AIR AND RADIATION ADMINISTRATION
DRAFT PART 70 OPERATING PERMIT

DOCKET # 24-033-1862

COMPANY: Sandy Hill Creative Disposal Project

LOCATION: 95000 Old Laurel Bowie Road
Bowie, MD 20708

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MARYLAND DEPARTMENT OF THE ENVIRONMENT
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AIR QUALITY PERMITS PROGRAM

TITLE V – PART 70 OPERATING PERMIT PROGRAM OVERVIEW

Title V of the Clean Air Act (amended) requires each state to implement a federally enforceable operating permit program for major sources of air pollution. This program, the Part 70 Permit Program, also known as the Title V Permit Program, is designed to provide a comprehensive administrative document (a Part 70 Operating Permit) that identifies all air emissions sources at a given facility and the federal air quality regulations applicable to those sources. The permit establishes the methodology by which the owner/operator will demonstrate compliance, and includes testing, monitoring, record-keeping, and reporting requirements for each emissions source.

A Part 70 Operating Permit does not authorize new construction, and does not add any new emissions limitations, standards, or work practices on an affected facility. There may, however, be additional testing, record keeping, monitoring, and reporting requirements. A Part 70 Operating Permit is a five-year renewable permit. A responsible official for each facility subject to a Part 70 Operating Permit is required to annually certify compliance with each applicable requirement for that facility.

When an application for a Part 70 Operating Permit is received, the Department will complete a technical review of the application and will prepare a draft Part 70 Operating Permit and Fact Sheet. The Fact Sheet will explain the basis and technical analysis used by the Department to develop the federally enforceable permit conditions, including the required testing, monitoring, record keeping, and reporting provisions for each emissions unit at the permitted facility. The Fact Sheet will also include a description of the facility operations and the current compliance status with applicable requirements. If there are any discrepancies between the Part 70 Operating Permit application and the draft permit, the Fact Sheet will contain a discussion of the inconsistencies and the final resolution.

Public Participation Process

The Part 70 Operating Permit Program provides the public, adjacent states, and EPA the opportunity to review and submit comments on draft permits. The public may also request a public hearing on the draft permit.

The purpose of a public hearing is to give interested parties the opportunity to submit comments for the record which are germane to the draft federally enforceable permit conditions. Comments made at the hearing, or in writing to the Department during the comment period, should address errors and deficiencies in the permit such as unidentified emissions units, incorrect or deficient regulation citation, deficient record keeping, monitoring, reporting or testing requirements and unresolved compliance issues. After the public comment period has closed, the Department will review the formal testimony as part of the final review and prepare a Response to Comments document which will be sent to the EPA along with the draft Part 70 Operating Permit and Fact Sheet.

Testimony on state-only requirements will be kept on file at the Department as part of the formal record, however, state-only rules and regulations are not federally enforceable, and therefore are not within the scope of the EPA review. The Department will keep a record of the identity of the commenters, their statements, a summary of the issues raised during the public comment period, and the Response to Comments document for at least five years.

Citizen Petition to EPA to Object to Permit Issuance

Interested parties may petition the EPA to object to the Part 70 Permit if the EPA has not already objected, within 60 days after the 45-day EPA review period has ended. The petition period will be posted on the EPA website. The EPA will only consider objections to the federally enforceable provisions of the draft permit which were raised with reasonable specificity during the public comment period, unless: (1) the petitioner demonstrates that it was impractical to raise the objections within the public comment period, or (2) the grounds for the objection arose after the comment period. If the EPA agrees with the petition, the Department will reopen, revise, or revoke the permit as determined.

Applicant Objection to Permit Issuance and Recourse

If the applicant objects to the federally enforceable permit conditions contained in the issued Part 70 Operating permit, the applicant has 15 days from receipt of the issued permit to request a contested case hearing. More information on that can be found in 40 CFR, Part 70, and COMAR 26.11.03.11.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION

NOTICE OF INTENT TO ISSUE PART 70 OPERATING PERMIT, OPPORTUNITY TO SUBMIT WRITTEN COMMENTS OR TO REQUEST A PUBLIC HEARING

The Department of the Environment, Air and Radiation Administration (ARA) has completed its review of the application for a renewal Part 70 Operating Permit submitted by Sandy Hill Creative Disposal Project located in Bowie, MD. The facility includes the MSW landfill, landfill-gas (LFG) collection system, a blower, and a gas treatment system, all tied to two candlestick flares (one main and one backup).

The applicant is represented by:

Ms. Marilyn E. Naumann, Associate Director
Resource Recovery Division
Prince George's County Government
Department of the Environment
Resource and Recovery Division
3500 Brown Station Road
Upper Marlboro, MD, 20774

The Department has prepared a draft Part 70 Operating Permit for review and is now ready to receive public comment. A docket containing the application, draft permit, and supporting documentation is available for review on the Department's website, under the Air Quality Permitting Page's Title V link under "Draft Title V Permits" and may be viewed here:

https://tinyurl.com/DraftTitleV

Interested persons may submit written comments or request a public hearing on the draft permit. Written comments must be received by the Department no later than 30 days from the date of this notice. Requests for a public hearing must be submitted in writing and must also be received by the Department no later than 30 days from the date of this notice.

Comments and requests for a public hearing will be accepted by the Department if they raise issues of law or material fact regarding applicable requirements of Title V of the Clean Air Act, and/or regulations implementing the Title V Program in Maryland found in COMAR.

A Request for public hearing shall include the following:

1) The name, mailing address, and telephone number of the person making the request;

2) The names and addresses of any other persons for whom the person making the request is representing; and

3) The reason why a hearing is requested, including the air quality concern that forms the basis for the request and how this concern relates to the person making the request.

All written comments and requests for a public hearing should be directed to the attention of Ms. Shannon Heafey via email at Shannon.heafey@maryland.gov or by post at Air Quality Permits Program, Air and Radiation Administration, 1800 Washington Boulevard Suite 720, Baltimore, Maryland 21230-1720. Further information may be obtained by calling Ms. Shannon Heafey at (410) 537-4433.

PART 70 OPERATING PERMIT FACT SHEET
SANDY HILL CREATIVE DISPOSAL PROJECT
9500 OLD LAUREL – BOWIE ROAD
BOWIE, MARYLAND 20708
PART 70 OPERATING PERMIT NO. 24-033-01862

BACKGROUND

The Sandy Hill Creative Disposal Project (SHCDP) is a 249-acre municipal solid waste (MSW) landfill with a primary SIC code of 4953 (2012 NAIC Code of 562212). The landfill is located in Prince George's County, Maryland approximately two miles northwest of Bowie, MD on Old Laurel Bowie Road. The SHCDP facility is owned by Prince George's County (PGC) and is sited on property leased from the Maryland-National Capital Park and Planning Commission (property owner). The Waste Management Disposal Services of Maryland, Inc., under contract with PGC, operated the facility from May 1978 to March 2007.

The SHCDP facility first accepted waste for disposal on May 8, 1978 with a modification by consent order issued on December 30, 1992. The facility design capacity is approximately 7.5 million tons. Approximately 129 acres of the site has been utilized for waste disposal. The landfill ceased accepting waste in the year 2000, with a total of 6.54 million tons of refuse in place. The landfill closure construction began in April 2003 and the capping system is in place.

The SHCDP facility includes the MSW landfill, landfill-gas (LFG) collection system, a blower, and a gas treatment system, all tied to two candlestick flares (one main and one backup). The SHCDP is also provided with equipment maintenance facilities, and storm water ponds within the premises.

During its time of operation, the SHCDP facility received mostly MSW with less than one percent (1%) industrial waste. The burning of waste or other materials is strictly prohibited within the SHDCP.

The LFG collection system at SHCDP facility consists of interior and out of refuse vertical extraction wells, horizontal extraction devices, condensate sumps, and leachate manhole connections. Gas extracted from extraction devices is collected in headers and laterals and routed to the on-site gas treatment system and flares.

The normal operation is to route all collected LFG to the main blower and then to the gas treatment system. The gas delivered to the gas treatment system is compressed, dewatered, and filtered, and sent off-site for use by NASA to fuel boilers. Excess LFG is controlled with an on-site main or backup candlestick flares. Only one flare is operated at a time.

Leachate from the landfill and condensate from LFG collection system is collected in manhole MH-1 where liquids are pumped into a 20,000-gallon aboveground storage tank (AST). The liquids from the AST are hauled offsite.

The permitted design capacity was increased to greater than 2.75 million tons after May 30, 1991 and, therefore, the landfill is regulated according to the New Source Performance Standards (NSPS) in 40 CFR Part 60. A landfill is automatically subject to Part 70 operating permit requirements, if it has a design capacity of at least 2.5 million megagrams (2.75 million tons), regardless of whether it is a major stationary source. SHCDP has a design capacity which is greater than the 2.75 million tons threshold, making it subject to the Title V permitting requirements. The refuse-in-place from waste accepted through December 31, 2023 is 6,538,832 tons.

EPA promulgated national emission standards for hazardous air pollutants for existing and new municipal solid waste (MSW) landfills - 40 CFR Part 63, Subpart AAAA. SHCDP is subject to these MACT requirements because it is a MSW landfill that has accepted waste since November 8, 1987 and is an area source landfill that has a design capacity equal to or greater than 2.5 million cubic meters that was not permanently closed as of January 16, 2003. The facility projected and reported in the 2023 annual emission certification report an NMOC generation rate in 2023 to be around 30.49 tpy (27.47 Mg/yr) using the Landfill gas emission model (LandGEM) with an assumed [AP-42 factor] NMOC concentration (595 ppm). However, the NMOCs are collected by a gas collection and control system and destroyed by two candlestick (one main and one backup) flares, with approximately 98% destruction efficiency.

The current Title V permit for SHCDP expired on May 31, 2023. On June 2, 2022, the Department received a Part 70 renewal permit application for the Sandy Hill Creative Disposal Project. An administrative completeness review was conducted, and the application was deemed to be complete. The completeness determination letter was sent on September 8, 2022, granting the facility an application shield.

The following table summarizes the actual estimated emissions from the SHCDP based on its emission calculations shown in the Title V application.

Table 1: Actual Emissions

Year	NO_X (TPY)	SO_X (TPY)	PM_{10} (TPY)	CO (TPY)	VOC (TPY)
2023	2.34	0.53	0.14	12.74	0.99
2022	1.54	0.35	0.09	8.40	1.33
2021	0.83	0.19	0.05	4.52	0.86
2020	0.98	0.22	0.06	5.31	0.71
2019	1.63	0.37	0.10	8.90	0.76

Table 2: Summary of projected NMOC generation rates*

Year	NMOC (Mg/yr)
2023	27.47

*NMOC generation rates were based on reported wasted in place and using default values in the Landfill gas emission model (LandGEM) with an assumed [AP-42 factor] NMOC concentration (595 ppm).

Prince George's County is located in Area III, which is classified as an ozone nonattainment area. The major source thresholds for triggering Title V permitting for this area under Part 70 rule are the potential to emit of 25 tons per year for volatile organic compounds (VOCs) and nitrogen oxides (NO_x), and 100 tons per year for any other criteria pollutants and 10 tons per year for a single hazardous air pollutant (HAP) or 25 tons per year for total HAPs.

CHANGES FOR THE CURRENT PERMIT

The renewed permit incorporated the new 40 CFR Subpart OOO regulations for landfills. Also, the renewed permit incorporates applicable state-only requirements listed in COMAR 26.11.42 for the control of methane emissions from Municipal Solid Waste Landfills. The requirements primarily apply to the flares located on the premises and have been included in the state-only section of the permit conditions.

MACT

EPA promulgated national emission standards for hazardous air pollutants for existing and new municipal solid waste (MSW) landfills - 40 CFR Part 63, Subpart AAAA. The SHCDP is subject to these MACT requirements because it is a MSW landfill that has accepted waste after November 8, 1987 and is an area source landfill that has a design capacity equal to or greater than 2.5 million cubic meters that was not permanently closed as of January 16, 2003. The SHCDP must comply with the MACT requirements when facility's NMOC emissions exceed 50 Mg/year.

CAM Analysis

Compliance Assurance Monitoring (CAM) 40 CFR, Subpart 64 applies to any emission unit at a Title V source that meets the following criteria:

- The emission unit is subject to a federally enforceable emission limit or standard for a regulated pollutant;

- The emission unit uses a control device to achieve compliance with any such emission limitation;

- The emission unit has the potential to emit 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 and must not otherwise be exempt from CAM.

Sandy Hill Creative Disposal is not a major source of air pollutants, but it has a design capacity greater than the 2.75 million tons threshold, making it subject to the Title V permitting requirements. The landfill itself is not subject to limitations on the emissions of Particulate, sulfur oxides, nitrogen oxides, or VOCs. In addition, potential uncontrolled emission levels are well below the major threshold.

The SHCDP maintains two candle stick flares at the premises. These emission units are not subject to limitations on the emissions of particulate, sulfur oxides, nitrogen oxides, and/or VOC. No control devices are employed to control particulate, sulfur oxides, nitrogen oxides, or VOC. CAM requirements, therefore, are not applicable to these units.

GREENHOUSE GAS (GHG) EMISSIONS

Sandy Hill Creative Disposal Project emits the following greenhouse gases (GHGs) related to Clean Air Act requirements: carbon dioxide and methane. These GHGs originate from various processes (i.e., waste decomposition and landfill gas fugitives) contained within the facility premises applicable to SHCDP. The facility has not triggered Prevention of Significant Deterioration (PSD) requirements for GHG emissions; therefore, there are no applicable GHG Clean Air Act requirements. GHGs were based on emission estimates using default data entered in the US EPA LandGEM model, version 3.02 (see Table 3 shown below). Future emission certifications will show more accurate levels once site-specific data are gathered in the future years. Furthermore, the Permittee shall quantify facility wide GHG emissions and report them in accordance with Section 3 of the Part 70 permit.

The following table summarizes the actual emissions from SHCDP based on emission estimates using the LandGEM model and information submitted in the Part 70 Permit Application:

Table 3: Greenhouse Gases Emissions Summary

GHG	Conversion factor	2023 tpy CO2e
Carbon dioxide, CO_2	1	7,246
Methane, CH_4	21	307
Total GHG, CO_2eq		**7,553**

Note: the N2O, HFCs, PFCs, and SF6 emissions from fugitive LFG are not quantified due to the absence of AP-42 emission factors.

EMISSION UNIT IDENTIFICATION

Municipal solid waste (MSW) landfills produce a large volume of gas that consists primarily of methane and carbon dioxide. Landfill gas also contains water vapor and a small amount of non-methane organic compounds (NMOC). The NMOC include Hazardous Air Pollutants (HAPs), odorous compounds, and Volatile Organic Compounds (VOCs), which are photochemically reactive and contribute to summertime ozone formation, which can result in adverse effects to human health and vegetation.

Particulate matter emissions can be generated in the form of fugitive dust created by landfill operations and mobile sources, such as garbage trucks traveling along paved and unpaved surfaces.

The Sandy Hill Creative Disposal Project has identified the following emission units as being subject to the Title V permitting requirements and having applicable requirements:

Table 4: Emission Unit Identification

MDE Registration Number	Emissions Unit Number	Emissions Unit Description	Date of Registration
EU-1	9-0657	A129- acre area of closed and capped municipal solid waste landfill (MSW) incorporating a LFG collection system.	1978
EU-2 & EU-3	9-0658	Flaring system comprising of two (2) candlestick flares (main and backup), each rated	December 2010 & July 2011

MDE Registration Number	Emissions Unit Number	Emissions Unit Description	Date of Registration
		at 90 MM Btu/hr (3,000 scfm) of LFG flow at 50% methane content).	

AN OVERVIEW OF THE PART 70 PERMIT

Section I of the Part 70 Permit contains a brief description of the facility and an inventory list of the emissions units for which applicable requirements are identified in Section IV of the permit.

Section II of the Part 70 Permit contains the general requirements that relate to administrative permit actions. This section includes the procedures for renewing, amending, reopening, and transferring permits, the relationship to permits to construct and approvals, and the general duty to provide information and to comply with all applicable requirements.

Section III of the Part 70 Permit contains the general requirements for testing, record keeping and reporting; and requirements that affect the facility as a whole, such as open burning, air pollution episodes, particulate matter from construction and demolition activities, asbestos provisions, ozone depleting substance provisions, general conformity, and acid rain permit. This section includes the requirement to report excess emissions and deviations, to submit an annual emissions certification report and an annual compliance certification report, and results of sampling and testing.

Section IV of the Part 70 Permit identifies the emissions standards, emissions limitations, operational limitations, and work practices applicable to each emissions unit located at the facility. For each standard, limitation, and work practice, the permit identifies the basis upon which the Permittee will demonstrate compliance. The basis will include testing, monitoring, record keeping, and reporting requirements. The demonstration may include one or more of these methods.

Section V of the Part 70 Permit contains a list of insignificant activities. These activities emit very small quantities of regulated air pollutants and do not require a permit to construct or registration with the Department. For insignificant activities that are subject to a requirement under the Clean Air Act, the requirement is listed under the activity.

Section VI of the Part 70 Permit contains State-only enforceable requirements. Section VI identifies requirements that are not based on the Clean Air Act, but solely on Maryland air pollution regulations. These requirements generally relate to the prevention of nuisances and implementation of Maryland's Air Toxics Program.

REGULATORY AND TECHNICAL REVIEW/COMPLIANCE METHODOLOGY

Emission Unit: EU-1
A 129-acre municipal solid waste (MSW) landfill currently closed to operations. The landfill was active from 1978 to 2000. It incorporates a LFG collection system. All collected LFG from the landfill is routed to the main blower and then to the gas treatment system. The LFG in excess of the gas treatment system is controlled with a flaring system comprised of two candlestick (main and backup) flares each rated at 3,000 scfm of LFG flow. **[Reg. No. 9-0657]**

Applicable Standards and Limits:

A. Standards for Air Emissions

[Reference: 40 CFR 62.16714]

(1) The Permittee shall ensure that the gas collection and control system satisfies the requirements for an active collection system as provided for in §62.16714(b)(2)(i-iv). The Permittee shall install the gas collection and control system according to the specifications in §62.16728. **[Reference: 40 CFR 62.16714(b)(2) and 62.16724]**

(2) The Permittee shall route all the collected landfill gas to a control system designed and operated to reduce non-methane organic compounds (NMOC) by 98 weight-percent as provided for in §62.16714(c)(2). **[Reference: 40 CFR 62.16714(c) and (c)(2)]**

(3) The Permittee may cap or remove the collection and control system provided that all the conditions of §62.16714(f)(1-4) are met. The NMOC gas produced by the landfill shall be calculated following the procedures specified in §62.16718(b). **[Reference: 40 CFR 62.16714(f)]**

(4) When the landfill is closed, the Permittee is no longer subject to the requirement to maintain an operating permit under Part 70 for the landfill if the landfill is not otherwise subject to the requirements of Part 70 and if either of the conditions in §62.16714(e)(1) and (2) are met. **[Reference: 40 CFR 62.16714(e)]**

(5) The Permittee shall not cause or allow any material to be handled, transported, or stored; or a building, its appurtenances; or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. **[Reference: COMAR 26.11.06.03D(2)]**

Compliance

[Reference: 40 CFR 62.16718 and 62.16720]

To comply with the testing requirements, the Permittee shall use the methods specified in §62.16720(a)(1) through (6) to determine whether the gas collection system is in compliance with the requirements for an active collection system in §62.16714(b)(2). **[Reference: 40 CFR 62.16720(a)]** The Permittee should also follow the procedures in §62.16718(b) to calculate the NMOC gas produced by the landfill to determine if the collection and control system may be capped or removed as provided in §62.16714(f). **[Reference: 40 CFR 62.16718(b)]**

The monitoring requirements should be implemented following the recommendations stated in the Section 1.3.B "Operational Standards." Also, the Permittee shall operate and monitor the gas system in accordance with 40 CFR 62.16722. To comply with Record Keeping requirements, the Permittee shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location for each collector as specified in §62.16726(d)(1) and (2). **[Reference: 40 CFR 62.16726(d)]** Also, the Permittee shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed in §62.16726(b)(1) as measured during the initial performance test. Records of subsequent tests or monitoring shall be maintained for a minimum of 5 years. **[Reference: 40 CFR 62.16726(b)** To comply with Reporting requirements, the Permittee shall submit an equipment removal report to the Administrator 30 days prior to removal or cessation of operation of the control equipment as required in §62.16724(g)(1) through (2). **[Reference: 40 CFR 62.16724(g)]**

(4) The Permittee shall submit a closure report to the Administrator within 30 days of waste acceptance cessation as required in §62.16724(f). If a closure report has been submitted to the Administrator, no additional wastes may be placed into the landfill without the Permittee filing a notification of modification as described in §60.7(a)(4). **[Reference: 40 CFR 62.16724(f)]**

B. Operational Standards

[Reference: 40 CFR 62.16716]

(1) The Permittee shall operate the gas collection and control system such that landfill gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for 5 years or more if active; or 2 years or more if closed or at final grade. **[Reference: 40 CFR 62.16714(b)(2)(ii) and 62.16716(a)]**

(2) The Permittee shall operate the collection system with negative pressure at each wellhead except under the conditions specified in §62.16716(b)(1) - (3). **[Reference: 40 CFR 62.16716(b)]**

(3) The Permittee shall operate each interior wellhead in the collection system with a landfill gas temperature less than 55° C. The Permittee may establish a higher operating temperature at a particular well as provided for in §62.16716(c). **[Reference: 40 CFR 62.16716(c)]**

(4) The Permittee shall operate the collection system so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. To determine if this level is exceeded, the Permittee shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill as provided for in §62.16716(d). **[Reference: 40 CFR 62.16716(d)]**

(5) In the event the collection or control system is not operating, the Permittee shall shut down the gas mover system and shall close, within one hour, all valves in the collection and control system contributing to venting of the gas to the atmosphere. **[Reference: 40 CFR 62.16716(e)]**

(6) The Permittee shall operate the control system at all times when the collected gas is routed to the system. **[Reference: 40 CFR 62.16716(f)]**

(7) The Permittee must take corrective actions if the requirements in §62.16720(a)(3) and (5) or §62.16720(c) of 40 CFR 62, Subpart OOO if monitoring demonstrates that the operational requirements in §62.16716(b), (c), or (d) are not met. If corrective actions are taken as specified in §62.16720, the monitored exceedance is not a violation of the operational requirements in §62.16716. **[Reference: 40 CFR 62.16716(g)]**

(8) The Permittee shall take reasonable precautions, including the application of water on unpaved roads and other surfaces, to prevent particulate matter from becoming airborne. **[Reference: COMAR 26.11.06.03D(2)]**

Compliance

The Permittee shall demonstrate compliance with the testing requirements by following the procedures listed under the Section 1.3.B "Monitoring Requirements." In addition, the Permittee shall determine the nitrogen and oxygen level as prescribed in 40 CFR 62.16722(a)(2). **[Reference: 40 CFR 62.16722(a)(2)]**

