06	3.968E+02	1.970E+03	2.953E+06	1.984E+02
2064	6.967E+03	5.579E+06	3.749E+02	1.861E+03	2.790E+06	1.874E+02
2065	6.581E+03	5.270E+06	3.541E+02	1.758E+03	2.635E+06	1.770E+02
2066	6.217E+03	4.978E+06	3.345E+02	1.661E+03	2.489E+06	1.672E+02
2067	5.872E+03	4.702E+06	3.159E+02	1.569E+03	2.351E+06	1.580E+02
2068	5.547E+03	4.442E+06	2.984E+02	1.482E+03	2.221E+06	1.492E+02
2069	5.239E+03	4.196E+06	2.819E+02	1.400E+03	2.098E+06	1.409E+02
2070	4.949E+03	3.963E+06	2.663E+02	1.322E+03	1.982E+06	1.331E+02
2071	4.675E+03	3.743E+06	2.515E+02	1.249E+03	1.872E+06	1.258E+02
2072	4.416E+03	3.536E+06	2.376E+02	1.180E+03	1.768E+06	1.188E+02
2073	4.171E+03	3.340E+06	2.244E+02	1.114E+03	1.670E+06	1.122E+02
2074	3.940E+03	3.155E+06	2.120E+02	1.052E+03	1.578E+06	1.060E+02
2075	3.722E+03	2.980E+06	2.002E+02	9.941E+02	1.490E+06	1.001E+02
2076	3.516E+03	2.815E+06	1.891E+02	9.391E+02	1.408E+06	9.457E+01
2077	3.321E+03	2.659E+06	1.787E+02	8.870E+02	1.330E+06	8.933E+01
2078	3.137E+03	2.512E+06	1.688E+02	8.379E+02	1.256E+06	8.439E+01
2079	2.963E+03	2.373E+06	1.594E+02	7.915E+02	1.186E+06	7.971E+01
2080	2.799E+03	2.241E+06	1.506E+02	7.476E+02	1.121E+06	7.529E+01
2081	2.644E+03	2.117E+06	1.422E+02	7.062E+02	1.059E+06	7.112E+01
2082	2.497E+03	2.000E+06	1.344E+02	6.671E+02	9.999E+05	6.718E+01
2083	2.359E+03	1.889E+06	1.269E+02	6.301E+02	9.445E+05	6.346E+01
2084	2.228E+03	1.784E+06	1.199E+02	5.952E+02	8.921E+05	5.994E+01
2085	2.105E+03	1.685E+06	1.132E+02	5.622E+02	8.427E+05	5.662E+01
2086	1.988E+03	1.592E+06	1.070E+02	5.311E+02	7.960E+05	5.348E+01
2087	1.878E+03	1.504E+06	1.010E+02	5.016E+02	7.519E+05	5.052E+01
2088	1.774E+03	1.421E+06	9.544E+01	4.738E+02	7.103E+05	4.772E+01
2089	1.676E+03	1.342E+06	9.016E+01	4.476E+02	6.709E+05	4.508E+01
2090	1.583E+03	1.267E+06	8.516E+01	4.228E+02	6.337E+05	4.258E+01
2091	1.495E+03	1.197E+06	8.044E+01	3.994E+02	5.986E+05	4.022E+01
2092	1.412E+03	1.131E+06	7.599E+01	3.772E+02	5.655E+05	3.799E+01
2093	1.334E+03	1.068E+06	7.178E+01	3.563E+02	5.341E+05	3.589E+01
2094	1.260E+03	1.009E+06	6.780E+01	3.366E+02	5.045E+05	3.390E+01
2095	1.190E+03	9.531E+05	6.404E+01	3.179E+02	4.766E+05	3.202E+01
2096	1.124E+03	9.003E+05	6.049E+01	3.003E+02	4.502E+05	3.025E+01
2097	1.062E+03	8.505E+05	5.714E+01	2.837E+02	4.252E+05	2.857E+01
2098	1.003E+03	8.033E+05	5.398E+01	2.680E+02	4.017E+05	2.699E+01
2099	9.476E+02	7.588E+05	5.099E+01	2.531E+02	3.794E+05	2.549E+01
2100	8.951E+02	7.168E+05	4.816E+01	2.391E+02	3.584E+05	2.408E+01
2101	8.455E+02	6.771E+05	4.549E+01	2.259E+02	3.385E+05	2.275E+01
2102	7.987E+02	6.396E+05	4.297E+01	2.133E+02	3.198E+05	2.149E+01
2103	7.544E+02	6.041E+05	4.059E+01	2.015E+02	3.021E+05	2.030E+01
2104	7.126E+02	5.706E+05	3.834E+01	1.904E+02	2.853E+05	1.917E+01
2105	6.732E+02	5.390E+05	3.622E+01	1.798E+02	2.695E+05	1.811E+01
2106	6.359E+02	5.092E+05	3.421E+01	1.698E+02	2.546E+05	1.711E+01
2107	6.006E+02	4.810E+05	3.232E+01	1.604E+02	2.405E+05	1.616E+01
2108	5.673E+02	4.543E+05	3.052E+01	1.515E+02	2.272E+05	1.526E+01
2109	5.359E+02	4.291E+05	2.883E+01	1.431E+02	2.146E+05	1.442E+01
2110	5.062E+02	4.054E+05	2.724E+01	1.352E+02	2.027E+05	1.362E+01