The monitoring requirements should be implemented following the recommendations stated in the Section 1.3.B "Operational Standards." In addition, the Permittee shall measure the gauge pressure in the gas collection header on a monthly basis as provided in §62.16720(a)(3). **[Reference: 40 CFR 62.16722(a)(1)]** Also, the Permittee shall take temperature measurements at each wellhead, monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis, and monitor temperature of the landfill gas on a monthly basis as provided in §62.16720(a)(4). **[Reference: 40 CFR 62.16722(a)(3)]** The Permittee shall also implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis. **[Reference: 40 CFR 62.16720(c)(5)]** When the landfill is closed and it has no monitored exceedances of the 500 ppm operational standard for surface methane concentrations in three consecutive quarterly monitoring periods, the Permittee may convert to an annual monitoring frequency. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring. **[Reference: 40 CFR 62.16722(f)]**

To comply with Record Keeping requirements, the Permittee shall follow the procedures listed in Section 1.4.B, "Record Keeping Requirements, Standards for Air Emissions." The Permittee shall keep for five years up-to date, readily accessible monthly records of the gauge pressure in the gas collection system nitrogen or oxygen concentrations in the landfill gas, and temperature of the landfill gas as specified to be monitored in §62.16722(a). The Permittee should also keep records of the surface methane concentrations monitored as specified in §62.16722(f). **[Reference: 40 CFR 62.16726(c)]** The Permittee shall record instances when positive pressure occurs in efforts to avoid a fire, and shall be submitted with the annual report as provided in §62.16724(h)(1). **[Reference: 40 CFR 62.16716(b)(1)]**

To comply with Reporting requirements, the Permittee shall follow the procedures listed in Section 1.5.B, "Reporting Requirements, Standards for Air Emissions." The Permittee shall submit to the Administrator annual reports of the recorded information in §62.16724(h)(1) through (7). The reportable

exceedances for enclosed combustors are defined under §62.16726(c)(1). **[Reference: 40 CFR 62.16724(h)]**

C. Other Requirements

The provisions of this subpart apply at all times, including periods of startup, shutdown, or malfunction. During periods of startup, shutdown, and malfunction, you must comply with the work practice specified in § 62.16716(e) in lieu of the compliance provisions in § 62.16720. **[Reference: 40 CFR 62.16720(e)]**

Compliance

The Permittee shall demonstrate compliance with the testing requirements by following the procedures listed under Record Keeping and Reporting Requirements in Section 1.4 and 1.5. The monitoring requirements should be implemented following the recommendations listed under Record Keeping Requirements in Section 1.4. The Permittee shall keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report which triggered §62.16714(e), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. **[Reference: 40CFR 62.16726(a)]** The Permittee shall also keep for 5 years up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. **[Reference: 40 CFR 62.16726(c)]** As part of the Record Keeping requirements, the Permittee shall submit an annual NMOC emission rate report to the Administrator. The report is due on the anniversary of the Permittee's initial submittal of the NMOC report as required in 40 CFR 62.16724(c). **[Reference: 40 CFR 62.16724(c)]** However, the Permittee is exempted from the requirements of 40 CFR 62.16724(c)(1) through (3), after the installation of a landfill gas collection and control system in compliance with §62.16714(b) and (c), during such time as the collection and control system is in operation and in compliance with §§62.16716 and 62.16720. **[Reference: 40 CFR 62.16724(c)(4)]**

Emission Unit: EU-1 Cont'd

Applicable Standards/Limits:

Subpart AAAA – National Emission Standard for Hazardous Air Pollutants: Municipal Solid Waste Landfills.

Applicability

"You are subject to this subpart if you own or operate a MSW landfill that has accepted since November 8, 1987 or has additional capacity for waste disposition and meets any one of the three criteria in paragraphs (a)(1) through (3) of this section: (3) Your MSW landfill is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m3) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to §63.1959." **[Reference: 40 CFR §63.1935(a)(3)]** "If your landfill is an existing affected source and is an area source meeting the criteria in §63.1935(a)(3), you must comply with the requirements in §63.1957(a), §63.1958, §63.1961 and §63.1962 by the date your landfill is required to install a collection and control system by the Federal plan, or EPA approved and effective State or tribal plan that applies to your landfill, whichever occurs later." **[Reference: 40 CFR §63.1945]**

Standards

Before September 28, 2021, if alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions have already been approved under 40 CFR part 60, subpart WWW; subpart XXX; a federal plan; or an EPA-approved and effective state or tribal plan, these alternatives can be used to comply with this subpart, except that all affected sources must comply with the SSM requirements in subpart A of this part as specified in Table 1 of this subpart and all affected sources must submit compliance reports every 6 months as specified in §63.1981(h), including information on all deviations that occurred during the 6-month reporting period. Deviations for continuous emission monitors or numerical continuous parameter monitors must be determined using a 3-hour monitoring block average. Beginning no later than September 28, 2021, the collection and control system design plan may include for approval collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions, as provided in §63.1981(d)(2). **[Reference: 40 CFR §63.1955(a)]**

General and Continuing Compliance Requirements

"Compliance is determined using performance testing, collection system monitoring, continuous parameter monitoring, and other credible evidence. In addition, continuous parameter monitoring data collected under §63.1961(b)(1), (c)(1), and (d) are used to demonstrate compliance with the operating standards for control systems. If a deviation occurs, you have failed to meet the control device operating standards described in this subpart and have deviated from the requirements of this subpart. (a) Before September 28, 2021, you must develop a written SSM plan according to the provisions in §63.6(e)(3) of subpart A. A copy

of the SSM plan must be maintained on site. Failure to write or maintain a copy of the SSM plan is a deviation from the requirements of this subpart. (b) After September 27, 2021, the SSM provisions of §63.6(e) of subpart A no longer apply to this subpart and the SSM plan developed under paragraph (a) of this section no longer applies. Compliance with the emissions standards and the operating standards of §63.1958 of this subpart is required at all times. [Reference: 40 CFR §63.1964]." **[Reference: 40.CFR §63.1960]**

Compliance
The Permittee shall Keep records and reports as specified in 40 CFR Part 60, Subpart OOO, or in the Federal plan, EPA approved State plan or tribal plan that implements 40 CFR Part 60, Subpart Cc, whichever applies to your landfill, with one exception: You must submit the annual report described in 40 CFR 62.16724(h) or operator must follow semi-annual reporting requirements as specified in 40 CFR 63.1981(h) in lieu of this paragraph. **[Reference: 40.CFR §63.1981(a)]** "You must also keep records and reports as specified in the general provisions of 40 CFR Part 63 and this part as shown in Table 1 of this subpart. Applicable records in the general provisions include items such as SSM plans and the SSM plan reports." **[Reference: 40.CFR §63.1983]**

Emission Unit: EU-02 and 03
Flare System: The flare system comprises of two candlestick (main and backup) flares each rated at 90 MM Btu/hr (3,000 scfm of LFG flow at 50% methane content). The main flare, Perennial Energy, Inc., model FL-12-C, was brought online in July 2011 and the backup flare, LFG Specialties, model CF 1238I10, in December 2010. Only one flare is operated at a time.
The flare system burns off collected LFG in excess of the gas treatment system and has 98% destruction efficiency. The assigned emission point to the main flare is EU-2, and the backup flare is EU-3. **[Reg. No. 9-0658]**

Applicable Standards and Limits

A. Control of Visible Emissions
(1) Control of Visible Emissions
COMAR 26.11.06.02C(2) – Visible Emission Standards
"In Areas III and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

COMAR 26.11.06.02A(2) – General Exceptions.
"The visible emissions standards in §C of this regulation do not apply to emissions during start-up and process modifications or adjustments, or occasional cleaning of control equipment, if:
(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any 60-minute period."

Compliance Demonstration
The Permittee shall properly operate and maintain the flare in a manner to minimize visible emissions. **[Reference: COMAR 26.11.06.02C(2)]** The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, Plant Wide Condition, "Report of Excess Emissions and Deviations.

B. Operational Standards
[Reference: 40 CFR Part 62]
"(a)(4) If the calculated NMOC emission rate greater than or equal to or greater than 50 megagrams per year, the owner or operator must collect and control MSW landfill emissions: (c) Control the gas collected from within the landfill through the use of control devices meeting the following requirements (1) or (2) or (3) of this section, except as provided in §60.24. (1) A non-enclosed flare designed and operated in accordance with the parameters established in 40 CFR 60.18 except as noted in § 62.16722(d)" **[Reference: 40 CFR Part 62.16714(a)(4) and (c)]**

Compliance Demonstration
As part of the monitoring requirements from the flares, the Permittee shall follow the procedures described in 40 CFR §60.16722. The Permittee shall keep up-to-date, readily accessible records of the flame or flare pilot flame monitoring as specified under §62.16722(c) for open flares and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot is absent during those instances when the utility flare is being used while it is out-of-service. **[Reference: 40 CFR 62.16726(b)(4) and MOE ARMA/AQPP Letter, October 2, 1995]** Also, the Permittee shall keep up-to-date, readily accessible records of the control device vendor specifications until the control device is removed. **[Reference: 40CFR 62.16726(b)]**

COMPLIANCE SCHEDULE

The Sandy Hill Creative Disposal Project is currently in compliance with all applicable air quality requirements.

TITLE IV - ACID RAIN

The Acid Rain Program does not apply to the Sandy Hill Creative Disposal Project.

TITLE VI - OZONE DEPLETING SUBSTANCES

The facility is currently complying with the applicable federal requirements in 40 CFR 82, 82.34(a); 82.42(a)(1); 82.42(b)(1), (2).

SECTION 112 (r) - ACCIDENTAL RELEASE

The facility is not subject to the requirements of Section 112 (r) of the Clean Air Act.

PERMIT SHIELD

The Sandy Hill Creative Disposal Project requested a permit shield.

INSIGNIFICANT ACTIVITIES

This section provides a list of insignificant emissions units that were reported in the Title V permit application. The applicable Clean Air Act requirements, if any, are listed below the insignificant activity.

(1) X Space heaters utilizing direct heat transfer and used solely for comfort heat;

(2) Containers, reservoirs, or tanks used exclusively for:

(a) X Storage of butane, propane, or liquefied petroleum, or natural gas;

(3) X First aid and emergency medical care provided at the facility, including related activities such as sterilization and medicine

preparation used in support of a manufacturing or production process;

STATE-ONLY ENFORCEABLE CONDITIONS

The Permittee is subject to the following State-only enforceable requirements:

1. Applicable Regulations:

(A) **COMAR 26.11.06.08** – Nuisance.
"An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created. Nothing in this regulation relating to the control of emissions may in any manner be constructed as authorizing or permitting the creation of, or maintenance of, nuisance or air pollution."

(B) **COMAR 26.11.06.09** – Odors.
"A person may not cause or permit the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created."

(C) **COMAR 26.11.15.05** – Control Technology Requirements.
"A person who complies with the ambient impact requirement in Regulation .06 of this chapter may not be affected by the amount of the installation's stack height that exceeds good engineering practice (GEP), or by any other dispersion technique.
(3) Unless an existing installation is controlled using T-BACT, the degree of emission limitation required in order to demonstrate compliance with Regulation .06 of this chapter may not be affected by the amount of the installation's stack height that exceeds good engineering practice (GEP), or by any other dispersion technique."

(D) **COMAR 26.11.15.06** – Ambient Impact Requirement.
1. "Except as provided in §B(3) of this regulation, a person may not cause or permit the discharge of a toxic air pollutant listed in COMAR 26.11.16.07 from an existing installation or source if total allowable emissions of that TAP from the premises will unreasonably endanger human health.
2. A person shall demonstrate compliance with §B(1) of this regulation using the procedures established in Regulation .07 of this chapter and COMAR 26.11.16.
3. A person who owns or operates an existing premises shall meet the

requirements of §B(1) and (2) of this regulation for each TAP listed in COMAR 26.11.16.07 by the applicable compliance dates listed in COMAR 26.11.16.07, or not later than 2 years after becoming subject to this chapter, whichever is later."

For the Flares Only

(E) **COMAR 26.11.42** – Control of Methane Emissions from Municipal Solid Waste Landfills.

COMAR 26.11.42.01(A) – Applicability and Exemptions.
"This chapter applies to a person who owns or operates a municipal solid waste (MSW) landfill that has accepted waste after November 8, 1987."

COMAR 26.11.42.05(B)(2) – Standard and Requirements for Gas Collection and Control Systems. – Requirements for Enclosed Flares.
"(a) An owner or operator of a MSW landfill that routes landfill gas to an enclosed flare shall achieve a methane destruction efficiency of at least 99 percent by weight and meet the following specifications:

(i) The device shall be equipped with automatic dampers, an automatic shutdown device, a flame arrester, and continuous recording temperature sensors; and
(ii) The device shall have a sufficient flow of propane, natural gas, or another fuel source approved by the Department to the pilot light to prevent unburned collected methane from being emitted to the atmosphere during restart and startup.

(b) The owner or operator of a MSW landfill shall install, calibrate, operate and maintain the flare system in accordance with the manufacturer's specifications and if applicable, within the parameter ranges established in the landfill's permit to construct issued by the Department.

(c) An owner or operator that used an enclosed flare shall install, calibrate, and maintain a gas flow rate measuring device that either records the flow to the control device at least every 15 minutes or secures the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration."

(F) **COMAR 26.11.42.05(B)(7)(a) thru (k)** – Standard and Requirements for Gas Collection and Control Systems. – Performance Test Requirements.
"(a) The owner or operator shall conduct annual performance tests for any gas control device(s) subject to the requirements of §B(2), (3) & (4) of this

regulation using the test methods identified in Regulation .11C of this chapter.

(b) An initial performance test shall be conducted within 180 days of start-up of the gas collection and control system.

(c) Following an initial performance test, the owner or operator shall conduct a complete annual performance test no later than 45 days following the 1-year anniversary date of the initial performance test.

(d) The owner or operator of an existing gas control device shall demonstrate compliance with this regulation no later than 180 days following the effective date of this regulation in accordance with the test methods and procedures specified in Regulation .11C of this regulation.

(e) The owner or operator shall conduct performance tests under conditions specified by the Department based on representative performance of the affected source for the period being tested.

(f) Representative conditions shall exclude periods of startup and shutdown unless specified by the Department.

(g) The owner or operator may not conduct performance tests during periods of malfunction.

(h) The owner or operator shall record the process information that is necessary to document operating conditions during the test and include in such record an explanation to support that such conditions represent normal operation.

(i) The owner or operator shall make available records necessary to determine the conditions of performance tests available upon request by the Department.

(j) If a gas control device remains in compliance after three consecutive performance tests, the owner or operator may conduct the performance test every 3 years.

(k) Once a gas control device is placed on the 3-year performance test schedule, if a subsequent performance test shows the gas collection and control system is out of compliance with the requirements of this regulation, the performance testing frequency shall return to annual."

(G) **COMAR 26.11.42.09(B)(1)** – Monitoring Requirements and Corrective Actions. – Gas Control System Equipment Monitoring.
"The owner or operator shall monitor the gas control system using the following procedures:
(1) For enclosed combustors (including enclosed flares), the following equipment shall be installed, calibrated, maintained, and operated according to the manufacturer's specifications:

(a) A temperature monitoring device equipped with a continuous recorder which has an accuracy of plus or minus (±) 1 percent of the temperature being measured expressed in degrees Celsius or Fahrenheit; and

(b) A device which records the gas flow to the control device(s) and bypass of the control device. The owner or operator shall:

(i) Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the control device at least every 15 minutes;

(ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration; and

(iii) Perform a visual inspection of the seal or closure mechanism at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(c) A temperature monitoring device is not required for boilers and process heaters with a design heat input capacity of 44 megawatts (150 MMBtu/hr) or greater."

(H) **COMAR 26.11.42.09(B)(9)** – Monitoring Requirements and Corrective Actions. – Gas Control System Equipment Monitoring.
"For a gas treatment system, the following equipment shall be installed, calibrated, maintained, and operated according to the manufacturer's specifications:

(a) A device which records the gas flow to the treatment system and bypass if applicable.

(b) The owner or operator shall:

(i) Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes;

(ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration; and

(iii) Perform a visual inspection of the seal or closure mechanism at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line."

(l) **COMAR 26.11.42.10** – Recordkeeping and Reporting Requirements.

COMAR 26.11.42.10B(1)(a), (b), and (m) – Recordkeeping Requirements.

"An owner or operator of a MSW landfill shall maintain the following records for at least 5 years:

(a) All gas collection system downtime exceeding 5 days, including dates of downtime, individual well shutdown and disconnection times, the reason for the downtime, and any corrective actions conducted in response to the downtime;

(b) All gas control system downtime in excess of 1 hour, the reason for the downtime, and the length of time the gas control system was shut down, and any corrective actions conducted in response to the downtime;"
…..

(m) Records of the gas control system equipment operating parameters specified to be monitored under Regulation .09B of this chapter as well as records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The records shall include the following information:

(i) For enclosed flares, all 3-hour periods of operation during which the average temperature difference was more than 28ºC (50º F) below the average combustion temperature during the most recent performance test at which compliance with Regulations .05B(2) and (3) of this chapter was determined;"

COMAR 26.11.42.10C – Reporting Requirements.

COMAR 26.11.42.10C(2) – Equipment Removal Report.

"(a) A gas collection and control system equipment removal report shall be submitted to the Department 30 days prior to well capping, removal, or cessation of operation of the gas collection, treatment, or control system equipment.

(b) The report shall contain the following information:

(i) A copy of the closure notification submitted to the Department in accordance with §C(1) of this regulation;
(ii) A copy of the initial performance test report or other documentation demonstrating that the gas collection and control system has been installed and operated for a minimum of 15 years, unless the owner or operator can demonstrate that due to declining methane rates the MSW landfill is unable to operate the gas collection and control system for a 15-year period;"

(J) **COMAR 26.11.42.10C(7)** – Performance Test Report.

"(a) For a control system designed and operated to meet the requirements of this chapter, the owner or operator shall submit a Performance Test Report to the Department that establishes the reduction efficiency or parts per million by volume no later than 180 days after the initial startup of the approved control system using EPA Method 25 or 25C, 40 CFR Part 60, Appendix A.

(b) The owner or operator shall submit any additional performance test reports to the Department within 30 days after the date of completing each performance test, including any associated fuel analyses."

(c) The performance test report shall include the following information:

(i) A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, all areas

excluded from collection, and the proposed sites for the future collection system expansion;
(ii) The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based;
(iii) The documentation of the presence of asbestos or non-decomposable material for each area from which collection wells have been excluded based on the presence of asbestos or non-decomposable material;
(iv) The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on nonproductivity and the calculations of gas generation flow rate for each excluded area;
(v) The process for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill; and
(vi) The process for controlling off-site migration."

The Permittee shall follow the reporting procedures listed in COMAR 26.11.42.10 (A) and (A-1). Test results, reports, or other information, unless otherwise specified by the Department shall be submitted to:

Program Manager
Air Quality Compliance Program
Maryland Department of the Environment
1800 Washington Boulevard, Suite 715
Baltimore, Maryland 21230
410-537-4225
Or electronically to:
MDEAIR.OTHERCOMPLIANCE@maryland.gov
[Reference: COMAR 26.11.42.10 (A) and (A-1)]

(K) **COMAR 26.11.42.11(C)(1)** – Test Methods and Procedures. – Determination of Control Device Destruction Efficiency.
"The following methods of analysis shall be used to determine the efficiency of the control device in reducing methane:
(1) Enclosed Combustors. One of the following test methods shall be used to determine the efficiency of the control device in reducing methane by at least 99 percent, or in reducing the outlet methane

concentration for lean burn engines to less than 3,000 ppmv, dry basis, corrected to 15 percent oxygen:

(a) U.S. EPA Reference Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography;

(b) U.S. EPA Reference Method 25, Determination of Total Gaseous Nonmethane Organic Emissions as Carbon;

(c) U.S. EPA Reference Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer; or

(d) U.S. EPA Reference Method 25C, Determination of Nonmethane Organic Compounds in Landfill Gases."

2. Record Keeping and Reporting:

The Permittee shall submit to the Department, by April 1 of each year during the term of this permit, a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. The analysis shall include either:

(a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or

(b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.

May 26, 2022

File No. 02219039.01

Ms. Suna Yi Sariscak, Manager
Air Quality Permits Program
Air and Radiation Management Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230-1719

Subject: Title V/Part 70 Operating Permit Application for Renewal
Sandy Hill Creative Disposal Project
Prince George's County Government
Permit No.: 24-033-01862 AI Number: 28814

Dear Ms. Sariscak:

On behalf of Prince George's County, Maryland, SCS Engineers (SCS) has prepared the enclosed application for the renewal of the Title V/Part 70 Operating Permit for the Sandy Hill Creative Disposal Project (Permit No. 24-033-01862) located in Bowie, Maryland. The current permit was issued on June 1, 2018 and will expire on May 31, 2023. This renewal application is submitted in response to MDE's letter dated March 1, 2022 and email dated March 14, 2022 wherein renewal application submittal date was revised to by May 31, 2022.

Enclosed are two (2) hard copies and one (1) electronic copy (on compact disc) of the application package.

If you have any questions, please feel free to contact me at (703) 471-6150 or Mr. Erick Jackson of Prince George's County at (301) 780-6303.

Sincerely,

Darrin Dillah

Darrin D. Dillah, Ph.D., P.E., BCEE
Project Director and Vice President
SCS Engineers

ddd/jmm/gri/bsp/prs

cc: Marilyn E. Naumann, C.P.M., Prince George's County, DoE, RRD
Darryl Lee Flick, Prince George's County DoE, RRD
Brian Coblentz, Chief Compliance Division, LMA
Sameul Ogbogu, Project Manager, Construction and Maintenance Section, LMA

Enclosures: As above

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Suite 720 • Baltimore, Maryland 21230-1720
410-537-3000 • 800-633-6101 • http://www.mde.maryland.gov

Air and Radiation Administration • Air Quality Permits Program

Budget Reconciliation and Financing Act of 2003
(Commonly referred as Maryland House Bill 935)

On July 1, 2003, House Bill 935, Chapter 203 amended § 1-203 of the Environment Article, Annotated Code of Maryland, as follows:

Section 1-203(b).
(1) A license or permit is considered renewed for purposes of this subsection if the license or permit is issued by a unit of State government to a person for the period immediately following a period for which the person previously possessed the same or a substantially similar license.
(2) Before any license or permit may be renewed under this article, **the issuing authority shall verify through the office of the Comptroller (emphasis added)** that the applicant has paid all undisputed taxes and the unemployment insurance contributions payable to the Comptroller or the Secretary of Labor, Licensing, and Regulation or that the applicant has provided for payment in a manner satisfactory to the unit responsible for collection.