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)*
2111	4.782E+02	3.829E+05	2.573E+01	1.277E+02	1.914E+05	1.286E+01
2112	4.517E+02	3.617E+05	2.430E+01	1.206E+02	1.808E+05	1.215E+01
2113	4.267E+02	3.416E+05	2.296E+01	1.140E+02	1.708E+05	1.148E+01
2114	4.030E+02	3.227E+05	2.168E+01	1.076E+02	1.614E+05	1.084E+01
2115	3.807E+02	3.048E+05	2.048E+01	1.017E+02	1.524E+05	1.024E+01
2116	3.596E+02	2.879E+05	1.935E+01	9.605E+01	1.440E+05	9.674E+00
2117	3.397E+02	2.720E+05	1.828E+01	9.073E+01	1.360E+05	9.138E+00
2118	3.208E+02	2.569E+05	1.726E+01	8.570E+01	1.285E+05	8.631E+00
2119	3.031E+02	2.427E+05	1.631E+01	8.095E+01	1.213E+05	8.153E+00
2120	2.863E+02	2.292E+05	1.540E+01	7.647E+01	1.146E+05	7.701E+00
2121	2.704E+02	2.165E+05	1.455E+01	7.223E+01	1.083E+05	7.275E+00
2122	2.554E+02	2.045E+05	1.374E+01	6.823E+01	1.023E+05	6.872E+00
2123	2.413E+02	1.932E+05	1.298E+01	6.445E+01	9.660E+04	6.491E+00
2124	2.279E+02	1.825E+05	1.226E+01	6.088E+01	9.125E+04	6.131E+00
2125	2.153E+02	1.724E+05	1.158E+01	5.751E+01	8.620E+04	5.791E+00
2126	2.034E+02	1.628E+05	1.094E+01	5.432E+01	8.142E+04	5.471E+00
2127	1.921E+02	1.538E+05	1.034E+01	5.131E+01	7.691E+04	5.168E+00
2128	1.814E+02	1.453E+05	9.762E+00	4.847E+01	7.265E+04	4.881E+00
2129	1.714E+02	1.372E+05	9.221E+00	4.578E+01	6.862E+04	4.611E+00
2130	1.619E+02	1.296E+05	8.711E+00	4.324E+01	6.482E+04	4.355E+00
2131	1.529E+02	1.225E+05	8.228E+00	4.085E+01	6.123E+04	4.114E+00
2132	1.445E+02	1.157E+05	7.772E+00	3.859E+01	5.784E+04	3.886E+00
2133	1.365E+02	1.093E+05	7.341E+00	3.645E+01	5.463E+04	3.671E+00
2134	1.289E+02	1.032E+05	6.935E+00	3.443E+01	5.161E+04	3.467E+00
2135	1.218E+02	9.749E+04	6.550E+00	3.252E+01	4.875E+04	3.275E+00
2136	1.150E+02	9.209E+04	6.188E+00	3.072E+01	4.605E+04	3.094E+00
2137	1.086E+02	8.699E+04	5.845E+00	2.902E+01	4.349E+04	2.922E+00
2138	1.026E+02	8.217E+04	5.521E+00	2.741E+01	4.108E+04	2.760E+00
2139	9.693E+01	7.762E+04	5.215E+00	2.589E+01	3.881E+04	2.607E+00
2140	9.156E+01	7.332E+04	4.926E+00	2.446E+01	3.666E+04	2.463E+00
2141	8.649E+01	6.925E+04	4.653E+00	2.310E+01	3.463E+04	2.327E+00
2142	8.169E+01	6.542E+04	4.395E+00	2.182E+01	3.271E+04	2.198E+00
2143	7.717E+01	6.179E+04	4.152E+00	2.061E+01	3.090E+04	2.076E+00
2144	7.289E+01	5.837E+04	3.922E+00	1.947E+01	2.918E+04	1.961E+00
2145	6.885E+01	5.513E+04	3.704E+00	1.839E+01	2.757E+04	1.852E+00