In order for the Maryland Department of the Environment (MDE) to verify this compliance, we would need you to provide the following information before we can process or issue your renewal license, permit, or certification:

Current MDE License/Permit No.: 24-033-01862

Name of Licensee or Permit Holder: Prince George's Co. Govenment, Dept. of the Environment

Address: 3500 Brown Station Road
Upper Marlboro, MD 20774

Contact Name: Marilyn E. Naumann **Title:** Associate Director

Contact Telephone Number: (301) 952-7625

Privacy Act Notice: This Notice is provided pursuant to the Federal Privacy Act of 1974, 5 U.S.C. § 552a. Disclosure of your Social Security or Federal Tax Identification on this form is mandatory pursuant to the provisions of § 1-203 (2003) of Environment Article, Annotated Code of Maryland, which requires MDE to verify that an applicant for a permit or license has paid all undisputed taxes and unemployment insurance. Social Security and Federal Tax Identification Nos. will not be used for any purposes other than those described in this Notice.

Federal Employer Identification Number (FEIN): 526000998

Certification: I certify that the above information is true and correct to the best of my knowledge.

Marilyn Naumann — Signature
5-20-22 — Date

Complete and return this form to Sena Harlley at the above address. If you have any questions, please contact Ms. Harlley at (410) 537-3251.

Part 70 Operating Permit Renewal Application

Sandy Hill Creative Disposal Project
Bowie, Prince George's County, Maryland
(Permit Number: 24-033-01862 AI Number: 28814)

Prince George's County
Department of the Environment
Resource Recovery Division
3500 Brown Station Road
Upper Marlboro, Maryland 20774

SCS ENGINEERS

02219039.01 | May 2022

11260 Roger Bacon Drive
Reston, VA 20190
703-471-6150

Part 70 Operating Permit Renewal Application
Sandy Hill Creative Disposal Project Facility

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List of Tables

Appendices

1.0 INTRODUCTION

The Sandy Hill Creative Disposal Project (SHCDP), located in Bowie, Maryland, is owned and operated by Prince George's County, Maryland. The landfill commenced contruction on or before July 17, 2014; it ceased accepting in 2000; and it has not been modified or reconstructed since July 17, 2014. As such, the landfill is subject to the New Source Performance Standards 40 CFR 60 Subpart Cf. Because the Maryland state does not have an approved and currently effective state implementation plan that implements 40 CFR 60 Subpart Cf, the SHCDP is required to comply with the federal plan requirements for MSW landfills that commenced construction on or before July 17, 2014 and have not been modified or reconstructed since July 17, 2014 (40 CFR 62 Subpart OOO). Further the landfill is also subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63 Subpart AAAA. As such, the SHCDP is required to obtain a Title V/Part 70 operating permit.

The facility currently operates two emission units in accordance with Part 70 Operating Permit No. 24-033-01862, as listed below.

- MSW Landfill (EU-1): A capped and closed MSW landfill, comprising a total size of 129 acres. The landfill incorporates an active gas collection and control system (GCCS) for the extraction and control of landfill gas (LFG).

- Flaring System EU-2 & EU-3: A flaring system consisting of two (2) candlestick flares for the control of LFG emissions. EU-2 is designated as the main flare and EU-3 is designated as the backup flare. Both flares are each rated at 3,000 cfm. Only one flare operates at a time.

A facility plot plan and a process flow diagram are included in Appendix A.

This package addresses the requirements of the Maryland Department of the Environment (MDE) Part 70 Operating Permit Application for renewal as they apply to the SHCDP and seeks to renew the Part 70 Operating Permit.

Potential emissions are updated with this application to reflect declining LFG generation from the landfill and the EPA AP-42 emission factors for the flare (see Appendix D). Actual emissions for the previous 5 years are included in Appendix E. The most-recent emissions certification report is included in Appendix B and the mostrecent annual compliance certification report is included in Appendix C.

2.0 APPLICATION FORMS

A summary of the included sections of the application forms, starting page numbers, and total number of pages for each section are included in Table 2-1 below.

Table 2-1. Summary of Application Forms

Section	Starting Page	Total Pages
Facility Information	1-1	1
Owner and Operator	1-1	
Section 1 – Certification Statements	1-2	2
Section 2 – Facility Description Summary	2-1	1
Section 3A – Emissions Unit Descriptions	3A-1	2
Section 3B – Citation and Description of Applicable Federally Enforceable Requirements	3B-1	18
Section 3C – Obsolete, Extraneous, or Insignificant Permit Conditions	3C-1	1
Section 3D – Alternate Operating Scenarios	3D-1	1
Section 3E – Citation and Description of Applicable Federally Enforceable Requirements for an Alternate Operating Scenario	3E-1	1
Section 4 – Control Equipment	4-1	1
Section 5 – Summary Sheet of Potential Emissions	5-1	1
Section 6 – Explanation of Proposed Exemptions from Otherwise Applicable Federally Enforceable Requirements	6-1	1
Section 7 – Compliance Schedule for Noncomplying Emission Units	7-1	2
State-Only Enforceable Requirements	ST-1	3
Total Pages	**35**	

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard ● Baltimore MD 21230
(410) 537-3000 ● 1-800-633-6101 ● http://www.mde.state.md.us

PART 70 PERMIT APPLICATION FOR RENEWAL

AIR AND RADIATION MANAGEMENT ADMINISTRATION

Facilities required to obtain a Part 70 permit under COMAR 26.11.03.01 must complete and return this form. Applications are incomplete unless all applicable information required by COMAR 26.11.03.03 and 26.11.03.13 is supplied. Failure to supply additional information required by the Department to enable it to act on the application may result in loss of the application shield and denial of this application.

Owner and Operator:

Name of Owner or Operator: **Prince George's County Government, Department of the Environment, Resource Recovery Division**		
Street Address: **3500 Brown Station Road**		
City: **Upper Marlboro**	State: **Maryland**	Zip Code: **20774**
Telephone Number **(301) 952-7625**		Fax Number **(301) 952-7611**

Facility Information:

Name of Facility: **Sandy Hill Creative Disposal Project**		
Street Address: **9500 Old Laurel Bowie Road**		
City: **Bowie**	State: **Maryland**	Zip Code: **20708**
Plant Manager: **Eric A. Jackson**	Telephone Number: **(301) 780-6303**	Fax Number: **(301) 952-7611**
24-Hour Emergency Telephone Number for Air Pollution Matters: **Darrin Dillah, SCS Engineers – (703) 981-9941**		

List, on a separate page, the names and telephone numbers of other facility owners and persons with titles.

SECTION 1. CERTIFICATION STATEMENTS

1. Compliance Status with Applicable Enhanced Monitoring and Compliance Certification Requirements

The emissions units identified in this application are in compliance with applicable enhanced monitoring and compliance certification requirements.

2. Certification of Current Compliance with All Applicable Federally Enforceable Requirements

Except for the requirements identified in Section 7 of this application, for which compliance is not achieved, I hereby certify, based on information and belief formed after reasonable inquiry, that the facility is currently in compliance with all applicable federally enforceable requirements and agree that the facility will continue to comply with those requirements during the permit term.

You must complete a Section 7 form for each non-complying emissions unit.

3. Statement of Compliance with Respect to All New Applicable Requirements Effective During the Permit Term

I hereby state, based on information and belief formed after reasonable inquiry, that the facility agrees to meet, in a timely manner, all applicable federally enforceable requirements that become effective during the permit term, unless a more detailed schedule is expressly required by the applicable requirement.

4. Risk Management Plan Compliance

I hereby certify that, based on information and belief formed after reasonable inquiry, that a Risk Management Plan as required under §112(r) of the Clean Air Act:

[ ] has been submitted;

[ ] will be submitted at a future date; or

[**X**] does not need to be submitted.

5. Statement of Truth, Accuracy, and Completeness

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision and in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

RESPONSIBLE OFFICIAL:

X Marilyn Naumann 5-20-22

SIGNATURE DATE

Marilyn E. Naumann

PRINTED NAME

Associate Director, Resource Recovery Division

TITLE

SECTION 2. FACILITY DESCRIPTION SUMMARY

1. Major Activities of Facility

Briefly describe the major activities, including the applicable SIC Code(s) and end product(s).

The Sandy Hill Creative Disposal Project (SHCDP) is a 249-acre municipal solid waste (MSW) landfill with primary SIC code of 4953 and NAICS code of 562212. Approximately 129 acres of the site has been used for waste disposal. The landfill began accepting waste in 1978 and ceased accepting waste in 2000. As such, landfilling activities no longer occur at the landfill.

The SHCDP consists of an MSW landfill and active landfill gas (LFG) collection system, designated as EU-1. Collected LFG is routed through a treatment skid to an off-site third party facility, which operates under a separate permit. Excess LFG not sent to the off-site third party facility is routed either to the main candlestick flare (EU-2) or the backup candlestick flare (EU-3).

2. Facility-Wide Emissions

A. This facility is required to obtain a Part 70 Operating Permit because it is: Check appropriate box:

- ☐ Actual Major
- ☐ Potential Major·
- ☐ Solid Waste Incineration Unit Requiring Permit Under § 129(e) of CAA
- **X** The landfill's design capacity exceeds the 40 CFR 62 Subpart OOO threshold of 2.5 million Mg and thus is subject to the Part 70 operating permit program.

B. List the actual facility-wide emissions below (**tons per year**)*:

PM10 _0.05_ NOx _0.83_ VOC _0.86_ SOx _0.19_ CO _4.52_ HAPs _0.13_

* See **Appendix B** for the 2021 Emissions Certification Report

3. Include With the Application:

Facility Plot Plan and Process Flow Diagram showing all emissions units, emission points, and control devices – **see Appendix A**;
Emissions Certification Report (copy of the most recent submitted to the Department) – **see Appendix B**.

SECTION 3A. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: **EU-1** 1a. Date of installation (month/year): **May 1978**	2. MDE Registration No.:(if applicable) **16-1862**

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

Municipal Solid Waste Landfill and Gas Collection System: EU-1 consists of a closed MSW landfill and an active gas collection system. The landfill began accepting waste in 1978 and ceased accepting waste in 2000. Collected LFG is routed to a blower and then through a gas treatment system to an off-site third-party facility, which operates under a separate permit. Excess LFG not sent to the gas treatment system is routed either to the main or the backup candlestick flare. Only one is operated at a time, if needed.

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference: **N/A**

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

Type(s) of Fuel	% Sulfur	Annual Usage (specify units)
1. **N/A**		
2.		
3.		

6. Emissions in Tons:

A. Actual Major: **N/A** Potential Major: **N/A** (note: before control device)

B. Actual Emissions (tpy): NOx **N/A** SOx **N/A** VOC **0.83** PM10 **0.00** HAPs **0.03**

SECTION 3A. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: **EU-2 / EU-3** 1a. Date of installation (month/year): **Jul. 2011 / Dec. 2010**	2. MDE Registration No.:(if applicable) **9-0658**

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

Flare System: The flare system consists of two candlestick flares. The main flare, designated as EU-2, is a Perennial Energy model FL-12-C flare and the backup flare, designated as EU-3, is an LFG Specialties model CF 1238I10. Both flares are rated at 3,000 scfm (at a methane content of 50 percent). Only one flare operates at a time. EU-2 and EU-3 began operation in July 2011 and December 2010, respectively.

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference: **N/A**

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

	Type(s) of Fuel	% Sulfur	Annual Usage (specify units)
1.	**LFG**	**0.0047%**	**46.7 MMscf in 2021**
2.			
3.			

6. Emissions in Tons:

A. Actual Major: **N/A** Potential Major: **N/A** (note: before control device)

C. Actual Emissions (tpy): NOx **0.83** SOx **0.19** VOC **0.03** PM10 **0.05** HAPs **0.10**

SECTION 3B. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: _EU-1_ **General Reference:** 40 CFR 62 Subpart OOO; COMAR 26.11

Briefly describe the Emission Standard/Limit or Operational Limitation:

Permit No. 24-033-01862 IV.1.1 Applicable Standards/Limits:

A. Standards for MSW Landfill Emissions [Reference: 40 CFR 62.16714]

(1) The Permittee shall ensure that the gas collection and control system satisfies the requirements for an active collection system as provided for in §62.16714(b)(2)(i-iv). The Permittee shall install the gas collection and control system according to the specifications in §62.16728. **[Reference: 40 CFR 62.16714(b)(2)and 62.16724]**

(2) The Permittee shall route all the collected landfill gas to a control system designed and operated to reduce non-methane organic compounds (NMOC) by 98 weight-percent as provided for in §62.16714(c)(2) **[Reference: 40 CFR 62.16714(c) and (c)(2)]**

(3) The Permittee may cap or remove the collection and control system provided that all the conditions of §62.16714(f)(1-4) are met. The NMOC gas produced by the landfill shall be calculated following the procedures specified in §62.16718(b). **[Reference: 40 CFR 62.16714(f)]**

(4) When the landfill is closed, the Permittee is no longer subject to the requirement to maintain an operating permit under Part 70 for the landfill if the landfill is not otherwise subject to the requirements of Part 70 and if either of the conditions in §62.16714(e)(1) and (2)are met. **[Reference: 40 CFR 62.16714(e)]**

(5) The Permittee shall not cause or allow any material to be handled, transported, or stored; or a building, its appurtenances; or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. **[Reference: COMAR 26.11.06.03D(2)]**

Permit Shield Request: YES

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report:_____
- **X** Annual Compliance Certification: By April 1
- **X** Semi-Annual Monitoring Report: By Jan 30/Jul 30

Methods used to demonstrate compliance:

Monitoring: Reference: Permit No. 24-033-01862 IV.1.3 A.; 40 CFR 62.16722

Describe:

(1) Operate and monitor gas system in accordance with 40 CFR 62.16722 and as listed in IV.1.3.B of Permit No. 24-033-01862.
(2) through (5) See record-keeping and reporting requirements.

Testing: Reference: Permit No. 24-033-01862 IV.1.2 A.; 40 CFR 62.16718 and 62.16720

Describe:

(1) The Permittee shall use the methods specified in §62.16720(a)(1) through (6) to determine whether the gas collection system is in compliance with the requirements for an active collection system in §62.16714(b)(2). [Reference: 40 CFR 62.16720(a)]
(2) See monitoring requirements
(3) The Permittee shall follow the procedures in §62.16718(b) to calculate the NMOC gas produced by the landfill to determine if the collection and control system may be capped or removed as provided in §62.16714(f) [Reference: 40 CFR 62.16718(b)]
(4) and (5) See monitoring requirements

Record Keeping: Reference: Permit No. 24-033-01862 IV.1.4 A.; 40 CFR 62.16726

Describe:

(1) Except as provided for in §62.16724(d)(2):
(a) The Permittee shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location for each collector as specified in §62.16726(d)(1) and (2). [Reference: 40 CFR 62.16726(d)]
(b) The Permittee shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed in §62.16726(b)(1) as measured during the initial performance test. Records of subsequent tests or monitoring shall be maintained for a minimum of 5 years. [Reference: 40 CFR 62.16726(b)]
(2) through (5) See record-keeping and reporting requirements.

Reporting: Reference: Permit No. 24-033-01862 IV.1.5 A.; 40 CFR 62.16724

Describe:

(1) & (2) See record keeping and reporting requirements.

(3) The Permittee shall submit an equipment removal report to the Administrator 30 days prior to

removal or cessation of operation of the control equipment as required in §62.16724(g)(1) through (2). [Reference: 40 CFR 62.16724(g)]

(4) The Permittee shall submit a closure report to the Administrator within 30 days of waste acceptance cessation as required in §62.16724(f). If a closure report has been submitted to the Administrator, no additional wastes may be placed into the landfill without the Permittee filing a notification of modification as described in §60.7(a)(4).
[Reference: 40 CFR 62.16724(f)]

(5) See record keeping and reporting requirements.

Frequency of submittal of the compliance demonstration: Annual & Semi-Annual

SECTION 3B. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: _EU-1_ **General Reference:** 40 CFR 62 Subpart OOO; COMAR 26.11

Briefly describe the Emission Standard/Limit or Operational Limitation:

Permit No. 24-033-01862 IV.1.1 Applicable Standards/Limits:

B. Operational Standards [Reference: 40 CFR 62.16716]

(1) The Permittee shall operate the gas collection and control system such that landfill gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for 5 years or more if active; or 2 years or more if closed or at final grade. **[Reference: 40 CFR 62.16714(b)(2)(ii) and 62.16716(a)]**

(2) The Permittee shall operate the collection system with negative pressure at each wellhead except under the conditions specified in §62.16716(b)(1) - (3). **[Reference: 40 CFR 62.16716(b)]**

(3) The Permittee shall operate each interior wellhead in the collection system with a landfill gas temperature less than 55° C. The Permittee may establish a higher operating temperature at a particular well as provided for in §62.16716(c). **[Reference: 40 CFR 62.16716(c)]**

(4) The Permittee shall operate the collection system so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. To determine if this level is exceeded, the Permittee shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill as provided for in §62.16716(d). **[Reference: 40 CFR 62.16716(d)]**

(5) In the event the collection or control system is not operating, the Permittee shall shut down the gas mover system and shall close, within one hour, all valves in the collection and control system contributing to venting of the gas to the atmosphere. **[Reference: 40 CFR 62.16716(e)]**

(6) The Permittee shall operate the control system at all times when the collected gas is routed to the system. **[Reference: 40 CFR 62.16716(f)]**

(7) The Permittee must take corrective actions if the requirements in §62.16720(a)(3) and (5) or §62.16720(c) of 40 CFR 62, Subpart OOO if monitoring demonstrates that the operational requirements in §62.16716(b), (c), or (d) are not met. If corrective actions are taken as specified in §62.16720, the monitored exceedance is not a violation of the operational requirements in §62.16716. **[Reference: 40 CFR 62.16716(g)]**

(8) The Permittee shall take reasonable precautions, including the application of water on unpaved roads and other surfaces, to prevent particulate matter from becoming airborne. **[Reference: COMAR 26.11.06.03D(2)]**

Permit Shield Request: _____YES_____

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report:_____
- **X** Annual Compliance Certification: _By April 1_
- **X** Semi-Annual Monitoring Report: _By Jan 30/Jul 30_

Methods used to demonstrate compliance:

Monitoring: Reference: Permit No. 24-033-01862 Section IV.1.3.B.; 40 CFR 62.16720 & 16722

Describe:

(1) See record-keeping and reporting requirements

(2) The Permittee shall install a sampling port at each wellhead. [Reference: 40 CFR 62.16722(a)]. The Permittee shall measure the gauge pressure in the gas collection header on a monthly basis as provided in §62.16720(a)(3). [Reference: 40 CFR 62.16722(a)(1)].

(a) If a positive pressure exists, the Permittee shall initiate corrective action within 5 days, except for the conditions allowed under §62.16716(b). [Reference: 40 CFR 62.16720(a)(3).

(b) If negative pressure cannot be achieved without excess air infiltration into the landfill within 15 days of the first measurement of a positive pressure in a wellhead, the Permittee shall conduct a root cause analysis and correct the exceedance as soon as practicable, but not later than 60 days after positive pressure was first measured. [Reference: 40 CFR 62.16720(a)(3)(i)]

(3) The Permittee shall:

(a) Install a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead. [Reference: 40 CFR 62.16722(a)].

(b) Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis. [Reference: 40 CFR 62.16722(a)(2)]

(c) Monitor temperature of the landfill gas on a monthly basis as provided in §62.16720(a)(4). [Reference: 40 CFR 62.16722(a)(3)]

(d) If a well exceeds the temperature operating parameters specified in §62.16716(c), the Permittee shall initiate action to correct the exceedance as provided in §62.16720(a)(4). [Reference: 40 CFR 62.16720(a)(4)]

(4) The Permittee shall use the procedures specified in §62.16720(c)(1) through (c)(5) to demonstrate compliance with the surface methane operational standard as provided in §62.16716(d) and as detailed in the Updated Surface Monitoring Design Plan. [Reference: 40 CFR 62.16720(c)] & [Administrative Compliance Consent Order between EPA and Waste Management Disposal Services of Maryland dated 10/28/04]

(a) The Permittee shall comply with the instrumentation specifications and procedures for surface emission monitoring devices as specified in §62.16720(d) and monitor surface concentrations of methane according to the instrument specifications and procedures. [Reference: 40 CFR 62.16720(d)]

(b) The Permittee shall record as a monitored exceedance any reading of 500 parts per million or more of methane above background at any location and the Permittee shall take the actions specified in §62.16720(c)(4)(i) through (v). As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of §62.16716(d). [Reference: 40 CFR 62.16720(c)(4)]

(c) The Permittee shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis. [Reference: 40 CFR 62.16720(c)(5)]

(d) When the landfill is closed and it has no monitored exceedances of the 500 ppm operational standard for surface methane concentrations in three consecutive quarterly monitoring periods, the Permittee may convert to an annual monitoring frequency. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring. [Reference: 40 CFR 62.16722(f)]

(5) through (8) See record-keeping and reporting requirements.

Testing: Reference: Permit No. 24-033-01862 Section IV.1.2.B.; 40 CFR 62.16716 and 16722

Describe:

(1) and (2) See monitoring requirements

(3) The nitrogen and oxygen level shall be determined as prescribed in 40 CFR 62.16722(a)(2). See also requirements of IV.1.3.B. [Reference: 40 CFR 62.16722(a)(2)]

(4) through (8) See monitoring requirements

Record Keeping: Reference: Permit No. 24-033-01862 Section IV.1.4.B; 40 CFR 62.16724 & 62.16726

Describe:

(1) See record-keeping and reporting requirements.

(2) through (4) Except as provided for in §62.16724(d)(2), the Permittee shall keep for five years up-to-date, readily accessible monthly records of the gauge pressure in the gas collection system nitrogen or oxygen concentrations in the landfill gas, and temperature of the landfill gas as specified to be monitored in §62.16722(a). In a similar manner, the Permittee will keep records of the surface methane concentrations monitored as specified in §62.16722(f). [Reference: 40 CFR

62.16726(c)](2) The Permittee shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual report as provided in §62.16724(h)(1). [Reference: 40 CFR 62.16716(b)(1)]

(5) and (6) See record-keeping and reporting requirements.

(7) Except as provided for in §62.16724(d)(2), the Permittee shall keep for at least 5 years up-to-date, readily accessible records of items specified in §62.16726(e)(1) through (5) of §62.16726(e). [Reference: 40 CFR 62.16726(e)]

(8) See record-keeping and reporting requirements.

Reporting: Reference: Permit No. 24-033-01862 Section IV.1.5.B; 40 CFR 62.16724; 40 CFR 62.16726

Describe:

(1) through (6) The Permittee shall submit to the Administrator annual reports of the recorded information in §62.16724(h)(1) through (7). The reportable exceedances for enclosed combustors are defined under §62.16726(c)(1). [Reference: 40 CFR 62.16724(h)].

(7) and (8) See record-keeping and reporting requirements.