2146	6.504E+01	5.208E+04	3.499E+00	1.737E+01	2.604E+04	1.750E+00
2147	6.143E+01	4.919E+04	3.305E+00	1.641E+01	2.460E+04	1.653E+00
2148	5.803E+01	4.647E+04	3.122E+00	1.550E+01	2.323E+04	1.561E+00
2149	5.482E+01	4.389E+04	2.949E+00	1.464E+01	2.195E+04	1.475E+00
2150	5.178E+01	4.146E+04	2.786E+00	1.383E+01	2.073E+04	1.393E+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)*
2010	0	0	0	0	0	0
2011	6.112E+02	3.339E+05	2.243E+01	5.122E-01	1.429E+02	9.602E-03
2012	1.132E+03	6.183E+05	4.155E+01	9.486E-01	2.646E+02	1.778E-02
2013	1.330E+03	7.265E+05	4.882E+01	1.115E+00	3.110E+02	2.089E-02
2014	1.517E+03	8.285E+05	5.567E+01	1.271E+00	3.546E+02	2.383E-02
2015	1.759E+03	9.607E+05	6.455E+01	1.474E+00	4.112E+02	2.763E-02
2016	2.032E+03	1.110E+06	7.460E+01	1.703E+00	4.752E+02	3.193E-02
2017	2.296E+03	1.255E+06	8.429E+01	1.925E+00	5.370E+02	3.608E-02
2018	2.655E+03	1.450E+06	9.746E+01	2.225E+00	6.208E+02	4.171E-02
2019	3.212E+03	1.755E+06	1.179E+02	2.692E+00	7.510E+02	5.046E-02
2020	3.875E+03	2.117E+06	1.422E+02	3.247E+00	9.060E+02	6.087E-02
2021	4.722E+03	2.580E+06	1.733E+02	3.958E+00	1.104E+03	7.418E-02
2022	5.523E+03	3.017E+06	2.027E+02	4.629E+00	1.291E+03	8.677E-02
2023	6.523E+03	3.563E+06	2.394E+02	5.467E+00	1.525E+03	1.025E-01
2024	8.206E+03	4.483E+06	3.012E+02	6.877E+00	1.919E+03	1.289E-01
2025	9.795E+03	5.351E+06	3.596E+02	8.210E+00	2.290E+03	1.539E-01
2026	1.130E+04	6.172E+06	4.147E+02	9.468E+00	2.641E+03	1.775E-01
2027	1.272E+04	6.947E+06	4.667E+02	1.066E+01	2.973E+03	1.998E-01
2028	1.406E+04	7.679E+06	5.159E+02	1.178E+01	3.286E+03	2.208E-01
2029	1.532E+04	8.370E+06	5.624E+02	1.284E+01	3.582E+03	2.407E-01
2030	1.652E+04	9.023E+06	6.063E+02	1.384E+01	3.862E+03	2.595E-01
2031	1.765E+04	9.640E+06	6.477E+02	1.479E+01	4.126E+03	2.772E-01
2032	1.871E+04	1.022E+07	6.869E+02	1.568E+01	4.375E+03	2.940E-01
2033	1.972E+04	1.077E+07	7.239E+02	1.653E+01	4.611E+03	3.098E-01
2034	2.067E+04	1.129E+07	7.588E+02	1.733E+01	4.834E+03	3.248E-01
2035	2.157E+04	1.178E+07	7.918E+02	1.808E+01	5.044E+03	3.389E-01
2036	2.242E+04	1.225E+07	8.230E+02	1.879E+01	5.242E+03	3.522E-01
2037	2.322E+04	1.269E+07	8.524E+02	1.946E+01	5.430E+03	3.648E-01
2038	2.248E+04	1.228E+07	8.250E+02	1.884E+01	5.255E+03	3.531E-01
2039	2.123E+04	1.160E+07	7.793E+02	1.779E+01	4.964E+03	3.335E-01