Frequency of submittal of the compliance demonstration: Annual & Semi-Annual

SECTION 3B. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: _EU-1_ **General Reference:** 40 CFR 62 Subpart OOO; COMAR 26.11

Briefly describe the Emission Standard/Limit or Operational Limitation:

Permit No. 24-033-01862 IV.1.1 Applicable Standards/Limits:

C. Other Requirements

The provisions of 40 CFR 62, Subpart OOO apply at all times, during periods of start-up, shutdown, or malfunction. The Permittee must comply with the work practice specified in §62.16716(e) in lieu of the compliance provisions in §62.16720. **[Reference: 40 CFR 62.16720(e)]**

Permit Shield Request: YES

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report:_____
- **X** Annual Compliance Certification: By April 1
- **X** Semi-Annual Monitoring Report: By Jan 30/Jul 30

Methods used to demonstrate compliance:

Monitoring: Reference: Permit No. 24-033-01862 Section IV.1.3.D.; 40 CFR 62

Describe:

See record-keeping and reporting requirements

Testing: Reference: Permit No. 24-033-01862 Section IV.1.2.D; 40 CFR 62

Describe:

See record-keeping and reporting requirements

Record Keeping: Reference: Permit No. 24-033-01862 Section IV.1.4.D; 40 CFR 62

Describe:

(1) Except as provided in §62.16724(d)(2), the Permittee shall keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report which triggered §62.16714(e), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable. [Reference: 40CFR 62.16726(a)]

(2) Except as provided in §62.16724(d)(2), the Permittee shall keep for 5 years up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. [Reference: 40 CFR 62.16726(c)]

(3) The Permittee shall keep up-to-date, readily accessible continuous records of the indication of flow to the control device or the indication of bypass flow or records of monthly inspections of car-seals or lock-and- key configurations used to seal bypass lines, specified under §62.16722.

Reporting: Reference: Permit No. 24-033-01862 Section IV.1.5.D; 40 CFR 62

Describe:

The Permittee shall submit an annual NMOC emission rate report to the Administrator. The report is due on the anniversary of the Permittee's initial submittal of the NMOC report as required in 40 CFR 62.16724(c). [Reference: 40 CFR 62.16724(c)]

Exception: The Permittee is exempted from the requirements of 40 CFR 62.16724(c)(1) through (3), after the installation of a landfill gas collection and control system in compliance with §62.16714(b) and (c), during such time as the collection and control system is in operation and in compliance with §§62.16716 and 62.16720. [Reference: 40 CFR 62.16724(c)(4)]

Frequency of submittal of the compliance demonstration: Annual & Semi-Annual

SECTION 3B. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: __EU-1_ **General Reference:** _40 CFR 63 Subpart AAAA_

Briefly describe the Emission Standard/Limit or Operational Limitation:

1a.1 Applicable Standards/Limits:

Subpart AAAA - National Emission Standard for Hazardous Air Pollutants: Municipal Solid Waste Landfills.

Applicability

"You are subject to this subpart if you own or operate a MSW landfill that has accepted since November 8, 1987 or has additional capacity for waste disposition and meets any one of the three criteria in paragraphs (a)(1) through (3) of this section: (3) Your MSW landfill is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m3) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to §63.1959." [Reference: 40 CFR §63.1935(a)(3)]

"If your landfill is an existing affected source and is an area source meeting the criteria in §63.1935(a)(3), you must comply with the requirements in §63.1957(a), §63.1958, §63.1961 and §63.1962 by the date your landfill is required to install a collection and control system by the Federal plan, or EPA approved and effective State or tribal plan that applies to your landfill, whichever occurs later." [Reference: 40 CFR §63.1945]

Standards

Before September 28, 2021, if alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions have already been approved under 40 CFR part 60, subpart WWW; subpart XXX; a federal plan; or an EPA-approved and effective state or tribal plan, these alternatives can be used to comply with this subpart, except that all affected sources must comply with the SSM requirements in subpart A of this part as specified in Table 1 of this subpart and all affected sources must submit compliance reports every 6 months as specified in §63.1981(h), including information on all deviations that occurred during the 6-month reporting period. Deviations for continuous emission monitors or numerical continuous parameter monitors must be determined using a 3-hour monitoring block average. Beginning no later than September 28, 2021, the collection and control system design plan may include for approval collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions, as provided in §63.1981(d)(2).[Reference: 40 CFR §63.1955(a)]

General and Continuing Compliance Requirements

Compliance is determined using performance testing, collection system monitoring, continuous parameter monitoring, and other credible evidence. In addition, continuous parameter monitoring data collected under §63.1961(b)(1), (c)(1), and (d) are used to demonstrate compliance with the operating

standards for control systems. If a deviation occurs, you have failed to meet the control device operating standards described in this subpart and have deviated from the requirements of this subpart.

(a) Before September 28, 2021, you must develop a written SSM plan according to the provisions in §63.6(e)(3) of subpart A. A copy of the SSM plan must be maintained on site. Failure to write or maintain a copy of the SSM plan is a deviation from the requirements of this subpart.

(b) After September 27, 2021, the SSM provisions of §63.6(e) of subpart A no longer apply to this subpart and the SSM plan developed under paragraph (a) of this section no longer applies. Compliance with the emissions standards and the operating standards of §63.1958 of this subpart is required at all times.

[Reference: 40 CFR §63.1964]

Permit Shield Request: _____YES_____

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report:_____
- **X** Annual Compliance Certification:_By April 1_
- **X** Semi-Annual Monitoring Report: _By Jan 30/Jul 30_

Methods used to demonstrate compliance:

Monitoring: Reference: Permit No. 24-033-01862 Section IV.1a.3; 40 CFR 63 Subpart AAAA

Describe:

See General and Continuing Compliance Requirements

Testing: Reference: Permit No. 24-033-01862 Section IV.1a.2; 40 CFR 63 Subpart AAAA

Describe:

See General and Continuing Compliance Requirements

Record Keeping: Reference: Permit No. 24-033-01862 Section IV.1a.4; 40 CFR 63 Subpart AAAA

Describe:

"Keep records and reports as specified in 40 CFR Part 60, Subpart OOO, or in the Federal plan, EPA approved State plan or tribal plan that implements 40 CFR Part 60, Subpart Cc, whichever applies to your landfill, with one exception: You must submit the annual report described in 40 CFR 62.16724(h) or operator must follow semi-annual reporting requirements as specified in 40 CFR 63.1981(h) in lieu of this paragraph.[Reference: 40.CFR §63.1981(a)]

"You must also keep records and reports as specified in the general provisions of 40 CFR Part 63 and this part as shown in Table 1 of this subpart. Applicable records in the general provisions include items such as SSM plans and the SSM plan reports." [Reference: 40.CFR §63.1983]

Reporting: Reference: Permit No. 24-033-01862 Section IV.1a.5; 40 CFR 63 Subpart AAAA

Describe:

See General and Continuing Compliance Requirements

Frequency of submittal of the compliance demonstration: Annual & Semi-Annual

SECTION 3B. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: _EU-2 & EU-3_ **General Reference:** 40 CFR 62 Subpart OOO; COMAR 26.11

Briefly describe the Emission Standard/Limit or Operational Limitation:

IV.2.1 Applicable Standards/Limits:

A. Control of Visible Emissions

COMAR 26.11.06.02C(2). Visible Emission Standards
'In Areas Ill and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

COMAR 26.11.06.02A(2) General Exceptions. The visible emissions standards in §C of this regulation do not apply to emissions during startup and process modifications or adjustments, or occasional cleaning of control equipment, if:
(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any 60-minute period.

Permit Shield Request: YES

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report:_____
- **X** Annual Compliance Certification: By April 1
- **X** Semi-Annual Monitoring Report: By Jan 30/Jul 30

Methods used to demonstrate compliance:

Monitoring: Reference: Permit No. 24-033-01862 Section IV.2.3;

Describe:

The Permittee shall properly operate and maintain the flare in a manner to minimize visible emissions. [Reference: COMAR 26.11.03.06C].

Testing: Reference: Permit No. 24-033-01862 Section IV.2.2.; COMAR 26.11.03.06

Describe:

See record-keeping and reporting requirements

Record Keeping: Reference: Permit No. 24-033-01862 Section IV.2.4.; COMAR 26.11.03.06

Describe:

The Permittee shall retain records of preventative maintenance on site for at least five years and make these records available to the Department upon request. [Reference: COMAR 26.11.03.06C]

Reporting: Reference: Permit No. 24-033-01862 Section IV.2.5.;

Describe:

The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, Plant Wide Condition, "Report of Excess Emissions and Deviations."

Frequency of submittal of the compliance demonstration: Annual & Semi-Annual

SECTION 3B. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: _EU-2 & EU-3_ **General Reference:** 40 CFR 60 Subpart A;
40 CFR 62 Subpart OOO;
CFR 63 Subpart AAAA

Briefly describe the Emission Standard/Limit or Operational Limitation:

IV.2.1 Applicable Standards/Limits:

B. Operational Standards
[Reference 40 CFR 62.16714(a)(4) and (c)]

(a)(4) If the calculated NMOC emission rate greater than or equal to or greater than 50 megagrams per year, the owner or operator must collect and control MSW landfill emissions:
(c) Control the gas collected from within the landfill through the use of control devices meeting the following requirements (1) or (2) or (3) of this section, except as provided in §60.24.
(1) A non-enclosed flare designed and operated in accordance with the parameters established in 40 CFR 60.18 except as noted in § 62.16722(d)

Permit Shield Request: YES

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report:_____
- **X** Annual Compliance Certification: By April 1
- **X** Semi-Annual Monitoring Report: By Jan 30/Jul 30

Methods used to demonstrate compliance:

Monitoring: Reference: Permit No. 24-033-01862 Section IV.2.3; 40 CFR 62.16722

Describe:

Each owner or operator seeking to comply with §62.16714(c) using an open flare shall install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment: [Reference: 40 CFR 62.16722(c)]
(1) A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame.
(2) A device that records flow to or bypass of the flare. The owner or operator shall either:
(i) Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or
(ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

Testing: Reference: Permit No. 24-033-01862 Section IV.2.2.

Describe:

See record-keeping and reporting requirements

Record Keeping: Reference: Permit No. 24-033-01862 Section IV.2.4.; 40 CFR §§62.16722 and 16726.

Describe:

The Permittee shall keep up-to-date, readily accessible records of the flame or flare pilot flame monitoring as specified under §62.16722(c) for open flares and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot is absent during those instances when the utility flare is being used while it is out-of-service. [Reference: 40 CFR 62.16726(b)(4) and MOE ARMA/AQPP Letter, October 2, 1995].

The Permittee shall keep up-to-date, readily accessible records of the control device vendor specifications until the control device is removed. [Reference: 40CFR 62.16726(b)]

Reporting: Reference: Permit No. 24-033-01862 Section IV.2.5.;

Describe:

See record-keeping requirements

Table 1 to Subpart AAAA of Part 63 – Applicability of NESHAP General Provisions to Subpart AAAA.		
Part 63 Citation	**Description**	**Explanation**
63.1(a)	Applicability: general applicability of NESHAP in this subpart	Affected sources are already subject to the provisions of paragraphs (a)(10) - (12) through the same provisions under 40 CFR, part 60 subpart A.
63.1(b)	Applicability determination for stationary sources	
63.1(e)	Title V permitting	
63.2	Definitions	
63.4	Prohibited activities and circumvention	Affected sources are already subject to the
		provisions of paragraph (b) through the same provisions under 40 CFR, part 60 subpart A.
63.5(b)	Requirements for existing, newly constructed, and reconstructed sources	
63.6(e)	Operation and maintenance requirements, start-up, shutdown and malfunction plan provisions	
63.6(f)	Compliance with non opacity emission standards	Affected sources are already subject to the provisions of paragraphs (f)(1) and (2)(i) through the same provisions under 40 CFR, part 60 subpart A.
63.10(b)(2)(i) – (b)(2)(v)	General recordkeeping requirements	

Table 1 to Subpart AAAA of Part 63 – Applicability of NESHAP General Provisions to Subpart AAAA.		
Part 63 Citation	**Description**	**Explanation**
63.10(d)(5)	If actions taken during start-up, shutdown and malfunction are consistent with the procedures in the startup, shutdown and malfunction plan, this information shall be included in a semi- annual startup, shutdown and malfunction plan report. Any time an action taken during a startup, shutdown and malfunction plan is not consistent with the startup, shutdown and malfunction plan, the source shall report actions taken with 2 working days after commencing such actions, followed by a letter 7 days after the event.	
63.12(a)	These provisions do not preclude the State from adopting and enforcing any standard, limitation, etc; requiring permits or requiring emissions reductions in excess of those specified.	
63.15	Availability of information and confidentiality.	

Frequency of submittal of the compliance demonstration: __ Annual & Semi-Annual_____

SECTION 3C. OBSOLETE, EXTRANEOUS, OR INSIGNIFICANT PERMIT CONDITIONS

List permit to construct conditions which should be considered to be obsolete, extraneous, or environmentally insignificant.

Emissions Unit No.: _____Permit to Construct No. _____

Emissions Point No.	Date Permit Issued	Condition No.	Brief Description of Condition and Reason for Exclusion
NOT APPLICABLE			

SECTION 3D. ALTERNATE OPERATING SCENARIOS

Emissions Unit No.:_____

Briefly describe any alternate operating scenarios. Assign a number to each scenario for identification purposes.

NOT APPLICABLE

SECTION 3E. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS FOR AN ALTERNATE OPERATING SCENARIO

Scenario No.: _____

Emissions Unit No.: _____ **General Reference:** _____

Briefly describe any applicable Emissions Standard/Limits/Operational Limitations:

NOT APPLICABLE

_____

_____

_____

_____

Compliance Demonstration

Methods used to demonstrate compliance:

Monitoring: Reference _____ Describe: _____

_____

_____

_____

Testing: Reference _____ Describe: _____

_____

_____

_____

Record Keeping: Reference _____ Describe: _____

_____

_____

_____

Reporting: Reference _____ Describe: _____

_____

_____

_____

Frequency of submittal of the compliance demonstration: _____

SECTION 4. CONTROL EQUIPMENT

1. Associated Emissions Units No. : **NONE**	2. Emissions Point No.:
3. Type and Description of Control Equipment:	

4. Pollutants Controlled:	Control Efficiency:

5. Capture Efficiency:

SECTION 5. SUMMARY SHEET OF POTENTIAL EMISSIONS

List all applicable pollutants in tons per year (tpy) pertaining to this facility. The Emissions Unit No. should be consistent with numbers used in Section 3. Attach a copy of all calculations.

Pollutant	NOx	CO	PM-10	SOx	VOCs	HAPs
CAS Number	Varies	630-08-0	N/A	Varies	Varies	Varies
EU-1	0.0	0.0	0.0	0.0	4.48	2.61
EU-2 & EU-3	12.06	65.63	3.02	11.61	0.37	1.45
Fugitive Emissions*	0.0	0.0	0.0	0.0	4.48	2.61
Total	12.06	65.63	3.02	11.61	4.85	4.06

*Notes:

1. Potential emissions are updated to reflect current facility conditions (see Appendix D).
2. All pollutants emitted by EU-1 (Landfill) are emitted as fugitive emissions. All potential fugitive emissions are from the landfill only.

SECTION 6. EXPLANATION OF PROPOSED EXEMPTIONS FROM OTHERWISE APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Describe and cite the applicable requirements to be exempted. Complete this Section only if the facility is claiming exemptions from or the non-applicability of any federally enforceable requirements.

1. Applicable Requirement:

NOT APPLICABLE

2. Brief Description:

3. Reasons for Proposed Exemption or Justification of Non-applicability:

SECTION 7. COMPLIANCE SCHEDULE FOR NONCOMPLYING EMISSIONS UNITS

1. Emissions Unit #	Anticipated Compliance Date
Applicable Federally Enforceable Requirement being Violated: **NOT APPLICABLE**	

2. Description of Plan to Achieve Compliance:
_____
_____
_____
_____
_____
_____

Certified Progress Reports for sources in noncompliance shall be submitted at least quarterly to the Department.

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STATE-ONLY ENFORCEABLE REQUIREMENTS

Facility Information:

Name of Facility: Sandy Hill Creative Disposal Project	**County** Prince George's County, Maryland
Premises Number: N/A	
Street Address: 9500 Old Laurel Bowie Road, Bowie, MD 20708	
24-hour Emergency Telephone Number for Air Pollution Matters: Darrin Dillah, SCS Engineers – (703) 981-9941	
Type of Equipment (List Significant Units):	
EU-1: MSW Landfill	
EU-2 & EU-3: Two candlestick flares (main & backup) each rated at 3,000 cfm for the control of landfill gas emissions	

CITATION TO AND DESCRIPTION OF APPLICABLE STATE-ONLY ENFORCEABLE REQUIREMENTS

Registration No.: N/A

Emissions Unit No.: Facility-Wide **General Reference:** COMAR 26.11; Part 70 Operating Permit No. 24-033-01862

Briefly describe the requirement and the emissions limit (if applicable):

(A) COMAR 26.11.06.08 - Nuisance

"An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created. Nothing in this regulation relating to the control of emissions may in any manner be constructed as authorizing or permitting the creation of, or maintenance of, nuisance or air pollution."

(B) COMAR 26.11.06.09 – Odors

"A person may not cause or permit the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created."

(C) COMAR 26.11.15.05 - Control Technology Requirements

"A person who complies with the ambient impact requirement in Regulation .06 of this chapter may not be affected by the amount of the installation's stack height that exceeds good engineering practice (GEP), or by any other dispersion technique.
(3) Unless an existing installation is controlled using T-BACT, the degree of emission limitation required in order to demonstrate compliance with Regulation .06 of this chapter may not be affected by the amount of the installation's stack height that exceeds good engineering practice (GEP), or by any other dispersion technique."

(D) COMAR 26.11.15.06 - Ambient Impact Requirement

1. "Except as provided in §8(3) of this regulation, a person may not cause or permit the discharge of a toxic air pollutant listed in COMAR 26.11.16.07 from an existing installation or source if total allowable emissions of that TAP from the premises will unreasonably endanger human health.

2. A person shall demonstrate compliance with §8(1) of this regulation using the procedures established in Regulation .07 of this chapter and COMAR 26.11.16.

3. A person who owns or operates an existing premises shall meet the requirements of §8(1) and (2) of this regulation for each TAP listed in COMAR 26.11.16.07 by the applicable compliance dates listed in COMAR 26.11.16.07, or not later than 2 years after becoming subject to this chapter, whichever is later."

Methods used to demonstrate compliance:

Recordkeeping and Reporting Requirements:

The Permittee shall submit to the Department, by April 1 of each year during the term of this permit, a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. The analysis shall include either:

(a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or

(b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.

3.0 INSIGNIFICANT ACTIVITIES

III. Check-off List of Emissions Units and Activities Exempt from the Part 70 Permit Application

Insignificant Activities

Place a check mark beside each type of emissions unit or activity that is located at the facility. Where noted, please indicate the number of that type of emissions unit or activity located at the facility.

(1) No. ___ Fuel burning equipment using gaseous fuels or no. 1 or no. 2 fuel oil, and having a heat input less than 1,000,000 Btu (1.06 gigajoules) per hour;

(2) No. ___ Fuel-burning equipment using solid fuel and having a heat input of less than 350,000 Btu (0.37 gigajoule) per hour;

(3) No. ___ Stationary internal combustion engines with less than 500 brake horsepower (373 kilowatts)of power output

(4) _X_ Space heaters utilizing direct heat transfer and used solely for comfort heat;

(5) ___ Water cooling towers and water cooling ponds unless used for evaporative cooling of water from barometric jets or barometric condensers, or used in conjunction with an installation requiring a permit to operate;

(6) No. ___ Unheated VOC dispensing containers or unheated VOC rinsing containers of 60 gallons (227 liters) capacity or less;

(7) ____ Commercial bakery ovens with a rated heat input capacity of less than 2,000,000 Btu per hour;

(8) ___ Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity, or any combination of these;

(9) ___ Confection cookers where the products are edible and intended for human consumption;

(10) ___ Die casting machines;

(11)___ Photographic process equipment used to reproduce an image upon sensitized material through the use of radiant energy;

(12)___ Equipment for drilling, carving, cutting, routing, turning, sawing, planing, spindle sanding, or disc sanding of wood or wood products;

(13)___ Brazing, soldering, or welding equipment, and cutting torches related to manufacturing and construction activities that emit HAP metals and not directly related to plant maintenance, upkeep and repair or maintenance shop activities;

(14)___ Equipment for washing or drying products fabricated from metal or glass, provided that no VOC is used in the process and that no oil or solid fuel is burned;

(15)___ Containers, reservoirs, or tanks used exclusively for electrolytic plating work, or electrolytic polishing, or electrolytic stripping of brass, bronze, cadmium, copper, iron, lead, nickel, tin, zinc, and precious metals;

(16) Containers, reservoirs, or tanks used exclusively for:

(a) ___ Dipping operations for applying coatings of natural or synthetic resins that contain no VOC;

(b) ___ Dipping operations for coating objects with oils, waxes, or greases, and where no VOC is used;

(c) _X_ Storage of butane, propane, or liquefied petroleum, or natural gas;

(d) No. ___ Storage of lubricating oils:

(e) No. ___ Unheated storage of VOC with an initial boiling point of 300 °F (

(f) No. ___ Storage of Numbers 1, 2, 4, 5, and 6 fuel oil and aviation jet engine fuel,

(g) No. ___ Storage of motor vehicle gasoline and having individual tank capacities of 2,000 gallons (7.6 cubic meters) or less;

(h) No. ___ The storage of VOC normally used as solvents, diluents, thinners, inks, colorants, paints, lacquers, enamels, varnishes, liquid resins, or other surface coatings and having individual capacities of 2,000 gallons (7.6 cubic meters) or less;

(17) ___ Gaseous fuel-fired or electrically heated furnaces for heat treating glass or metals, the use of which does not involve molten materials;

(18) Crucible furnaces, pot furnaces, or induction furnaces, with individual capacities of 1,000 pounds (454 kilograms) or less each, in which no sweating or distilling is conducted, or any fluxing is conducted using chloride, fluoride,

or ammonium compounds, and from which only the following metals are poured or in which only the following metals are held in a molten state:

(a) ___ Aluminum or any alloy containing over 50 percent aluminum, if no gaseous chloride compounds, chlorine, aluminum chloride, or aluminum fluoride is used;

(b) ___ Magnesium or any alloy containing over 50 percent magnesium;

(c) ___ Lead or any alloy containing over 50 percent lead;

(d) ___ Tin or any alloy containing over 50 percent tin;

(e) ___ Zinc or any alloy containing over 50 percent zinc;

(f) ___ Copper;

(g) ____ Precious metals;

(19)____ Charbroilers and pit barbecues as defined in COMAR 26.11.18.01 with a total cooking area of 5 square feet (0.46 square meter) or less;

(20) ___ First aid and emergency medical care provided at the facility, including related activities such as sterilization and medicine preparation used in support of a manufacturing or production process;

(21) ____ Certain recreational equipment and activities, such as fireplaces, barbecue pits and cookers, fireworks displays, and kerosene fuel use;

(22) ___ Potable water treatment equipment, not including air stripping equipment;

(23)___ Firing and testing of military weapons and explosives;

(24)___ Emissions resulting from the use of explosives for blasting at quarrying operations and from the required disposal of boxes used to ship the explosive;

(25)____ Comfort air conditioning subject to requirements of Title VI of the Clean Air Act;

(26)____ Grain, metal, or mineral extrusion presses;

(27)____ Breweries with an annual beer production less than 60,000 barrels;

(28)___ Natural draft hoods or natural draft ventilators that exhaust air pollutants into the ambient air from manufacturing/industrial or commercial processes;

(29)____ Laboratory fume hoods and vents;

(30) No. ___ Sheet-fed letter or lithographic printing press(es) with a cylinder width of less than 18 inches;

For the following, attach additional pages as necessary:

(31) any other emissions unit, not listed in this section, with a potential to emit less than the "de minimus" levels listed in COMAR 26.11.02.10X (list and describe units):

No. ___ _____

No. ___ _____

No. ___ _____

No. ___ _____

No. ___ _____

(32) any other emissions unit at the facility which is not subject to an applicable requirement of the Clean Air Act (list and describe):

No. ___ _____

No. ___ _____

No. ___ _____

4.0 APPLICATION COMPLETENESS CHECKLIST

VI .Application Completeness Checklist

The purpose of this part is to list the information required to achieve a Part 70 application shield.