2040	2.005E+04	1.096E+07	7.361E+02	1.681E+01	4.689E+03	3.151E-01
2041	1.894E+04	1.035E+07	6.953E+02	1.588E+01	4.429E+03	2.976E-01
2042	1.789E+04	9.775E+06	6.568E+02	1.500E+01	4.184E+03	2.811E-01
2043	1.690E+04	9.234E+06	6.204E+02	1.417E+01	3.952E+03	2.655E-01
2044	1.597E+04	8.722E+06	5.860E+02	1.338E+01	3.733E+03	2.508E-01
2045	1.508E+04	8.239E+06	5.536E+02	1.264E+01	3.526E+03	2.369E-01
2046	1.425E+04	7.782E+06	5.229E+02	1.194E+01	3.331E+03	2.238E-01
2047	1.346E+04	7.351E+06	4.939E+02	1.128E+01	3.146E+03	2.114E-01
2048	1.271E+04	6.944E+06	4.666E+02	1.065E+01	2.972E+03	1.997E-01
2049	1.201E+04	6.559E+06	4.407E+02	1.006E+01	2.807E+03	1.886E-01
2050	1.134E+04	6.196E+06	4.163E+02	9.505E+00	2.652E+03	1.782E-01
2051	1.071E+04	5.852E+06	3.932E+02	8.979E+00	2.505E+03	1.683E-01
2052	1.012E+04	5.528E+06	3.714E+02	8.481E+00	2.366E+03	1.590E-01
2053	9.559E+03	5.222E+06	3.509E+02	8.011E+00	2.235E+03	1.502E-01
2054	9.029E+03	4.933E+06	3.314E+02	7.567E+00	2.111E+03	1.418E-01
2055	8.529E+03	4.659E+06	3.131E+02	7.148E+00	1.994E+03	1.340E-01
2056	8.056E+03	4.401E+06	2.957E+02	6.752E+00	1.884E+03	1.266E-01
2057	7.610E+03	4.157E+06	2.793E+02	6.378E+00	1.779E+03	1.196E-01
2058	7.188E+03	3.927E+06	2.639E+02	6.025E+00	1.681E+03	1.129E-01
2059	6.790E+03	3.709E+06	2.492E+02	5.691E+00	1.588E+03	1.067E-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)*
2060	6.414E+03	3.504E+06	2.354E+02	5.375E+00	1.500E+03	1.008E-01
2061	6.058E+03	3.310E+06	2.224E+02	5.078E+00	1.417E+03	9.518E-02
2062	5.723E+03	3.126E+06	2.101E+02	4.796E+00	1.338E+03	8.991E-02
2063	5.406E+03	2.953E+06	1.984E+02	4.531E+00	1.264E+03	8.492E-02
2064	5.106E+03	2.790E+06	1.874E+02	4.280E+00	1.194E+03	8.022E-02
2065	4.823E+03	2.635E+06	1.770E+02	4.042E+00	1.128E+03	7.577E-02
2066	4.556E+03	2.489E+06	1.672E+02	3.818E+00	1.065E+03	7.158E-02
2067	4.304E+03	2.351E+06	1.580E+02	3.607E+00	1.006E+03	6.761E-02
2068	4.065E+03	2.221E+06	1.492E+02	3.407E+00	9.505E+02	6.386E-02
2069	3.840E+03	2.098E+06	1.409E+02	3.218E+00	8.978E+02	6.033E-02
2070	3.627E+03	1.982E+06	1.331E+02	3.040E+00	8.481E+02	5.698E-02
2071	3.426E+03	1.872E+06	1.258E+02	2.872E+00	8.011E+02	5.383E-02
2072	3.236E+03	1.768E+06	1.188E+02	2.712E+00	7.567E+02	5.084E-02
2073	3.057E+03	1.670E+06	1.122E+02	2.562E+00	7.148E+02	4.803E-02
2074	2.888E+03	1.578E+06	1.060E+02	2.420E+00	6.752E+02	4.537E-02