Cover Page

(X) Name and address of owner or operator, including telephone number.

(X) Name and address of facility, including the plant manager's name and telephone number.

(X) A 24-hour emergency telephone number for air pollution matters.

Section 1 CERTIFICATION STATEMENTS

(X) The certification statement completed and signed by a responsible official.

Section 2 FACILITY DESCRIPTION SUMMARY

(X) A brief description of each of the source's process(es), including all applicable SIC codes and end products.

(X) Flow diagrams indicating all emissions units, emission points, and control devices.

(X) A plot plan of the entire facility.

(X) Emission Certification Report.

(X) General Emissions Information.

Section 3 EMISSIONS UNIT DESCRIPTIONS –

This section must be completed for each emissions unit.

Part A

(X) Emissions unit number.

(X) Detailed description of unit, including all emission points.

(X) Federally enforceable limit(s) on the operating schedule.

(X) Fuel consumption information for any emissions unit that consumes fuel including the type of fuel, percent sulfur, and annual usage of fuel.

Part B

(X) A citation and description of each federally enforceable requirement, including all emission standards, for each emissions unit.

(X) A statement of compliance demonstration techniques for each requirement, including a description of monitoring, record keeping, reporting requirements, and test methods.

(X) The frequency of submittal of the compliance demonstration during the permit term.

Part C

(N/A) Emissions unit number.

(N/A) Permit to construct number.

(N/A) Emissions point number(s).

(N/A) Date(s) the permit to construct was issued.

(N/A) Condition number(s) as indicated on the permit to construct.

(N/A) Description of the permit condition(s) and the reason(s) why they are believed to be obsolete, extraneous, or insignificant.

Part D

(N/A) Description of all alternate operating scenarios that apply to an emissions unit.

(N/A) Number assigned to each scenario.

(N/A) Emissions unit number.

(N/A) Description of the operating parameters for the emissions unit and other information which describes the how the operation of the unit will change under the different scenario.

Part E

(N/A) A citation and description of each federally enforceable requirement triggered by an operating scenario, including all emission standards, for each emissions unit.

(N/A) As an attachment, the date and results of the most recent compliance demonstration for each emission standard and/or emissions certification report with relevant supporting documentation.

(N/A) A statement of compliance demonstration techniques for each requirement, including a description of monitoring, record keeping, reporting requirements, and test methods.

(N/A) The frequency of submittal of the compliance demonstration during the permit term.

Section 4 CONTROL EQUIPMENT

(X) The type of each piece of air pollution control equipment

(X) The capture and control efficiencies of the control equipment.

Section 5 SUMMARY SHEET OF POTENTIAL EMISSIONS

(X) Quantity of potential emissions for criteria pollutants and HAPs emitted in tons per year for each emissions unit.

(X) Fugitive emission estimations for the entire facility for criteria pollutants and HAPs emitted in tons per year.

(X) Basis for all emission calculations.

Section 6 AN EXPLANATION OF PROPOSED EXEMPTIONS FROM OTHERWISE APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

(N/A) An explanation of the proposed exemption.

Section 7 COMPLIANCE SCHEDULE FOR NONCOMPLYING EMISSIONS UNITS

(N/A) Identification of emissions unit(s) not in compliance, including the requirement being violated and the effective compliance date.

(N/A) Detailed description of methods to be used to achieve compliance.

(N/A) A schedule of remedial measures, including an enforceable sequence of actions with milestones.

Attachment

(X) Checklist of Insignificant Activities

(N/A) CAM Plan (If Applicable)

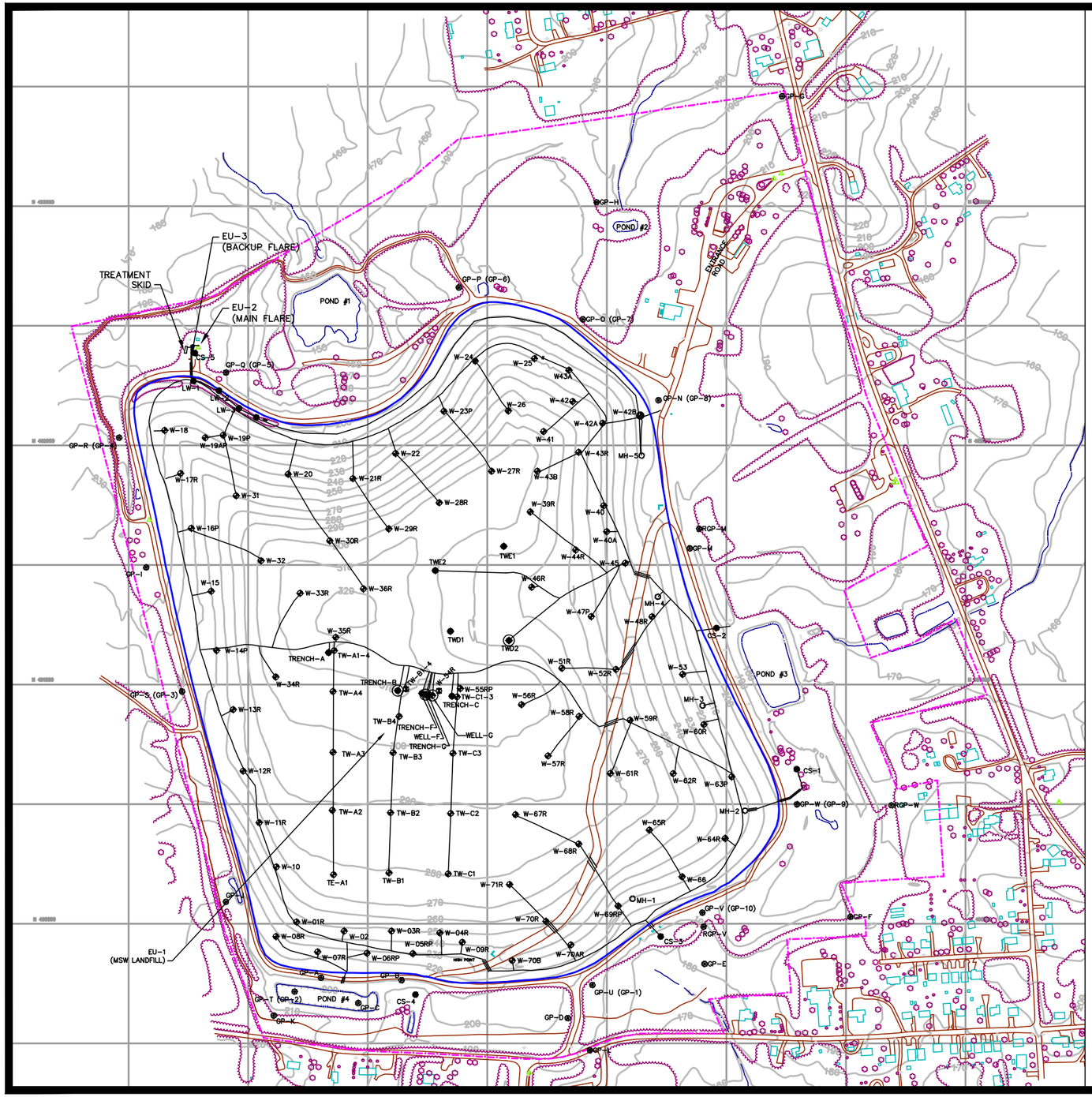
The SHCDP maintains two candle stick flares at the premises. These emission units are not subject to limitations of particulate matter, sulfur oxides, nitrogen oxides, and/or VOC emissions. No control devices are employed to control particulate matter, sulfur oxides, nitrogen oxides, or VOC emissions. CAM requirements, therefore, are not applicable to these units.

Appendix A

Appendix A-1. Facility Plot Plan

Appendix A-2. Process Flow Diagram

DRAWN BY: BSP/AT DATE: APR 2022 FILE NAME: 02219039.01 – PERMIT RENEWAL – FACILITY PLOT PLAN



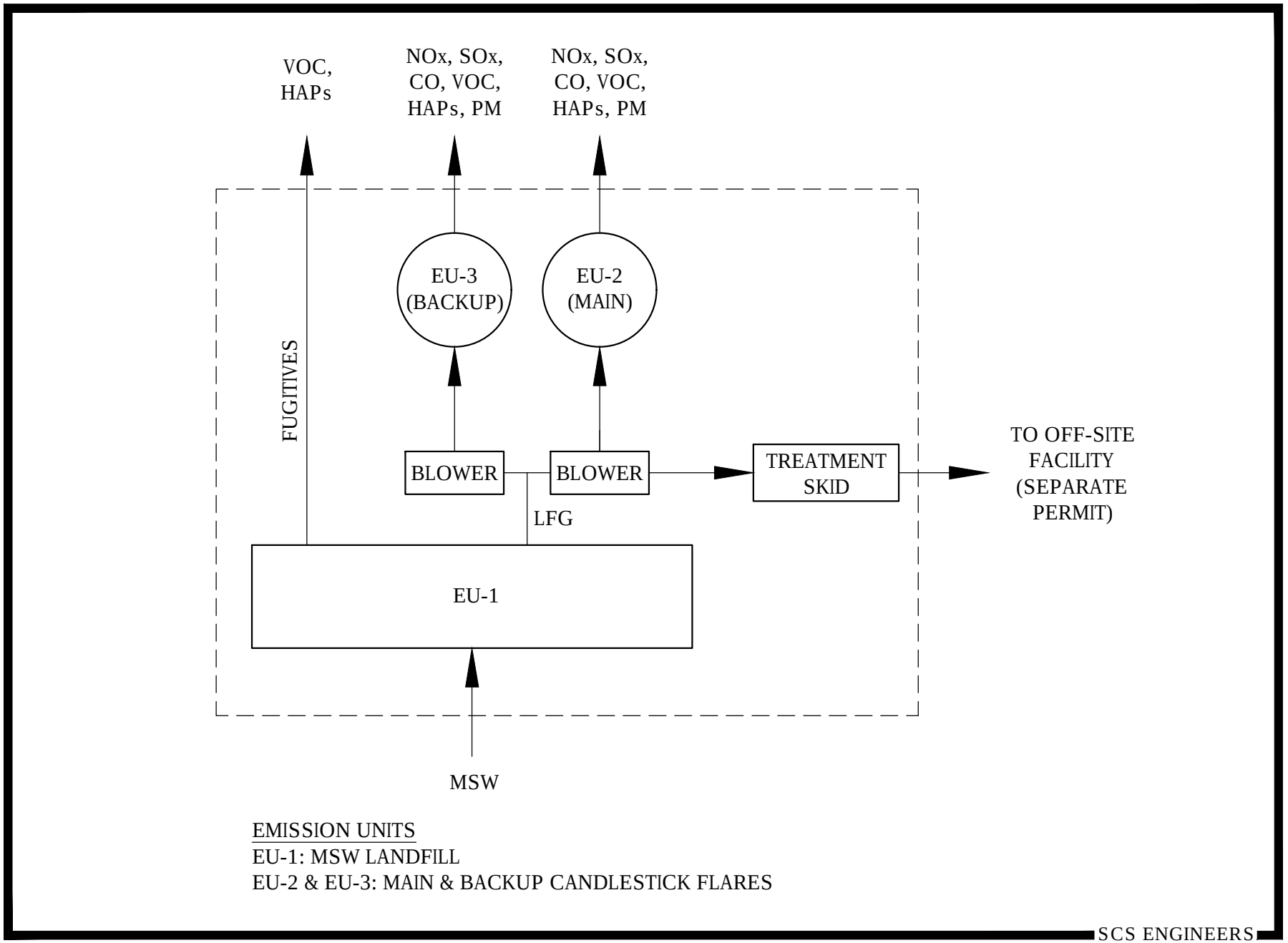
LEGEND

	PROPERTY BOUNDARY
	APPROX. LIMIT OF WASTE
	LFG HEADER
W–42	LFG EXTRACTION WELL
TRENCH–F	LFG EXTRACTION TRENCH
MH–5	LEACHATE COLLECTION MANHOLE
CT–1	CONDENSATE TANK
GP–R	PERIMETER LFG MONITORING PROBE
W–42B	LFG EXTRACTION WELL (DECOMMISSIONED)
TRENCH–B	LFG EXTRACTION TRENCH (DECOMMISSIONED)

SCS ENGINEERS

APPENDIX A-1 - FACILITY PLOT PLAN - SANDY HILL CREATIVE DISPOSAL PROJECT

DRAWN BY: AT DATE: APR 2022 FILE NAME: 02219039.01 – PERMIT RENEWAL – PROCESS FLOW DIAGRAM



APPENDIX A-2 - PROCESS FLOW DIAGRAM - SANDY HILL CREATIVE DISPOSAL PROJECT

Appendix B

2021 Emissions Certification Report

2021 Annual Emission Certification Report

Sandy Hill Creative Disposal Project
Permit No. 24-033-01862

Prince George's County
Department of the Environment
Resource Recovery Division
3500 Brown Station Road
Upper Marlboro, MD 20774

SCS ENGINEERS

02219039.01 | March 2022

11260 Roger Bacon Drive
Reston, VA 20190
703-471-6150

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard, Suite 715 • Baltimore Maryland 21230-1720
(410) 537-3000 • 1-800-633-6101 • http://www.mde.state.md.us
Air and radiation Management Administration
Air Quality Compliance Program
(410) 537-3220

FORM 1

GENERAL FACILITY INFORMATION
EMISSION CERTIFICATION REPORT

Report for Calendar Year: 2021

A. FACILITY IDENTIFICATION Facility Name: Sandy Hill Creative Disposal Project	--Do Not Write in This Space--
Address 9500 Old Laurel-Bowie Road	Date Received Local
City: Bowie County: Prince George's Zip: 20708	Date Received State
B. Briefly describe the Major Function of the Premises	AIRS Code
Municipal Solid Waste Landfill	FINDS Code
	SIC Code
	Premise Number
	Source Latitude and Longitude
C. SEASONAL PRODUCTION (if applicable) Winter (Dec.-Feb.) __ Spring (Mar.-May)____ Summer (June-Aug.)____ Fall (Sept-Nov.)____	Reviewed Name / Date

D. Explain any Increase/Decrease From Previous Calendar Year for Each Registration at this premises.

In 2021, NO_X, SO_X, CO, PM, VOC, and hydrogen chloride stack emissions were lower than in 2020 due to a similar decrease in LFG flow to flares. 2021 Fugitive emissions from landfill were insignificantly lower than in 2020 because landfill is closed.

E. CONTROL DEVICE INFORMATION (for NOx and VOC sources only)

Control Device	Capture Efficiency	Removal Efficiency
Landfill Gas Collection Flare System	95.0%	98 % (Manufacturer's Guarantee)

I am familiar with the premises and the installation and sources for which this report is submitted. I have personally examined the information in this report, which consists of **51** pages (including attachments), and certify that the information is correct to the best of my knowledge.

Marilyn E. Naumann — Associate Director, Resource Recovery Division — .
Name(Print/Type) — Title — Date

Marilyn Naumann — 240-508-9635 — 301-952-7625 .
Signature — Telephone Number

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Calendar Year: 2021

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: VOCs

Equipment Description/ Registration No	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)				TOSD	Operating Schedule			Emissions Methods
				Tons/yr	Lbs/day	Hrs/ day	Days/ week	Week/ yr	Days/ yr	Lbs/day	Hrs/ day	Start	End	
Landfill 16-1862			S			24	7	52	365		24			
			F	0.83	4.55					4.55				C2,C3
Landfill Gas Flare System 9-0658		Landfill gas	S	0.03	0.41	24	7	52	146	0.41	24			C2,C3
			F											
Total				**0.86**	**4.96**					**4.96**				

S-Stack Emissions F-Fugitive Daily emissions (lbs/day) are lbs/operating day of the source

TOSD-Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method
A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Frezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Calendar Year: 2021

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: NOx

Equipment Description/ Registration No	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)				TOSD	Operating Schedule			Emissions Methods
				Tons/yr	Lbs/day	Hrs/ day	Days/ week	Week/ yr	Days/ yr	Lbs/day	Hrs/ day	Start	End	
Landfill 16-1862			S								24			
			F	n/a	n/a					n/a				C2,C3
Landfill Gas Flare System 9-0658		Landfill gas	S	0.83	11.37	24	7	52	146	11.37	24			C2,C3
			F											
Total				**0.83**	**11.37**					**11.37**				

S-Stack Emissions F-Fugitive Daily emissions (lbs/day) are lbs/operating day of the source

TOSD-Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method
A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Frezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Calendar Year: 2021

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: SOx

Equipment Description/ Registration No	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)				TOSD	Operating Schedule			Emissions Methods
				Tons/yr	Lbs/day	Hrs/ day	Days/ week	Week/ yr	Days/ yr	Lbs/day	Hrs/ day	Start	End	
Landfill 16-1862			S											
			F	n/a	n/a									C2,C3
Landfill Gas Flare System 9-0658		Landfill gas	S	0.19	2.60	24	7	52	146					C2,C3
			F											
Total				**0.19**	**2.60**									

S-Stack Emissions F-Fugitive Daily emissions (lbs/day) are lbs/operating day of the source

TOSD-Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method
A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Frezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Calendar Year: 2021

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: CO

Equipment Description/ Registration No	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)				TOSD	Operating Schedule			Emissions Methods
				Tons/yr	Lbs/day	Hrs/ day	Days/ week	Week/ yr	Days/ yr	Lbs/day	Hrs/ day	Start	End	
Landfill 16-1862			S											
			F	n/a	n/a									C2,C3
Landfill Gas Flare System 9-0658		Landfill gas	S	4.52	61.92	24	7	52	146					C2,C3
			F											
Total				**4.52**	**61.92**									

S-Stack Emissions F-Fugitive Daily emissions (lbs/day) are lbs/operating day of the source

TOSD-Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method
A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Frezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

FORM 3: PM

EMISSIONS CERTIFICATION REPORT
Particulate Matter

Calendar Year: 2021

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: PM

Equipment Description/ Registration No	SCC Number	Fuel		PM – Filterable		PM_{10} – Filterable		$PM_{2.5}$ – Filterable		PM – Condensable		Operation (days/yr)	Emissions Methods
				Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day		
Landfill 16-1862			S									n/a	
			F	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
Landfill Gas Flare System 9-0658		Landfill gas	S	0.05	0.68	0.05	0.68	0.05	0.68	0.16	2.19	146	C2, C3
			F										
Total				**0.05**	**0.68**	**0.05**	**0.68**	**0.05**	**0.68**	**0.16**	**2.19**		

S-Stack Emissions F-Fugitive Daily emissions (lbs/day) are lbs/operating day of the source

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method
A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Frezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering judgment

FORM 4

Calendar Year: 2021

TOXIC AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: Acrylonitrile*

Equipment Description / Registration Number		Actual Emissions Tons/yr	Actual Emissions Lbs/day	Actual Emissions Lbs/hr	Control Device**	% Efficiency
MSW Landfill (16-1862)	Stack					
	Fugitive	0.01	0.07	0.00	O	95.00
LFG Flare System (9-0658)	Stack	0.00	0.00	0.00		
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
Totals		**0.01**	**0.07**	**0.00**		

* Please attach all calculations

* See Attachment 1 for minimum reporting values

** Control Device
S = Scrubber,
B = Baghouse
ESP = Electrostatic Precipitator,
A = After Scrubber,
C = Condenser
AD = Adsorption
O = Other

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4

Calendar Year: 2021

TOXIC AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: Chloroethane *

Equipment Description / Registration Number		Actual Emissions Tons/yr	Lbs/day	Lbs/hr	Control Device**	% Efficiency
MSW Landfill (16-1862)	Stack					
	Fugitive	0.00	0.018	0.001	O	95.00
LFG Flare System (9-0658)	Stack	0.00	0.00	0.000		
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
Totals		**0.00**	**0.02**	**0.001**		

* Please attach all calculations

* See Attachment 1 for minimum reporting values

** Control Device
S = Scrubber,
B = Baghouse
ESP = Electrostatic Precipitator,
A = After Scrubber,
C = Condenser
AD = Adsorption
O = Other

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4

Calendar Year: 2021

TOXIC AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: Hydrochloric acid *

Equipment Description / Registration Number		Actual Emissions Tons/yr	Lbs/day	Lbs/hr	Control Device**	% Efficiency
MSW Landfill (16-1862)	Stack					
	Fugitive	n/a	n/a	n/a	O	95.00
LFG Flare System (9-0658)	Stack	0.1	1.4	0.10		
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
Totals		**0.1**	**1.4**	**0.10**		

* Please attach all calculations

* See Attachment 1 for minimum reporting values

** Control Device
S = Scrubber,
B = Baghouse
ESP = Electrostatic Precipitator,
A = After Scrubber,
C = Condenser
AD = Adsorption
O = Other

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4

Calendar Year: 2021

TOXIC AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: Vinyl Chloride *

Equipment Description / Registration Number		Actual Emissions Tons/yr	Lbs/day	Lbs/hr	Control Device**	% Efficiency
MSW Landfill (16-1862)	Stack					
	Fugitive	0.02	0.1	0.00	O	95.00
LFG Flare System (9-0658)	Stack	0.00	0.0	0.00		
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
	Stack					
	Fugitive					
Totals		**0.02**	**0.1**	**0.00**		

* Please attach all calculations

* See Attachment 1 for minimum reporting values

** Control Device
S = Scrubber,
B = Baghouse
ESP = Electrostatic Precipitator,
A = After Scrubber,
C = Condenser
AD = Adsorption
O = Other

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 5

BILLABLE TOXIC AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Calendar Year: 2021

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862

Chemical Name	CAS Number		Actual Emissions			Estimation Method
			Tons/yr	Lbs/day		
carbon disulfide	75-15-0	S	0	0.0		C2, C3
		F	0	0.0		C2, C3
carbonyl sulfide	463-58-1	S	0	0.0		C2, C3
		F	0	0.0		C2, C3
chlorine	7782-50-5	S	n/a	n/a		
		F	n/a	n/a		C2, C3
cyanide compounds	57-12-5	S				
		F				
hydrochloric acid	7647-01-0	S	0.1	1.4		C2, C3
		F	n/a	n/a		
hydrogen fluoride	7664-39-3	S				
		F				
methyl chloroform	71-55-6	S	0	0		C2, C3
		F	0	0		C2, C3
methylene chloride	75-09-2	S	0	0		C2, C3
		F	0	0		C2, C3
perchloroethylene	127-18-4	S	0	0.0		C2, C3
		F	0	0.0		C2, C3
phosphine	7803-51-2	S				
		F				
titanium tetrachloride	7550-45-0	S				
		F				
TOTALS			**0.1**	**1.4**		

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Frezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measuremen
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering judgment
C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

This form to include only the eleven chemicals identified
n/a - not applicable

PLEASE NOTE: Be sure to attach all data and calculations necessary to support the emissions figures shown above.

Actual Emissions reported to the minimum reporting values specified by the MDE Attachment 1

FORM 6:Greenhouse Gases

Calendar Year: 2021

GREENHOUSE GAS AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: Carbon dioxide (CO_2) *

Equipment Description / Registration Number		Actual Emissions		
		Tons/yr	Lbs/day	Lbs/hr
MSW Landfill (16-1862)	Stack			
	Fugitive	641	3,512	146
LFG Flare System (9-0658)	Stack	2,375	32,534	1,356
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
Total		**3,016**	**36,046**	**1,502**

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

This form must be used to report Greenhouse gas emissions:

- carbon dioxide (CO_2)
- methane (CH_4)
- nitrous oxide (N_2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF6)

* Use a separate form for each pollutant.

* Please attach all calculations.

FORM 6:Greenhouse Gases

Calendar Year: 2021

GREENHOUSE GAS AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: Methane (CH_4) *

Equipment Description / Registration Number		Actual Emissions		
		Tons/yr	Lbs/day	Lbs/hr
MSW Landfill (16-1862)	Stack			
	Fugitive	318	1,742	73
LFG Flare System (9-0658)	Stack	1	14	1
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
Total		**319**	**1,756**	**74**

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

This form must be used to report Greenhouse gas emissions:

- carbon dioxide (CO_2)
- methane (CH_4)
- nitrous oxide (N_2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF6)

* Use a separate form for each pollutant.

* Please attach all calculations.

FORM 6:Greenhouse Gases

Calendar Year: 2021

GREENHOUSE GAS AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: Sandy Hill Creative Disposal Project Facility ID#. 24-033-01862 Pollutant: Nitrous oxide (N_2O) *

Equipment Description / Registration Number		Actual Emissions		
		Tons/yr	Lbs/day	Lbs/hr
MSW Landfill (16-1862)	Stack			
	Fugitive	n/a	n/a	n/a
LFG Flare System (9-0658)	Stack	0.03	0.41	0.02
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
	Stack			
	Fugitive			
Total		**0.03**	**0.41**	**0.02**

Note: n/a means not applicable

This form must be used to report Greenhouse gas emissions:

- carbon dioxide (CO_2)
- methane (CH_4)
- nitrous oxide (N_2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF6)

* Use a separate form for each pollutant.

* Please attach all calculations.

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

ATTACHMENT

(EMISSION CALCULATIONS)

Notes:

1. Normalized landfill gas (LFG) flow is the equivalent LFG flow at 50% methane (CH4) content.
2. LFG, CH4, volatile organic compounds (VOC) and non-methane organic compounds (NMOC) generation rates from the landfill were calculated by US EPA's Landfill Gas Emission Model (LandGEM) 3.02.
3. scf, scfm, yr, hr, cm, CO2, M, MM, min, gal, and tpy are standard cubic feet, standard cubic feet per minute, year, hour, cubic meter, carbon dioxide, thousand, million, minute, gallons, and tons per year, respectively.
4. Tables 1 and 2 provide flare operation and LFG collection data. Table 3 provides projected methane, LFG, NMOC, and VOC generation rates by LandGEM 3.02 model.

The following parameters and values are utilized in the computations of emissions:

1. Site-specific CH4 content	52.33%	[Table 2]
2. Site-specific CO2 content	38.47%	[Table 2]
3. Site-specific LFG flows to flares	46.726	MM scf/yr [Table 2]
4. Site-specific LFG flows to NASA	517.835	MM scf/yr [Table 2]
5. Total site-specific collected LFG	564.561	MM scf/yr [Table 2]
6. GCCS Operation Hours	8,754	Hours [Flow Meter Data]
7. CH4 flow to flares	24.453	MM scf/yr [Calculated]
8. Normalized LFG flow to flares	48.906	MM scf/yr (@ 50% CH4) [Calculated]
9. CH4 generation rate from landfill	6,981,696	cm/yr [Table 3]
10. VOC generation rate from landfill	13.047	tpy [Table 3]
11. Flare system operation	146	days/yr [Table 1]
	2,832.8	hr/yr [Table 1]
12. Landfill operation	365	days/yr
13. NO_X emission factor for flares	0.068	lb/MM Btu [Manufacturer's Guarantee]
14. CO emission factor for flares	0.370	lb/MM Btu [Manufacturer's Guarantee]
15. VOC destruction efficiency of flares	98.0%	[Manufacturer's Guarantee]

Step 1. Calculate average site-specific LFG heat content.

Using the standard heat content of 1,000 Btu/scf for CH4, the site-specific LFG heat content is:

Site-specific LFG heat content = (Site-specific CH4 content) x (heat content of CH4)
= (52.33/100) x (1,000 Btu/scf of CH4)
= **523.3 Btu/scf of LFG**

where,

Site-specific CH4 content	52.33%	
Heat content of CH4	1,000	Btu/scf of CH4

Step 2. Calculate LFG collection system efficiency.

The LFG is drawn to the flare station by a primary blower. The compession/dehydration system processes gas delivered by the primary blower by compressing, filtering, and dewatering gas prior to delivering the LFG off-site via a pipeline to the NASA Goddard Space Center. The remaining LFG is combusted in the Main and Backup (Candlestick) flares.

First, calculate total LFG collected from landfill.

Total site-specific LFG collected = Site-specific LFG flow to flares + site-specific LFG flow to NASA
= (46.726 MM scf/yr) + (517.835 MM scf/yr)
= 564.561 MM scf/yr

where,

Site-specific LFG flow to flares	46.726	MM scf/yr
Site-specific LFG flow to NASA	517.835	MM scf/yr

Next, calculate total CH4 collected from landfill.

Total CH4 collected from landfill = (Total site-specific LFG collected from landfill) x (site-specific CH4 content)
= (564.561 MM scf/yr) x (52.33/100)
= 295.451 MM scf/yr

Finally, calculate average LFG collection efficiency for the landfill.

The CH4 generation was estimated from the US EPA LandGEM model 3.02 and the AP-42 factors, and is given below.

CH4 generation from landfill	6,981,696	cm/yr

So, average LFG collection efficiency = (CH4 collected from landfill) / (CH4 generation from
= (295.451 MM scf/yr) x (1E+06 scf/MM scf) / [(6,981,696 cm/yr) x (35.31 scf/cm)]
= 119.85%

The average LFG collection efficiency computes to 119.85%, which is more than the theoretical maximum value of 100%. According to 40 CFR Part 98, a landfill area with a final cap or geomembrane cover has a collection efficiency of 95%. Because the landfill is capped with a final cover over the entirety of the landfill, the collection efficiency of the landfill is estimated at 95%.

The estimated annual fugitive CH4 volume from the landfill is calculated using equation HH-8 from 40 CFR Part 98 minus oxidation and the second term, which is applicable to flare emissions.

Estimated fugitive CH4 Volume = { [(1 / Collection Efficiency) * Total Collected from Landfill / (Annual Operating Hours of Collection System / Total Hours of the Year)] - Total Collected from the Landfill } * Site-Specific CH4 Content

= { [(1 / 95 %) * 564.561 MMscf/yr / (8754 hours / 8760 hours)] - 564.561 MMscf/yr } * 52.33 %

= **15.755 MM scf/yr CH4 Volume** 0.063899

where,

Collection Efficiency	95.00%	
Total LFG Collected from Landfill	564.561	MM scf/yr
Annual GCCS Operating Hours	8,754	Hours
Total Hours in the Year	8760	Hours
Site-Specific CH4 Content	52.33%	

Below, fugitive VOC was calculations were performed in a similar manner as for fugitive methane.

Generation/Fugitive emissions factor = 0.064 [Fugitive CH4 emission/ CH4 Generation]

Estimated fugitive VOC emissions = 0.064 generation/fugitive emissions factor * 13.047 tpy of VOC generation

= **0.834 tpy**

Step 3. Compute the site-specific NO_X emissions.

NO_X emissions from burning LFG in flares are calculated using the AP-42 emission factor of 0.068 lb/MM Btu.

Annual emissions = [(Site-specific LFG flow to flares) x (site-specific heat content of LFG) x (emission factor)] / (2,000 lb/ton)

= [(46.726 MM scf/yr of LFG) x (523.3 MM Btu/MM scf) x (0.068 lb/MM Btu)] / (2,000 lb/ton)

= **0.83 tpy**

and daily emissions = **11.37 lb/day**

where,

Site-specific LFG flow to flares	46.726	MM scf/yr
Emission factor for NO_X	0.068	lb/MM Btu
Site-specific heat content of LFG	523.3	Btu/scf
Flare system operation	146	days/yr

Step 4. Compute the site-specific CO emissions.

CO emissions from burning LFG in flares are calculated using the AP-42 emission factor of 0.370 lb/MM Btu.

Annual emissions = [(Site-specific LFG flow to flares) x (site-specific heat content of LFG) x (emission factor)] / (2,000 lb/ton)

= [(46.726 MM scf) x (523.3 MM Btu/MM scf) x (0.370 lb/MM Btu)] / (2,000 lb/ton)

= **4.52 tpy**

and daily emissions = **61.92 lb/day**

where,

Site-specific LFG flow to flares	46.726	MM scf/yr
Emission factor for CO	0.370	lb/MM Btu
Site-specific heat content of LFG	523.3	Btu/scf
Flare system operation	146	days/yr

Step 5. Calculate site-specific PM emissions.

The landfill was closed in 2000, and the final cap was completed in approximately 2003. No filling or construction activities occurred during the reporting year. Therefore, landfill filling and construction related particulate matter (PM) emissions at the landfill were not calculated.

Step 5a. Calculate site-specific PM emissions from flares.

The PM emissions from flares are calculated below.

Flares' operation result in condensable and filterable PM emissions. Further, PM emissions from burning LFG in flares are less than 2.5 micron (AP-42). So, emission factors for PM_{total}, PM_{10}, and $PM_{2.5}$ are the same, resulting in the similar calculations for each of the PM categories. Henceforth PM for flares would mean PM_{total}, PM_{10}, or $PM_{2.5}$.

The AP-42 PM emission factor is 0.017 lb/MM Btu, and according to AP-42 Table 1.4-2 Natural Gas Combustion in Boilers condensable PM is 75% and filterable PM is 25% . So, the condensable PM emission factor calculates to 0.013 lb/MM Btu and filterable to 0.004 lb/MM Btu.

Condensable PM emissions = [(Site-specific LFG flow to flare) x (site-specific heat content of LFG) x (condensable PM emission factor)] / (2,000 lb/ton)

= [(46.726 MM scf/yr of LFG) x (523.3 MM Btu/MM scf) x (0.013 lb/MM Btu)] / (2,000 lb/ton)

= **0.16 tpy**

= **2.19 lb/day**

where,

Site-specific LFG flow to flares	46.726	MM scf/yr
Site-specific heat content of LFG	523.3	Btu/scf
Condensable PM emission factor	0.013	lb/MM scf of CH4
Flare system operation	146	days/yr

Similarly filterable PM emissions were calculated and these are reported below.

Filterable PM emissions = **0.05 tpy**

= **0.68 lb/day**

Total PM emissions are the sum total of condensable and filterable PM emissions, as calculated below.

Total PM emissions = (Condensable PM emissions) + (Filterable PM emissions)
= (2.19 lb/day) + (0.68 lb/day)
= **2.87 lb/day**
OR = (0.16 tpy) + (0.05 tpy)
= **0.21 tpy**

Step 6. Calculate site-specific SO_X emissions.

The AP-42 factors for SO_X emissions from burning LFG assume that total reduced sulfur (TRS) is oxidized to SO_2. Each lb of TRS results in two pounds of SO_2. Using the AP-42 default value of 46.9 ppmv TRS concentration in LFG, the emission factor for SOX is first calculated using equations 3 and 4 (AP-42, Section 2.4).

SO_X emission factor = (1 MM scf of LFG) x (46.9 ppmv) / (35.31 cf/cm) x (32 g/gmol) / [(8.205E-05 cm-atm/gmol/K) x (298 K) x (1,000 g/kg)] x (2.2 lb/kg) x (2 lb SO2/lb TRS)
= **7.65 lb/MM scf of LFG**

where,

TRS concentration in LFG	46.9	ppmv [AP-42]
One cm =	35.31	cf
1,000 g =	2.2	lb

32 g/gmol is the molecular weight of sulfur
8.205E-05 is universal gas constant (cm-atm/gmol/K)
298 K is the standard temperature of LFG (25 ^oC)

Annual emissions = [(Normalized LFG flow to flares) x (emission factor)] / (2,000 lb/ton)
= [(48.906 MM scf/yr of LFG) x (7.650 lb/MM scf LFG)] / (2,000 lb/ton)
= **0.19 tpy**
and daily emissions = **2.60 lb/day**

where,

Normalized LFG flow to flares	48.906	MM scf/yr
SO_X emission factor	7.65	lb/MM scf LFG
Flare system operation	146	days/yr

Step 7. Calculate site-specific VOC emissions and fugitives.

Landfill fugitive and flare's stack VOC-emissions are calculated using AP-42 emission factors. Attached Tables 4 and 5 give the fugitive and stack emissions, respectively.

First, calculate VOC fugitive from landfill.

Annual fugitives = **0.83 tpy**

daily fugitives = **4.55 lb/day**
and hourly fugitives = **0.19 lb/hr**

where,

Fugitive VOC emissions	0.834	tpy (see page 3)
Landfill gas operation	365	days/yr

Finally, calculate VOC emissions from landfill flares.

VOC emissions from burning LFG in flares are calculated using the AP-42 default value of VOC concentration and the manufacturer's guaranteed 98.0% VOC destruction efficiency. First, calculate VOC inflow to flares.

VOC inflow to flare = (Normalized LFG flow to flare) x (VOC concentration in LFG)
= (48.906 MM scf/yr) x (235.0 ppmv) / (35.31 scf/cm) x (86.18 g/gmol) / [(8.205E-05 cm-atm/gmol/K) x (1000 g/kg) x (298 K)] x (2.2 lb/kg)
= **2,523.9 lb/yr**

where,

Normalized LFG flow to flares	48.906	MM scf/yr
VOC concentration in LFG	235.0	ppmv [AP-42 Table 2.4-2]
Molecular weight of VOC as Hexane	86.18	g/gmol [AP-42 Table 2.4-2]

8.205E-05 is universal gas constant (cm-atm/gmol/K)

298 K is the standard temperature of LFG (25 ^{o}C)

Then, using equation 5 (AP-42, Section 2.4) VOC emissions are calculated as below.

Annual emissions = [(VOC inflow to flares) x (1 - VOC destruction efficiency of flare)] / (2,000 lb/ton)
= [(2,523.9 lb/yr) x (1 - 98.0/100)] / (2,000 lb/ton)
= **0.03 tpy**
daily emissions = **0.41 lb/day**
hourly emissions = **0.02 lb/hr**

where,

VOC inflow to flares	2,523.9	lb/yr
VOC destruction efficiency of flares	98.0%	
Flare system operation	146	days/yr
	2,832.8	hr/yr

Step 8. Calculate TAP and HAP fugitives and emissions.

The landfill's fugitive toxic air pollutants (TAP)/hazardous air pollutants (HAP) and flares' stack TAP and HAP emissions are estimated using the AP-42 factors. Attached Tables 4 and 5 give landfill's fugitive and flares' stack emissions, respectively. Tables 6 through 8 summarize these TAP/HAP emissions and Table 9 gives billable TAP emissions.

The following is a sample calculation for fugitive and stack toluene-emissions. The fugitive and stack emissions calculations of other TAP/HAP were completed in a similar manner.

First, calculate fugitive toluene from landfill.

Amount of fugitive toluene emitted by the landfill is calculated using AP-42, Section 2.4.

Fugitive toluene emitted by landfill = (Fugitive CH4 emitted by landfill) x (2 parts of LFG/part of CH4) x (toluene concentration in LFG)

= (15.755 MMscf/yr x (1E+06 * 35.3 cf/cm) x (2 parts of LFG/part of CH4) x (39.3 ppmv) / (1E+06 ppm) x (92.13 g/gmol) / [(8.205E-05 cm-atm/gmol/K) x (1000 g/kg) x (298 K)] x (2.2 lb/kg)

= **290.8 lb/yr**

where,

Fugitive CH4 Volume from Landfill	15.755	MMscf/yr
Toluene concentration in LFG	39.3	ppmv [AP-42 Table 2.4-2]
Molecular weight of toluene	92.13	g/gmol [AP-42 Table 2.4-2]

8.205E-05 is universal gas constant (cm-atm/gmol/K)

298 K is the standard temperature of LFG (25 ^{o}C)

Fugitive toluene is calculated as shown below.

Annual fugitive = [(Toluene generation from landfill) x (1 - average LFG collection efficiency)] / (2,000 lb/ton)

= [(290.8 lb/yr) x (1 - 95.00/100)] / (2,000 lb/ton)

= **0 tpy**

daily emissions = **0 lb/day**

and hourly emissions = **0 lb/hr**

where,

Toluene generation from landfill	290.8	lb/yr
Average LFG collection efficiency	95.00%	
Landfill gas operation	365	days/yr

Finally, calculate toluene emissions from landfill flares.

Toluene emissions from burning LFG in flares are calculated using the AP-42 default value of toluene concentration and toluene destruction efficiency by first calculating toluene inflow to flares.

Toluene inflow to flares = (Normalized LFG flow to flares) x (Toluene concentration in LFG) x (Toluene molecular mass) / [(universal gas constant) x (gas temperature)]

= (48.906 MM scf/yr) x (39.3 ppmv) / (35.31 scf/cm) x (92.13 g/gmol) / [(8.205E-05 cm-atm/gmol/K) x (1,000 g/kg) x (298 K)] x (2.2 lb/kg)

= **451.2 lb/yr**

where,

Normalized LFG flow to flares	48.906	MM scf/yr
Toluene concentration in LFG	39.3	ppmv [AP-42 Table 2.4-2]
Molecular weight of toluene	92.13	g/gmol [AP-42 Table 2.4-2]

8.205E-05 is universal gas constant (cm-atm/gmol/K)

298 K is the standard temperature of LFG (25 ^{o}C)
Then, from equation 5 (AP-42, Section 2.4) toluene emissions are calculated as below.

Annual flare stack emissions = [(Toluene inflow to flares) x (1 - toluene destruction efficiency of flares)]
= (451.2 lb/yr) x (1 - 98.00/100)
= 9.02 lb/yr
= **0 tpy**
daily emissions = **0 lb/day**
and hourly emissions = **0 lb/hr**

where,

Toluene inflow to flares	451.2	lb/yr
Flare's toluene destruction efficiency	98.0%	[AP-42 Table 2.4-3]
Flare system operation	146	days/yr
	2,832.8	hr/yr

Step 9. Calculate greenhouse gas fugitives and emissions.

Step 9a. Carbon dioxide (CO2)

Burning of LFG produces CO2. Further, LFG also contains CO2. So, landfill gives fugitive CO2 and flares cause stack CO2 emissions. Site-specific LFG composition is used for the estimation of fugitive and stack CO2 emissions. Calculations for CO2 fugitive and stack emissions are given below.

First, calculate fugitive CO2 from the landfill

Fugitive CO2 volume = (Site-specific LFG generation) x (site-specific CO2 content of LFG) x (1-average LFG collection efficiency)
= (594.275 MM scf/yr) x (38.47%) x (1 - 95.00/100)
= 11.431 MM scf/yr

where,

Total site-specific LFG collected	564.561	MM scf/yr
Site-specific CO2 content of LFG	38.47%	
Average LFG collection efficiency	95.00%	
Landfill gas operation	365	days/yr
Site-specific LFG generation	594.275	MM scf/yr [(564.561 MM scf/yr) / (95.00 %)]

Fugitive CO2 mass = (Fugitive CO2 volume) x (CO2 molecular mass) / [(universal gas constant) x (gas temperature)]

= (11.431 MM scf/yr) x (1E+06 scf/MM scf) / (35.31 cf/cm) x (44.01 g/mol) / [(8.205E-05 cm-atm/gmol/K) x (298 K) x (1,000 g/kg)] x (2.2 lb/kg)

= 1,281,934.00 lb/yr

= **641.00 tpy**

daily emissions = **3,512 lb/day**

hourly emissions = **146.00 lb/hr**

where,

Fugitive CO2 volume	11.431	MM scf/yr
CO2 molecular mass	44.01	g/gmole
8.205E-05 is universal gas constant (cm-atm/gmol/K)		
298 K is the standard temperature of LFG (25 ^{o}C)		
35.31 = cf in one cm [1 cm = 35.31 cf]		

Finally, calculate CO2 emissions from the LFG flares

The CO2 emissions from burning LFG in flares are calculated using site-specific CH4 and CO2 contents of LFG, the AP-42 CH4 destruction efficiency, and the fact that 1 mole of CH4 produces 1 mole of CO2.

CO2 emissions volume = (Site-specific LFG flow to flares) x [(site-specific CO2 content of LFG) + (site-specific CH4 content of LFG) x (CH4 destruction efficiency)]

= (46.726 MM scf/yr) x [(38.47%) + (52.33%) x (99.7%)]

= 42.36 MM scf/yr

where,

Site-specific LFG flow to flares	46.726	MM scf/yr
Site-specific CO2 content of LFG	38.47%	
Site-specific CH4 content of LFG	52.33%	
CH4 destruction efficiency	99.7%	[AP-42]

Mass of Flare Stack CO2 emissions = (CO2 emissions volume) x (CO2 molecular mass) / [(universal gas constant) x (gas temperature)]

= (42.355 MM scf/yr) x (1E+06 scf/MM scf) / (35.31 cf/cm) x (44.01 g/mol) / [(8.205E-05 cm-atm/gmol/K) x (298 K) x (1,000 g/kg)] x (2.2 lb/kg)

= 4,749,919.00 lb/yr

= **2,375.00 tpy**

daily emissions = **32,534 lb/day**

hourly emissions = **1,356 lb/hr**

where,

CO2 emissions volume	42.36	MM scf/yr
CO2 molecular mass	44.01	g/gmole
8.205E-05 is universal gas constant (cm-atm/gmol/K)		
298 K is the standard temperature of LFG (25 ^{o}C)		
35.31 = cf in one cm [1 cm = 35.31 cf]		
Flare system operation	146	days/yr
	2,832.8	hr/yr

Step 9b. Methane (CH4)

The LFG contains CH4. So, the landfill emits fugitive CH4 and the flare stack emits uncombusted CH4. Site-specific LFG composition is used for the estimation of fugitive CH4 and AP-42 factors are used for the estimation of CH4 stack emissions. Calculations for CH4 fugitive and stack emissions are given below.