2075	2.728E+03	1.490E+06	1.001E+02	2.286E+00	6.378E+02	4.285E-02
2076	2.577E+03	1.408E+06	9.457E+01	2.159E+00	6.024E+02	4.048E-02
2077	2.434E+03	1.330E+06	8.933E+01	2.040E+00	5.691E+02	3.824E-02
2078	2.299E+03	1.256E+06	8.439E+01	1.927E+00	5.375E+02	3.612E-02
2079	2.172E+03	1.186E+06	7.971E+01	1.820E+00	5.078E+02	3.412E-02
2080	2.051E+03	1.121E+06	7.529E+01	1.719E+00	4.796E+02	3.223E-02
2081	1.938E+03	1.059E+06	7.112E+01	1.624E+00	4.530E+02	3.044E-02
2082	1.830E+03	9.999E+05	6.718E+01	1.534E+00	4.279E+02	2.875E-02
2083	1.729E+03	9.445E+05	6.346E+01	1.449E+00	4.042E+02	2.716E-02
2084	1.633E+03	8.921E+05	5.994E+01	1.369E+00	3.818E+02	2.566E-02
2085	1.543E+03	8.427E+05	5.662E+01	1.293E+00	3.607E+02	2.423E-02
2086	1.457E+03	7.960E+05	5.348E+01	1.221E+00	3.407E+02	2.289E-02
2087	1.376E+03	7.519E+05	5.052E+01	1.154E+00	3.218E+02	2.162E-02
2088	1.300E+03	7.103E+05	4.772E+01	1.090E+00	3.040E+02	2.042E-02
2089	1.228E+03	6.709E+05	4.508E+01	1.029E+00	2.871E+02	1.929E-02
2090	1.160E+03	6.337E+05	4.258E+01	9.722E-01	2.712E+02	1.822E-02
2091	1.096E+03	5.986E+05	4.022E+01	9.184E-01	2.562E+02	1.721E-02
2092	1.035E+03	5.655E+05	3.799E+01	8.675E-01	2.420E+02	1.626E-02
2093	9.777E+02	5.341E+05	3.589E+01	8.194E-01	2.286E+02	1.536E-02
2094	9.235E+02	5.045E+05	3.390E+01	7.740E-01	2.159E+02	1.451E-02
2095	8.724E+02	4.766E+05	3.202E+01	7.311E-01	2.040E+02	1.370E-02
2096	8.240E+02	4.502E+05	3.025E+01	6.906E-01	1.927E+02	1.295E-02
2097	7.784E+02	4.252E+05	2.857E+01	6.524E-01	1.820E+02	1.223E-02
2098	7.353E+02	4.017E+05	2.699E+01	6.162E-01	1.719E+02	1.155E-02
2099	6.945E+02	3.794E+05	2.549E+01	5.821E-01	1.624E+02	1.091E-02
2100	6.560E+02	3.584E+05	2.408E+01	5.498E-01	1.534E+02	1.031E-02
2101	6.197E+02	3.385E+05	2.275E+01	5.194E-01	1.449E+02	9.735E-03
2102	5.854E+02	3.198E+05	2.149E+01	4.906E-01	1.369E+02	9.196E-03
2103	5.529E+02	3.021E+05	2.030E+01	4.634E-01	1.293E+02	8.686E-03
2104	5.223E+02	2.853E+05	1.917E+01	4.377E-01	1.221E+02	8.205E-03
2105	4.933E+02	2.695E+05	1.811E+01	4.135E-01	1.154E+02	7.751E-03
2106	4.660E+02	2.546E+05	1.711E+01	3.906E-01	1.090E+02	7.321E-03
2107	4.402E+02	2.405E+05	1.616E+01	3.689E-01	1.029E+02	6.915E-03
2108	4.158E+02	2.272E+05	1.526E+01	3.485E-01	9.722E+01	6.532E-03
2109	3.928E+02	2.146E+05	1.442E+01	3.292E-01	9.183E+01	6.170E-03
2110	3.710E+02	2.027E+05	1.362E+01	3.109E-01	8.675E+01	5.828E-03