First, calculate fugitive CH4 from the landfill

Fugitive CH4 volume = (Site-specific LFG generation) x (site-specific CH4 content of LFG) x (1-average LFG collection efficiency)

= (594.275 MM scf/yr) x (52.33%) x (1 - 95.00/100)

= 15.550 MM scf/yr

where,

Site-specific LFG generation	594.275	MM scf/yr [Calculated earlier, Step 9a]
Site-specific CH4 content of LFG	52.33%	
Average LFG collection efficiency	95.00%	
Landfill gas operation	365	days/yr

Fugitive CH4 mass = (Fugitive CH4 volume) x (CH4 molecular mass) / [(universal gas constant) x (gas temperature)]

= (15.550 MM scf/yr) x (1E+06 scf/MM scf) / (35.31 cf/cm) x (16.044 g/mol) / [(8.205E-05 cm-atm/gmol/K) x (298 K) x (1,000 g/kg)] x (2.2 lb/kg)

= 635,731.00 lb/yr

= **318.00 tpy**

daily emissions = **1,742 lb/day**

hourly emissions = **73.00 lb/hr**

where,

Fugitive CH4 volume	15.550	MM scf/yr
CH4 molecular mass	16.044	g/gmole
8.205E-05 is universal gas constant (cm-atm/gmol/K)		
298 K is the standard temperature of LFG (25 ^{o}C)		
35.31 = cf in one cm [1 cm = 35.31 cf]		

Finally, calculate CH4 emissions from the LFG flares

The CH4 emissions from burning LFG in flares are calculated using site-specific CH4 content of LFG and the AP-42 CH4 destruction efficiency of 99.7% (assumed equal to destruction efficiency of non-halogen species).

CH4 emissions volume = (Site-specific LFG flow to flares) x (site-specific CH4 content of LFG) x (1 - CH4 destruction efficiency)

= (46.726 MM scf/yr) x (52.33%) x (1 - 99.7 %)

= 0.073 MM scf/yr

where,

Site-specific LFG flow to flares	46.726	MM scf/yr
CH4 destruction efficiency	99.7%	[AP-42]
Site-specific CH4 content of LFG	52.33%	

Mass of Flare Stack CH4 emissions = (CH4 emissions volume) x (CH4 molecular mass) / [(universal gas constant) x (gas temperature)]

= (0.073 MM scf/yr) x (1E+06 scf/MM scf) / (35.31 cf/cm) x (16.044 g/mol) / [(8.205E-05 cm-atm/gmol-K) x (298 K) x (1,000 g/kg)] x (2.2 lb/kg)

= 2,984.46 lb/yr

= **1.00 tpy**

daily emissions = **14 lb/day**

hourly emissions = **1.00 lb/hr**

where,

CH4 emissions volume	0.073	MM scf
CH4 molecular mass	16.044	g/gmole
8.205E-05 is universal gas constant (cm-atm/gmol/K)		
298 K is the standard temperature of LFG (25 ^{o}C)		
35.31 = cf in one cm [1 cm = 35.31 cf]		
Flare system operation	146	days/yr
	2,832.8	hr/yr

Step 9c. Nitrous oxide (N_2O)

Burning of LFG produces N_2O. So, flares produce stack N_2O emissions. The AP-42 factors are used for the estimation of N_2O stack emissions. Calculations for N_2O stack emissions are given below.

The AP-42 factor for LFG combustion are not available. The AP-42 factor for natural gas burnt in boilers was used to calculate N_2O emissions. The AP-42 factor for N_2O emissions (Table 1.4-2) from natural gas combustion is $2.2x10^{-3}$ lb/MM Btu (assuming 1,000 Btu/scf heat content of natural gas).

N_2O emissions = (Site-specific LFG flow to flares) x (site-specific heat content of LFG) x (N_2O emission factor)

= (46.726 MM scf/yr) x (523.3Btu/scf) x (0.0022lb/MM Btu)

= 53.80 lb/yr
= **0.03 tpy**
daily emissions = **0.41 lb/day**
hourly emissions = **0.02 lb/hr**

where,

Site-specific LFG flow to flares	46.726	MM scf/yr
N_2O emission factor	0.0022	lb/MM Btu
Site-specific heat content of LFG	523.3	Btu/scf
Flare system operation	146	days/yr
	2,832.8	hr/yr

Step 9d. Calculate hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur

The HFCs, PFCs, and SF_6 emissions from LFG burnt in flares are not quantified due to the absence of AP-42 factors.

Attachments: Tables 1 through 9.

Table 1. Operational Schedule of Flares

Month	Main (Candlestick) Flare		Backup (Candlestick) Flare		Total Flare Operation	
	Hours	Days	Hours	days	Hours	days
January	0.0	0	0.0	0	0.0	0
February	403.0	24	0.0	0	403.0	24
March	140.7	11	0.0	0	140.7	11
April	33.0	5	0.0	0	33.0	5
May	4.7	1	0.0	0	4.7	1
June	38.1	2	0.0	0	38.1	2
July	520.8	26	0.0	0	520.8	26
August	394.0	19	0.0	0	394.0	19
September	675.8	30	0.0	0	675.8	30
October	622.8	28	0.0	0	622.8	28
November	0.0	0	0.0	0	0.0	0
December	0.0	0	0.0	0	0.0	0
Annual total	2,832.8	146	0.0	0	2,832.8	146

Table 2. Landfill Gas Usage

Month	LFG to Main (Candlestick) Flare (MM scf)	LFG to Backup (Candlestick) Flare (MM scf)	LFG flows to flares (MM scf)	LFG sent to NASA plant (MM scf)	Total LFG collected (MM scf)	Methane content (%)	Carbon dioxide content (%)
January	0.000	0.000	0.000	49.286	49.286	50.95%	37.74%
February	5.900	0.000	5.900	35.012	40.911	52.39%	37.80%
March	2.094	0.000	2.094	46.002	48.096	53.86%	38.36%
April	0.790	0.000	0.790	46.433	47.223	52.59%	38.69%
May	0.226	0.000	0.226	49.872	50.097	49.53%	37.69%
June	0.815	0.000	0.815	43.359	44.174	49.53%	38.56%
July	5.277	0.000	5.277	41.763	47.041	52.72%	38.70%
August	11.797	0.000	11.797	35.633	47.430	54.06%	39.23%
September	10.567	0.000	10.567	38.128	48.695	53.31%	39.09%
October	9.259	0.000	9.259	40.241	49.500	53.00%	39.54%
November	0.000	0.000	0.000	43.394	43.394	54.25%	38.54%
December	0.000	0.000	0.000	48.712	48.712	51.81%	37.63%
Annual total	46.726	0.000	46.726	517.835	564.561		
Annual average*						52.33%	38.47%

* Annual average methane and carbon dioxide contents are weighted average with total landfill gas (LFG) as weights.

TABLE 3. Projected LFG, NMOC, and VOC Generation Rates by LandGEM ver 3.02

Year	Disposal Rate (tpy)	Refuse In-Place (tons)	Methane Generation rate (cm/yr)	LFG Generation rate (scfm)	NMOC Generation Rate (tpy)	VOC Generation Rate (tpy)
1978	286,577	0	0	0	0.000	0.000
1979	286,577	286,577	1,023,576	138	4.843	1.913
1980	286,577	573,154	2,007,017	270	9.496	3.751
1981	286,577	859,731	2,951,896	397	13.967	5.516
1982	286,577	1,146,308	3,859,726	519	18.262	7.213
1983	286,577	1,432,885	4,731,960	636	22.389	8.843
1984	286,577	1,719,462	5,569,993	748	26.354	10.409
1985	286,577	2,006,039	6,375,166	857	30.164	11.914
1986	286,577	2,292,616	7,148,768	961	33.824	13.359
1987	286,577	2,579,193	7,892,037	1,061	37.341	14.748
1988	286,577	2,865,770	8,606,161	1,156	40.720	16.083
1989	286,577	3,152,347	9,292,285	1,249	43.966	17.365
1990	286,577	3,438,924	9,951,505	1,337	47.086	18.597
1991	286,577	3,725,501	10,584,877	1,422	50.082	19.780
1992	286,577	4,012,078	11,193,413	1,504	52.962	20.918
1993	286,577	4,298,655	11,778,089	1,583	55.728	22.010
1994	286,577	4,585,232	12,339,839	1,658	58.386	23.060
1995	202,455	4,871,809	12,879,563	1,731	60.940	24.069
1996	202,690	5,074,264	13,097,663	1,760	61.972	24.476
1997	387,430	5,276,954	13,308,050	1,788	62.967	24.869
1998	387,430	5,664,384	14,170,030	1,904	67.045	26.480
1999	332,309	6,051,814	14,998,210	2,015	70.964	28.028
2000	154,709	6,384,123	15,597,040	2,096	73.797	29.147
2001	0	6,538,832	15,538,050	2,088	73.518	29.037
2002	0	6,538,832	14,928,795	2,006	70.636	27.898
2003	0	6,538,832	14,343,428	1,927	67.866	26.804
2004	0	6,538,832	13,781,014	1,852	65.205	25.753
2005	0	6,538,832	13,240,653	1,779	62.648	24.743
2006	0	6,538,832	12,721,480	1,710	60.192	23.773
2007	0	6,538,832	12,222,663	1,642	57.831	22.841
2008	0	6,538,832	11,743,406	1,578	55.564	21.945
2009	0	6,538,832	11,282,940	1,516	53.385	21.085
2010	0	6,538,832	10,840,530	1,457	51.292	20.258
2011	0	6,538,832	10,415,467	1,400	49.281	19.464
2012	0	6,538,832	10,007,070	1,345	47.348	18.701
2013	0	6,538,832	9,614,688	1,292	45.492	17.967
2014	0	6,538,832	9,237,690	1,241	43.708	17.263
2015	0	6,538,832	8,875,475	1,193	41.994	16.586
2016	0	6,538,832	8,527,463	1,146	40.348	15.936
2017	0	6,538,832	8,193,096	1,101	38.766	15.311
2018	0	6,538,832	7,871,840	1,058	37.246	14.710
2019	0	6,538,832	7,563,181	1,016	35.785	14.134
2020	0	6,538,832	7,266,625	976	34.382	13.579
2021	0	6,538,832	6,981,696	938	33.034	13.047

Assumed NMOC concentration of LFG =	595	ppmv [AP-42]
Assumed VOC concentration of LFG =	39%	of NMOC or 235 ppmv [AP-42]
Assumed methane content of LFG =	50.0%	
Assume decay rate constant (k) =	0.04	yr^{-1} [AP-42]
Assumed ultimate methane recovery rate (L_0) =	3,203.7	scf/ton [AP-42]
METRIC EQUIVALENT:	100	cm/Mg [AP-42]

Table 4. Fugitive TAP and HAP Emissions from the Landfill

LFG Collection Efficiency	=	95.00%	[Page 2, Emission Calculations]
Estimated Landfill Fugitive Methane	=	15.755	MMscf/yr [Emission Calculations]
Fugitive VOC from landfill	=	0.83	tpy [Emission Calculations]
Days in Year	=	365	Days

Pollutant	MW (g/gmol)	Concentration (ppmv)	Uncontrolled Emission Rate (lb/yr)	Emission Rate		
				(tpy)	lb/day	(lb/hr)
1,1,1-Trichloroethane (methyl chloroform)	133.41	0.48	5.1	0	0	0
1,1,2,2-Tetrachloroethane	167.85	1.11	15.0	0.0	0.0	0.0
1,1-Dichloroethane (ethylidene dichloride)	98.97	2.35	18.7	0	0	0
1,1-Dichloroethene (vinylidene chloride)	96.94	0.2	1.6	0	0.0	0.0
1,2-Dichloroethane (ethylene dichloride)	98.96	0.41	3.3	0.00	0.0	0.0
1,2-Dichloropropane (propylene dichloride)	112.99	0.18	1.6	0	0	0
Acrylonitrile	53.06	6.33	27.0	0.01	0.07	0.003
Benzene	78.11	1.91	12.0	0.0	0.03	0.00
Carbon disulfide	76.13	0.58	3.5	0	0.0	0.0
Carbon tetrachloride	153.84	0.004	0.0	0.00	0.0	0.0
Carbonyl sulfide	60.07	0.49	2.4	0	0.0	0.0
Chlorobenzene	112.56	0.25	2.3	0	0.0	0.0
Chloroethane (ethyl chloride)	64.52	1.25	6.5	0.00	0.018	0.001
Chloroform	119.39	0.03	0.3	0.0	0.00	0.00
Dichloromethane (methylene chloride)	84.94	14.3	97.6	0	0	0
Ethylbenzene	106.16	4.61	39.3	0	0	0
Ethylene dibromide	187.88	0.001	0.0	0.000	0	0
n-Hexane	86.18	6.57	45.5	0	0	0
Hydrochloric acid	36.46	42.0	n/a	n/a	n/a	n/a
Mercury and compunds	200.61	0.000292	0.0	0.000	0.0000	0.000

Pollutant	MW (g/gmol)	Concentration (ppmv)	Uncontrolled Emission Rate (lb/yr)	Emission Rate		
				(tpy)	lb/day	(lb/hr)
Methyl ethyl ketone	72.11	7.09	41.1	0	0	0
Methyl isobutyl ketone	100.16	1.87	15.0	0	0	0
Perchloroethylene (tetrachloroethylene)	165.83	3.73	49.7	0	0	0
Toluene	92.13	39.3	290.8	0	1	0
Trichloroethylene (trichloroethene)	131.4	2.82	29.8	0	0	0
Vinyl chloride	62.5	7.34	36.8	0.02	0.1	0.004
Xylenes	106.16	12.1	103.2	0	0	0
Total TAP & HAP				**0.03**	**1.22**	**0.008**

Notes: 1. n/a means not applicable.

2. The "Total TAP & HAP" may not match the sum of all TAP & HAP emission rates due to the display of plant level thresholds.

Table 5. TAP and HAP Emissions from Flares

Normalized LFG flow to flares = 48.906 MM scf/yr [Page 1 of calculations]
Flares operation: days/yr 146 [Table 1]
hrs/yr 2,832.8 [Table 1]

Pollutant	Molecular Weight (g/gmol)	Conentration (ppmv)	Pollutant inflow (lb/yr)	Destruction Efficiency	Emissions rate		
					(tpy)	(lb/day)	(lb/hr)
1,1,1-Trichloroethane (methyl chloroform)	133.41	0.48	8.0	98.0%	0	0	0
1,1,2,2-Tetrachloroethane	167.85	1.11	23.2	98.0%	0.0	0.0	0.0
1,1-Dichloroethane (ethylidene dichloride)	98.97	2.35	29.0	98.0%	0	0	0
1,1-Dichloroethene (vinylidene chloride)	96.94	0.2	2.4	98.0%	0	0.0	0.0
1,2-Dichloroethane (ethylene dichloride)	98.96	0.41	5.1	98.0%	0.00	0.0	0.0
1,2-Dichloropropane (propylene dichloride)	112.99	0.18	2.5	98.0%	0	0	0
Acrylonitrile	53.06	6.33	41.9	99.7%	0.00	0.00	0.00
Benzene	78.11	1.91	18.6	99.7%	0.0	0.00	0.00
Carbon disulfide	76.13	0.58	5.5	99.7%	0	0.0	0.0
Carbon tetrachloride	153.84	0.004	0.1	98.0%	0.00	0.0	0.0
Carbonyl sulfide	60.07	0.49	3.7	99.7%	0	0.0	0.0
Chlorobenzene	112.56	0.25	3.5	98.0%	0	0.0	0.0
Chloroethane (ethyl chloride)	64.52	1.25	10.1	98.0%	0.00	0.000	0.000
Chloroform	119.39	0.03	0.4	98.0%	0.0	0.00	0.00
Dichloromethane (methylene chloride)	147	0.21	3.8	98.0%	0	0	0
Ethylbenzene	106.16	4.61	61.0	99.7%	0	0	0
Ethylene dibromide	187.88	0.001	0.0	98.0%	0.000	0	0
n-Hexane	86.18	6.57	70.6	99.7%	0	0	0
Hydrochloric acid	36.46	42.0	190.8	0.0%	0.1	1.4	0.1
Mercury and compunds	200.61	0.000292	0.01	0.0%	0.000	0.0000	0.0000

Pollutant	Molecular Weight (g/gmol)	Conentration (ppmv)	Pollutant inflow (lb/yr)	Destruction Efficiency	Emissions rate		
					(tpy)	(lb/day)	(lb/hr)
Methyl ethyl ketone	72.11	7.09	63.7	99.7%	0	0	0
Methyl isobutyl ketone	100.16	1.87	23.3	99.7%	0	0	0
Perchloroethylene (tetrachloroethylene)	165.83	3.73	77.1	98.0%	0	0.0	0.0
Toluene	92.13	39.3	451.2	99.7%	0	0	0
Trichloroethylene (trichloroethene)	131.4	2.82	46.2	98.0%	0	0	0
Vinyl chloride	62.5	7.34	57.2	98.0%	0.00	0.0	0.0
Xylenes	106.16	12.1	160.1	99.7%	0	0	0
Total TAP & HAP					**0.100**	**1.3699**	**0.1000**

Notes: 1. n/a means not applicable.

2. The "Total TAP & HAP" may not match the sum of all TAP & HAP emission rates due to the display of plant level thresholds.

Table 6. Summary of Annual TAP and HAP Emissions

Pollutant	Landfill (tpy)	Flares (tpy)	Facility Total[1]	
			Emissions (tpy)	Below PL[2] thresholds?
1,1,1-Trichloroethane (methyl chloroform)	0	0	0	Yes
1,1,2,2-Tetrachloroethane	0.0	0.0	0.0	Yes
1,1-Dichloroethane (ethylidene dichloride)	0	0	0	Yes
1,1-Dichloroethene (vinylidene chloride)	0	0	0	Yes
1,2-Dichloroethane (ethylene dichloride)	0.00	0.00	0.00	Yes
1,2-Dichloropropane (propylene dichloride)	0	0	0	Yes
Acrylonitrile	0.01	0.00	0.01	No
Benzene	0.0	0.0	0.0	Yes
Carbon disulfide	0	0	0	Yes
Carbon tetrachloride	0.00	0.00	0.00	Yes
Carbonyl sulfide	0	0	0	Yes
Chlorobenzene	0	0	0	Yes
Chloroethane (ethyl chloride)	0.00	0.00	0.00	Yes
Chloroform	0.00	0.00	0.0	Yes
Dichloromethane (methylene chloride)	0	0	0	Yes
Ethylbenzene	0	0	0	Yes
Ethylene dibromide	0.000	0.000	0.000	Yes
n-Hexane	0.00	0.00	0	Yes
Hydrochloric acid	n/a	0.1	0.1	No
Mercury and compunds	0.000	0.000	0.000	Yes
Methyl ethyl ketone	0	0	0	Yes
Methyl isobutyl ketone	0	0	0	Yes
Perchloroethylene (tetrachloroethylene)	0	0	0	Yes

Pollutant	Landfill (tpy)	Flares (tpy)	Facility Total[1]	
			Emissions (tpy)	Below PL[2] thresholds?
Toluene	0	0	0	Yes
Trichloroethylene (trichloroethene)	0	0	0	Yes
Vinyl chloride	0.02	0.00	0.02	No
Xylenes	0	0	0	Yes
Total TAP & HAP	**0.03**	**0.1**	**0.13**	**n/a**

Notes: n/a means not applicable

[1] The "Total TAP & HAP" may not match the sum of all TAP & HAP emission rates due to the display of plant level thresholds.

[2] PL means Plant Level

Table 7. Summary of Daily TAP and HAP Emissions

Pollutant	Landfill (lb/day)	Flares (lb/day)	Facility Total (lb/day)
1,1,1-Trichloroethane (methyl chloroform)	0	0	0
1,1,2,2-Tetrachloroethane	0.0	0.0	0.0
1,1-Dichloroethane (ethylidene dichloride)	0	0	0
1,1-Dichloroethene (vinylidene chloride)	0.0	0.0	0.0
1,2-Dichloroethane (ethylene dichloride)	0.0	0.0	0.0
1,2-Dichloropropane (propylene dichloride)	0	0	0
Acrylonitrile	0.07	0.00	0.07
Benzene	0.03	0.00	0.03
Carbon disulfide	0.0	0.0	0.0
Carbon tetrachloride	0.0	0.0	0.0
Carbonyl sulfide	0.0	0.0	0.0
Chlorobenzene	0.0	0.0	0.0
Chloroethane (ethyl chloride)	0.018	0.00	0.02
Chloroform	0.0	0.0	0.0
Dichloromethane (methylene chloride)	0	0	0
Ethylbenzene	0	0	0
Ethylene dibromide	0	0	0
n-Hexane	0	0	0
Hydrochloric acid	n/a	1.4	1.4
Mercury and compunds	0.000	0.000	0.000
Methyl ethyl ketone	0	0	0
Methyl isobutyl ketone	0	0	0
Perchloroethylene (tetrachloroethylene)	0.0	0.0	0.0
Toluene	1	0	1
Trichloroethylene (trichloroethene)	0	0	0
Vinyl chloride	0.1	0.0	0.1
Xylenes	0	0	0
Total TAP & HAP	**1.22**	**1.37**	**2.59**

Note: n/a means not applicable

Table 8. Summary of Hourly TAP and HAP Emissions

Pollutant	Landfill (lb/hr)	Flares (lb/hr)	Facility Total[1]	
			Emissions (lb/hr)	Below PL[2] thresholds?
1,1,1-Trichloroethane (methyl chloroform)	0	0	0	Yes
1,1,2,2-Tetrachloroethane	0.0	0.0	0.0	Yes
1,1-Dichloroethane (ethylidene dichloride)	0	0	0	Yes
1,1-Dichloroethene (vinylidene chloride)	0.0	0.0	0.0	Yes
1,2-Dichloroethane (ethylene dichloride)	0.0	0.0	0.0	Yes
1,2-Dichloropropane (propylene dichloride)	0	0	0	Yes
Acrylonitrile	0.00	0.00	0.00	Yes
Benzene	0.000	0.00	0.00	Yes
Carbon disulfide	0.0	0.0	0.0	Yes
Carbon tetrachloride	0.0	0.0	0.0	Yes
Carbonyl sulfide	0.0	0.0	0.0	Yes
Chlorine	n/a	n/a	0.00	Yes
Chlorobenzene	0.0	0.0	0.0	Yes
Chloroethane (ethyl chloride)	0.001	0.000	0.001	No
Chloroform	0.0	0.0	0.0	Yes
Dichloromethane (methylene chloride)	0.0	0.0	0	Yes
Ethylbenzene	0	0	0	Yes
Ethylene dibromide	0	0	0	Yes
n-Hexane	0.000	0.000	0	Yes
Hydrochloric acid	n/a	0.10	0.10	No
Mercury and compunds	0.0000	0.0000	0.0000	Yes
Methyl ethyl ketone	0	0	0	Yes

Pollutant	Landfill (lb/hr)	Flares (lb/hr)	Facility Total[1]	
			Emissions (lb/hr)	Below PL[2] thresholds?
Methyl isobutyl ketone	0	0	0	Yes
Perchloroethylene (tetrachloroethylene)	0.0	0.0	0.0	Yes
Toluene	0	0	0	Yes
Trichloroethylene (trichloroethene)	0	0	0	Yes
Vinyl chloride	0.00	0.00	0.00	Yes
Xylenes	0	0	0	Yes
Total TAP & HAP	**0.0**	**0.1**	**0.11**	**n/a**

Notes: n/a means not applicable

[1] The "Total TAP & HAP" may not match the sum of all TAP & HAP emission rates due to the display of plant level thresholds.