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2111	3.504E+02	1.914E+05	1.286E+01	2.937E-01	8.194E+01	5.506E-03
2112	3.310E+02	1.808E+05	1.215E+01	2.774E-01	7.740E+01	5.201E-03
2113	3.127E+02	1.708E+05	1.148E+01	2.621E-01	7.311E+01	4.912E-03
2114	2.954E+02	1.614E+05	1.084E+01	2.475E-01	6.906E+01	4.640E-03
2115	2.790E+02	1.524E+05	1.024E+01	2.338E-01	6.523E+01	4.383E-03
2116	2.635E+02	1.440E+05	9.674E+00	2.209E-01	6.162E+01	4.140E-03
2117	2.489E+02	1.360E+05	9.138E+00	2.086E-01	5.821E+01	3.911E-03
2118	2.351E+02	1.285E+05	8.631E+00	1.971E-01	5.498E+01	3.694E-03
2119	2.221E+02	1.213E+05	8.153E+00	1.862E-01	5.193E+01	3.489E-03
2120	2.098E+02	1.146E+05	7.701E+00	1.758E-01	4.906E+01	3.296E-03
2121	1.982E+02	1.083E+05	7.275E+00	1.661E-01	4.634E+01	3.114E-03
2122	1.872E+02	1.023E+05	6.872E+00	1.569E-01	4.377E+01	2.941E-03
2123	1.768E+02	9.660E+04	6.491E+00	1.482E-01	4.135E+01	2.778E-03
2124	1.670E+02	9.125E+04	6.131E+00	1.400E-01	3.906E+01	2.624E-03
2125	1.578E+02	8.620E+04	5.791E+00	1.322E-01	3.689E+01	2.479E-03
2126	1.490E+02	8.142E+04	5.471E+00	1.249E-01	3.485E+01	2.341E-03
2127	1.408E+02	7.691E+04	5.168E+00	1.180E-01	3.292E+01	2.212E-03
2128	1.330E+02	7.265E+04	4.881E+00	1.115E-01	3.109E+01	2.089E-03
2129	1.256E+02	6.862E+04	4.611E+00	1.053E-01	2.937E+01	1.973E-03
2130	1.187E+02	6.482E+04	4.355E+00	9.944E-02	2.774E+01	1.864E-03
2131	1.121E+02	6.123E+04	4.114E+00	9.393E-02	2.621E+01	1.761E-03
2132	1.059E+02	5.784E+04	3.886E+00	8.873E-02	2.475E+01	1.663E-03
2133	1.000E+02	5.463E+04	3.671E+00	8.381E-02	2.338E+01	1.571E-03
2134	9.446E+01	5.161E+04	3.467E+00	7.917E-02	2.209E+01	1.484E-03
2135	8.923E+01	4.875E+04	3.275E+00	7.478E-02	2.086E+01	1.402E-03
2136	8.429E+01	4.605E+04	3.094E+00	7.064E-02	1.971E+01	1.324E-03
2137	7.962E+01	4.349E+04	2.922E+00	6.673E-02	1.862E+01	1.251E-03
2138	7.520E+01	4.108E+04	2.760E+00	6.303E-02	1.758E+01	1.181E-03
2139	7.104E+01	3.881E+04	2.607E+00	5.954E-02	1.661E+01	1.116E-03
2140	6.710E+01	3.666E+04	2.463E+00	5.624E-02	1.569E+01	1.054E-03
2141	6.338E+01	3.463E+04	2.327E+00	5.312E-02	1.482E+01	9.958E-04
2142	5.987E+01	3.271E+04	2.198E+00	5.018E-02	1.400E+01	9.406E-04
2143	5.655E+01	3.090E+04	2.076E+00	4.740E-02	1.322E+01	8.885E-04
2144	5.342E+01	2.918E+04	1.961E+00	4.477E-02	1.249E+01	8.393E-04
2145	5.046E+01	2.757E+04	1.852E+00	4.229E-02	1.180E+01	7.928E-04
2146	4.767E+01	2.604E+04	1.750E+00	3.995E-02	1.114E+01	7.488E-04
2147	4.502E+01	2.460E+04	1.653E+00	3.774E-02	1.053E+01	7.073E-04
2148	4.253E+01	2.323E+04	1.561E+00	3.564E-02	9.944E+00	6.682E-04
2149	4.017E+01	2.195E+04	1.475E+00	3.367E-02	9.393E+00	6.311E-04
2150	3.795E+01	2.073E+04	1.393E+00	3.180E-02	8.873E+00	5.962E-04

Fugitive Dust from Vehicle Traffic

Inputs

Vehicle Miles Traveled

Source: Facility

Paved Roads

1.46	Miles
43923	Trips per year
64127.58	VMT/yr

Unpaved Roads

2.2	Miles
43923	Trips per year
96630.6	VMT/yr

Average Weight of Vehicles Traveling Road

Source: Facility

11	tons

k Constant for Paved Roads

Source: AP-42 13.2.1

PM2.5	0.00054	lb/VMT
PM10	0.0022	lb/VMT
PM	0.011	lb/VMT

Silt Loading for Paved Roads

Source: AP-42 Table 13.2.1-3 for MSW Landfills

PM2.5	7.4	g/m^2
PM10	7.4	g/m^2
PM	7.4	g/m^2

k Constant for Unpaved Roads

Source: AP-42 Table 13.2.2-2

PM2.5	0.15	lb/VMT
PM10	1.5	lb/VMT
PM	4.9	lb/VMT

a Constant for Unpaved Roads

Source: AP-42 Table 13.2.2-2

PM2.5	0.9
PM10	0.9
PM	0.7

b Constant for Unpaved Roads

Source: AP-42 Table 13.2.2-2

PM2.5	0.45
PM10	0.45
PM	0.45

Mean Silt Content for Unpaved Roads

Source: MSW Landfills AP-42 Table 13.2.2-1

PM2.5	6.40
PM10	6.40
PM	6.40

Emissions Factors (lb/VMT)

Source: AP-42 13.2.1 Equation 1

Particulate Matter for Paved Roads

PM2.5	0.038513693
PM10	0.156907638
PM	0.78453819

Source: AP-42 13.2.2 Equation 1a

Particulate Matter for Unpaved Roads

PM2.5	0.152866477
PM10	1.528664774
PM	5.662618889

Emissions (tpy)

Particulate Matter Emissions for Paved Roads

PM2.5	1.234894963
PM10	5.031053552
PM	25.15526776

Particulate Matter Emissions for Unpaved Roads

PM2.5	7.385789714
PM10	73.85789714
PM	273.5911304

Fugitive Dust from Earth Moving Operations

Inputs
Source: AP-42 Table 13.2.3-1
Recommends Table 11.9-1 for Bulldozing, Overburden
Mean Material Silt Content
Source: AP-42 Table 11.9-3
6.9
Mean Material Moisture Content
Source: AP-42 Table 11.9-3
7.9
Scaling Factor for PM10
Source: AP-42 Table 11.9-1
0.75
Scaling Factor for PM2.5
Source: AP-42 Table 11.9-1
0.105

Emissions Factor (lb/hr)	
Source: AP-42 Table 11.9-1	
PM	3.940747
PM10	2.95556
PM2.5	0.388901

Emissions (tpy)	
PM	17.26047
PM10	12.94535
PM2.5	1.703386

Fuel Combustion

Inputs

Fuel Annual Usage

Source: Facility

On-road Diesel	88048	gal/yr
Off-road Diesel	113900	gal/yr
Total Fuel Usage	201948	gal/yr
Actual Hours of Operation	7805	hrs/yr
Scaled Fuel Usage	226657.845	gal/yr

Diesel Heat Value

Source: AP-42 Appendix A

137,000	BTU/gal
0.137	MMBTU/gal

Emissions Factors (lb/MMBTU)

Source: AP-42 Table 3.3.-1

NOx	4.41
CO	0.95
SOx	0.29
PM10	0.31
TOC	0.36
Benzene	9.33E-04
Toluene	4.09E-04
Xylenes	2.85E-04
1.3-Butadiene	3.91E-05
Formaldehdye	1.18E-03
Acetaldehyde	7.67E-04
Acrolein	9.25E-05
Total PAH	1.68E-04

Emissions (tpy)

NOx	68.46994
CO	14.74976
SOx	4.502558
PM10	4.813079
TOC	5.589382
Benzene	0.014486
Toluene	0.00635
Xylenes	0.004425
1.3-Butadiene	0.000607
Formaldehdye	0.018321
Acetaldehyde	0.011908
Acrolein	0.001436
Total PAH	0.002608
Total HAP	0.060142

Gasoline Dispensing

Inputs		Emissons Factor		Emissions (tpy)
10000	gal/month	Source: AP-42 Chapter 5.2		0.623958462
62	lb/lb-mol	10.39930769	lb/1000 gal	
7	psia	0.010399308	lb/gal	
520	R			
1	saturation factor			

Gasoline Storage Emissions from EPA Tanks

Annual Standing Losses (lb/yr)	Annual Working Losses (lb/yr)	Annual Total Losses (lb/yr)	Annual Total Lossess (tpy)
2546.410413	1442.251708	3988.662121	1.99433106