[2] PL means Plant Level

Table 9. Emissions Summary of Billable TAP

Pollutant		Emissions rate	
		(tpy)	(lb/day)
Carbon disulfide	S	0	0.0
	F	0	0.0
Carbonyl sulfide	S	0	0.0
	F	0	0.0
Chlorine	S	n/a	n/a
	F	n/a	n/a
Hydrochloric acid	S	0.1	1.4
	F	n/a	n/a
Methylene chloride	S	0	0
	F	0	0
Methyl chloroform	S	0	0
	F	0	0
Perchloroethylene	S	0	0.0
	F	0	0.0
Total Billable TAP		**0.1**	**1.4**

Notes: n/a means not applicable, S means stack emissions, and F means fugitive emissions

APPENDIX

(TOXICS AND VOC REPORT)

As shown in the attached documents, I certify that the facility is in compliance with the Maryland Air Toxics Regulations (COMAR 26.11.15.)

Marilyn Naumann

Marilyn E. Naumann, Associate Director

04/01/22

Date

1-HOUR SCREENING ANALYSIS

Tox-A-Matic 2012
Sandy Hill Creative Disposal Project - Flare
Astha Thakali
January 25, 2022

8	Typical hours of emissions per 8-hour work day
7	Typical days per week of emissions
52	Typical weeks per year of emissions
yes	Building downwash (default is yes)
11.23	Screen3 or AERSCREEN model run maximum concentration (ug/m3) from a 1 lb/hr emission rate

CAS	Name	Emissions Controlled lb/hr	Screening Level ug/m3	Exempt	Small Emitter 1	AER	Screen 3 or AERSCREEN				Bomb
							Impact ug/m3	Small Emitter 2	% screen Level	Pass?	
				26.11.15.01B(5)	26.11.15.03B(3)	26.11.16.02A(4)		26.11.15.03B(4)			
7647010	HYDROCHLORIC ACID (HYDROGI	0.15431	29.832311				1.7329		5.81	pass	

8-HOUR SCREENING ANALYSIS

Tox-A-Matic 2012
Sandy Hill Creative Disposal Project - Flare
Astha Thakali
January 25, 2022

8	Typical hours of emissions per 8-hour work day
7	Typical days per week of emissions
52	Typical weeks per year of emissions
yes	Building downwash (default is yes)
11.23	Screen3 or AERSCREEN model run maximum concentration (ug/m3) from a 1 lb/hr emission rate
0.7	8-hour multiplier (default is 0.7)

CAS	Name	Emissions Controlled lb/hr	Screening Level ug/m3	Exempt	Small Emitter 1	AER	Screen 3 or AERSCREEN				Bomb
							Impact ug/m3	Small Emitter 2	% screen Level	Pass?	
				26.11.15.01B(5)	26.11.15.03B(3)	26.11.16.02A(4)		26.11.15.03B(4)			
7647010	HYDROCHLORIC ACID (HYDROGI	0.15431	165.271			pass	1.2130		0.73	pass	

ANNUAL SCREENING ANALYSIS

Tox-A-Matic 2012
Sandy Hill Creative Disposal Project - Flare
Astha Thakali
January 25, 2022

8	Typical hours of emissions per 8-hour work day
7	Typical days per week of emissions
52	Typical weeks per year of emissions
yes	Building downwash (default is yes)
11.23	Screen3 or AERSCREEN model run maximum concentration (ug/m3) from a 1 lb/hr emission rate
0.08	Annual multiplier (default is 0.08)

CAS	Name	Emissions Controlled lb/yr	Screening Level ug/m3	Small Emitter 1	AER	Screen 3 or AERSCREEN			Bomb
						Impact ug/m3	% screen Level	Pass?	
				26.11.15.03B(3)	26.11.16.02A(4)				
7647010	HYDROCHLORIC ACID (HYDROGI	157.7333	0.7		pass	0.0162	2.31	pass	

1-HOUR SCREENING ANALYSIS

Tox-A-Matic 2012
Sandy Hill Creative Disposal Project - Landfill
Astha Thakali
January 25, 2022

8	Typical hours of emissions per 8-hour work day
7	Typical days per week of emissions
52	Typical weeks per year of emissions
yes	Building downwash (default is yes)
6.189	Screen3 or AERSCREEN model run maximum concentration (ug/m3) from a 1 lb/hr emission rate

CAS	Name	Emissions Controlled lb/hr	Screening Level ug/m3	Exempt	Small Emitter 1	AER	Screen 3 or AERSCREEN				Bomb
							Impact ug/m3	Small Emitter 2	% screen Level	Pass?	
				26.11.15.01B(5)	26.11.15.03B(3)	26.11.16.02A(4)		26.11.15.03B(4)			
107131	ACRYLONITRILE	0.002917									
75003	CHLOROETHANE	0.00075	13			pass	0.0046	pass	0.04	pass	
75014	VINYL CHLORIDE	0.004167									

8-HOUR SCREENING ANALYSIS

Tox-A-Matic 2012
Sandy Hill Creative Disposal Project - Landfill
Astha Thakali
January 25, 2022

8	Typical hours of emissions per 8-hour work day
7	Typical days per week of emissions
52	Typical weeks per year of emissions
yes	Building downwash (default is yes)
6.189	Screen3 or AERSCREEN model run maximum concentration (ug/m3) from a 1 lb/hr emission rate
0.7	8-hour multiplier (default is 0.7)

CAS	Name	Emissions Controlled lb/hr	Screening Level ug/m3	Exempt	Small Emitter 1	AER	Screen 3 or AERSCREEN				Bomb
							Impact ug/m3	Small Emitter 2	% screen Level	Pass?	
				26.11.15.01B(5)	26.11.15.03B(3)	26.11.16.02A(4)		26.11.15.03B(4)			
107131	ACRYLONITRILE	0.002917	43.394683			pass	0.0126	pass	0.03	pass	
75003	CHLOROETHANE	0.00075	2.6			pass	0.0032	pass	0.12	pass	
75014	VINYL CHLORIDE	0.004167	25.562372			pass	0.0181	pass	0.07	pass	

ANNUAL SCREENING ANALYSIS

Tox-A-Matic 2012
Sandy Hill Creative Disposal Project - Landfill
Astha Thakali
January 25, 2022

8	Typical hours of emissions per 8-hour work day
7	Typical days per week of emissions
52	Typical weeks per year of emissions
yes	Building downwash (default is yes)
6.189	Screen3 or AERSCREEN model run maximum concentration (ug/m3) from a 1 lb/hr emission rate
0.08	Annual multiplier (default is 0.08)

CAS	Name	Emissions Controlled lb/yr	Screening Level ug/m3	Small Emitter 1	AER	Screen 3 or AERSCREEN			Bomb
						Impact ug/m3	% screen Level	Pass?	
				26.11.15.03B(3)	26.11.16.02A(4)				
107131	ACRYLONITRILE	8.493333	0.01			0.0005	4.80	pass	
75003	CHLOROETHANE	2.184							
75014	VINYL CHLORIDE	12.13333	0.23		pass	0.0007	0.30	pass	

Appendix C

2021 Annual Compliance Certification

2021 Title V, Part 70
Compliance Certification Report

Sandy Hill Creative Disposal Project
Permit No. 24-033-01862

Prince George's County
Department of the Environment
Resource Recovery Division
3500 Brown Station Road
Upper Marlboro, MD 20774

SCS ENGINEERS

Project Number: 02219039.01 | March 2022

11260 Roger Bacon Drive
Reston, VA 20190
703-471-6150

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) NAUMANN (First) MARILYN (MI) E

Title ASSOCIATE DIRECTOR

Street or P.O. Box 3500 BROWN STATION ROAD

City UPPER MARLBORO State MD ZIP 20774 - 9343

Telephone (301) 952 - 7625 Ext. _____ Facsimile (301) 952 - 7611

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) Marilyn Naumann

Name (typed) MARILYN E. NAUMANN Date: 04 / 01 / 2022

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
ANNUAL COMPLIANCE CERTIFICATION (A-COMP)

A. GENERAL INFORMATION

Permit No. 24-033-01862

Reporting Period: Beg. 01 / 01 / 2021 End. 12 / 31 / 2021

Source / Company Name SANDY HILL CREATIVE DISPOSAL PROJECT

Mailing Address: Street or P.O. Box 9500 OLD LAUREL-BOWIE ROAD

City BOWIE State MD ZIP 20708

Contact person MARILYN E. NAUMANN Title ASSOCIATE DIRECTOR

Telephone (301) 952 - 7625 Ext.

Continued on next page

B. COMPLIANCE STATUS

Describe the compliance status of each permit term for the reporting period. Copy this page as many times as necessary to cover all permit terms and conditions.

Emission Unit ID(s): **EU-1 (Municipal Solid Waste (MSW) Landfill)**

Permit Term (Describe requirements and cross-reference)

IV.1.1 Applicable Standards/Limits:

A. Standards for Air Emissions [Reference: 40 CFR 60.752]

(1) The Permittee shall ensure that the gas collection and control system satisfies the requirements for an active collection system as provided for in §60.752(b)(2)(ii)(A)(l) through (4). The Permittee shall install the gas collection and control system according to the specifications in §60.759. **[Reference: 40 CFR 60.752(b)(2)(ii)(A) and 60.757]**

(2) The Permittee shall route all the collected landfill gas to a control system designed and operated to reduce non-methane organic compounds (NMOC) by 98 weight-percent as provided for in §60.752(b)(2)(iii)(B). **[Reference: 40 CFR 60.752(b)(2)(iii) and (iii)(B)]**

(3) The Permittee may cap or remove the collection and control system provided that all the conditions of §60.752(b)(2)(v)(A) - (C) are met. The NMOC gas produced by the landfill shall be calculated following the procedures specified in §60.754(b). **[Reference: 40 CFR 60.752(b)(2)(v)]**

(4) When the landfill is closed, the Permittee is no longer subject to the requirement to maintain an operating permit under part 70 for the landfill if the landfill is not otherwise subject to the requirements of part 70 and if either of the conditions in §60.752(b)(1) and (2) are met. **[Reference: 40 CFR 60.752(b)]**

(5) The Permittee shall not cause or allow any material to be handled, transported, or stored; or a building, its appurtenances; or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. **[Reference: COMAR 26.11.06.03D(2)]**

Compliance Methods for the Above (Description and Citation):

IV.1.2 A. Testing Requirements:
(1) - Methods specified in §60.755(a)(l) through (a)(6) are used to determine the gas collection system compliance and compliance is demonstrated in the Semi-Annual NSPS Reports.
(2), (4), and (5) - Compliance methods used are same as for Section IV.1.3.A, IV1.4.A, and IV.1.5.A Items (2), (4), and (5).
(3) - The procedures specified in §60.754(b) will be used to calculate the NMOC gas produced by the landfill prior to capping or removing the collection and control system.

IV.1.3 A. Monitoring Requirements:
(1) - Compliance methods used are same as for Section IV.1.3.B(2)..
(2) through (5) - Compliance methods used are same as for Section IV.1.4.A, and IV.1.5.A Items (2) through (5).

IV.1.4 A. Record Keeping Requirements:
(1) - (a) An up-to-date, readily accessible plot map of the gas system is maintained.
(b) Records are maintained of all the control equipment as required and are available upon request.
(2) through (5) - Compliance methods used are same as for Reporting Requirements, Section IV.1.5.A Items (2) through (5).

IV.1.5 A. Reporting Requirements:
(1), (2), and (5) - Compliance methods used are same as for Record Keeping Requirements, Section IV.1.4.A Items (1) and (5).
(3) - The control equipment is currently in operation. No equipment removal report is required during this period.
(4) - Landfill ceased accepting waste in 2000 and a closure report was submitted.

Status (Check one): ___ Intermittent Compliance __X__ Continuous Compliance

The permittee is subject to the Federal Plan requirements of 40 CFR 62 Subpart OOO, which became effective on June 21, 2021 and which replace NSPS 40 CFR 60 Subpart WWW. On September 27, 2021, the permittee began compliance with the updated requirements of NESHAP 40 CFR 63 Subpart AAAA, promulgated on March 26, 2020.

Emission Unit ID(s): **EU-1 (Municipal Solid Waste (MSW) Landfill)**

Permit Term (Describe requirements and cross-reference)

IV.1.1 Applicable Standards/Limits:

B. Operational Standards [Reference: 40 CFR 60.753]

(1) The Permittee shall operate the gas collection and control system such that landfill gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for 5 years or more if active; or 2 years or more if closed or at final grade. **[Reference: 40 CFR 60.752(b)(2)(ii)(A)(2) and 60.753(a)]**

(2) The Permittee shall operate the collection system with negative pressure at each wellhead except under the conditions specified in §60.753(b)(1) - (3). **[Reference: 40 CFR 60.753(b)]**

(3) The Permittee shall operate each interior wellhead in the collection system with a landfill gas temperature less than 55° C and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. The Permittee may establish a higher operating temperature, nitrogen, or oxygen value at a particular well as provided for in.

§60.753(c). **[Reference: 40 CFR 60.753(c)]**

(4) The Permittee shall operate the collection system so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. To determine if this level is exceeded, the Permittee shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill as provided for in §60.753(d). **[Reference: 40 CFR 60.753(d)]**

(5) In the event the collection or control system is inoperable, the Permittee shall shut down the gas mover system and shall close, within one hour, all valves in the collection and control system contributing to venting of the gas to the atmosphere. **[Reference: 40 CFR 60.753(e)]**

(6) The Permittee shall operate the control or treatment system at all times when the collected gas is routed to the system. **[Reference: 40 CFR 60.753(f)]**

(7) The Permittee shall take corrective action as specified in §60.755(a)(3) through (5) or §60.755(c) of 40 CFR 60, Subpart WWW if monitoring demonstrates that the operational requirements in §60.753(b), (c) , or (d) are not met. If corrective actions are taken as specified in §60.755, the monitored exceedance is not a violation of the operational requirements in §60.753. **[Reference: 40 CFR 60.753(g)]**

(8) The Permittee shall take reasonable precautions, including the application of water on unpaved roads and other surfaces, to prevent particulate matter from becoming airborne. **[Reference: COMAR 26.11.06.03D(2)]**

Compliance Methods for the Above (Description and Citation):

IV.1.2 B. Testing Requirements:
(1), (2), and (4) through (8) - Compliance methods used are same as for Monitoring Requirements, Section IV.1.3.B Items (1), (2), and (4) through (8).
(3) - The oxygen level is determined using a GEM-5000 Gas Analyzer which are approved for use under §60.753(c)(2).

IV.1.3 B. Monitoring Requirements:
(1), and (5) through (8) - Compliance methods used are same as for Section IV.1.4.B and IV.1.5.B Items (1), and (5) through (8).
(2) - A sampling port is installed on each wellhead and pressure is measured on a monthly basis. Proper corrective steps are taken if positive pressure is recorded in efforts to avoid fires. Records of positive pressure are submitted with the semiannual reports.
(3) - A sampling port and thermometer are on each wellhead. Temperature and oxygen are measured on a monthly basis. Corrective action is taken if a high temperature or oxygen reading is recorded.
(4) - On March 26, 2007, MDE granted approval for annual surface emission testing. Surface emission testing is performed on an annual basis. Monitoring instruments meet specifications in §60.755(d). Corrective action is taken if methane exceedance is recorded. Cap integrity is inspected on a monthly basis as part of wellhead monitoring.

IV.1.4 B. Record Keeping Requirements:
(1), (5), (6), and (8) - Compliance methods used are the same as for Section IV.1.5.B Items (1), (5), (6), and (8).
(2) through (4) - Continuous gas system operation and surface emissions data records are available upon request.

(7) - Collection and control system operation data records are available upon request.

IV.1.5 B. Reporting Requirements:
(1) through (6) - Semi-annual and annual reports detailing the gas collection and control system operation and any exceedances of operational standards were submitted.
(7) and (8) - Compliance methods used are the same as for the Record Keeping Requirements, Section IV.1.4.B Items (7) and (8).

Status (Check one): ___ Intermittent Compliance __X_ Continuous Compliance

The permittee is subject to the Federal Plan requirements of 40 CFR 62 Subpart OOO, which became effective on June 21, 2021 and which replace NSPS 40 CFR 60 Subpart WWW. On September 27, 2021, the permittee began compliance with the updated requirements of NESHAP 40 CFR 63 Subpart AAAA, promulgated on March 26, 2020.
Per NESHAP Subpart AAAA, beginning September 27, 2021, the oxygen standard of 5 percent is no longer applicable.

Emission Unit ID(s):): **EU-1 (Municipal Solid Waste (MSW) Landfill)**

Permit Term (Describe requirements and cross-reference)
IV.1.1 Applicable Standards/Limits:

C. Other Requirements

The provisions of 40 CFR 60, Subpart WWW apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed 5 days for collection systems and shall not exceed one (1) hour for treatment or control devices. **[Reference: 40 CFR 60.755(e)]**

Compliance Methods for the Above (Description and Citation):
IV.1.2 C. Testing Requirements: Compliance methods used are the same as for Section IV.1.4.C and IV.1.5.C.

IV.1.3 C. Monitoring Requirements: Compliance methods used are the same as for Section IV.1.4.C and IV.1.5.C.

IV.1.4 C. Record Keeping Requirements:
(1) - The design capacity report and records of amount of waste in place and annual acceptance rates are maintained on-site.
(2) - Up-to-date, readily accessible records of flare temperature exceedances are maintained.
(3) - Up-to-date, readily accessible continuous records of landfill gas flow are maintained.

IV.1.5 C. Reporting Requirements:
The landfill gas collection and control system is in operation and is in compliance with

Subpart WWW. No annual NMOC emission report is required this period.

Status (Check one): ___ Intermittent Compliance __X_ Continuous Compliance

The permittee is subject to the Federal Plan requirements of 40 CFR 62 Subpart OOO, which became effective on June 21, 2021 and which replace NSPS 40 CFR 60 Subpart WWW. On September 27, 2021, the permittee began compliance with the updated requirements of NESHAP 40 CFR 63 Subpart AAAA, promulgated on March 26, 2020.
Per NESHAP Subpart AAAA, beginning September 27, 2021, the SSM recordkeeping and reporting requirements are no longer applicable.

Emission Unit ID(s): **EU-1 (Municipal Solid Waste (MSW) Landfill) … Continued**

Permit Term (Describe requirements and cross-reference)
IV.1a.1 Applicable Standards/Limits:

Subpart AAAA – National Emission Standard for Hazardous Air Pollutants: Municipal Solid Waste Landfills.
Applicability
"You are subject to this subpart if you own or operate a MSW landfill that has accepted since November 8, 1987 or has additional capacity for waste disposition and meets any one of the three criteria in paragraphs (a)(1) through (3) of this section: (3) Your MSW landfill is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m^3) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to §60.754(a) of the MSW landfills new source performance standards in 40 CFR part 60, subpart WWW, the Federal plan, or an EPA approved and effective State or tribal plan that applies to your landfill." **[Reference: 40.CFR §63.1935(a)(3)]**

"If your landfill is an existing affected source and is an area source meeting the criteria in §63.1935(a)(3), you must comply with the requirements in §§63.1955(b) and 63.1960 through 63.1980 by the date your landfill is required to install a collection and control system by 40 CFR 60.752(b)(2) of subpart WWW, the Federal plan, or EPA approved and effective State or tribal plan that applies to your landfill or by January 16, 2004, whichever occurs later." **[Reference: 40.CFR §63.1945(f)]**

Standards
"If you are required by 40 CFR 60.752(b)(2) of subpart WWW, the Federal plan, or an EPA approved and effective State or tribal plan to install a collection and control system, you must comply with the requirements in §§63.1960 through 63.1985 and with the general provisions of this part specified in table 1 of this subpart." **[Reference: 40.CFR §63.1955(b)]**

General and Continuing Compliance Requirements
"Compliance is determined in the same way it is determined for 40 CFR Part 60, subpart WWW, including performance testing, monitoring of the collection system, continuous parameter monitoring, and other credible evidence. In addition, continuous parameter monitoring data, collected under 40 CFR 60.756(b)(1), (c)(1), and (d) of subpart WWW, are used to demonstrate compliance with the operating conditions for control systems. If a deviation occurs, you have failed to meet the control device operating conditions described in this subpart and have deviated from the requirements of this subpart. Finally, you must develop and implement a written SSM plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on-site. Failures to write, implement, or maintain a copy of the SSM plan is a deviation from the requirements of this subpart. "**[Reference: 40.CFR §63.1960]**

Compliance Methods for the Above (Description and Citation):
IV.1a.2 Testing Requirements: Compliance methods used are the same as for Testing Requirements, Section IV.1.2.B.

IV.1a.3 Monitoring Requirements: Compliance methods used are the same as for Monitoring Requirements, Section IV.1.3.B.

IV.1a.4 Record Keeping Requirements: Specified records and reports are maintained. Semi-annual reports are submitted by January 30 and July 30.

IV.1a.5 Reporting Requirements: Compliance methods used are the same as Reporting Requirements, Section IV.1.5.B.

Status (Check one): ___ Intermittent Compliance __X_ Continuous Compliance

The permittee is subject to the Federal Plan requirements of 40 CFR 62 Subpart OOO, which became effective on June 21, 2021 and which replace NSPS 40 CFR 60 Subpart WWW. On September 27, 2021, the permittee began compliance with the updated requirements of NESHAP 40 CFR 63 Subpart AAAA, promulgated on March 26, 2020.

Emission Unit ID(s): **EU-2 and EU-3 (Flare System)**

Permit Term (Describe requirements and cross-reference)
IV.2.1 Applicable Standards/Limits:

A. Control of Visible Emissions

COMAR 26.11 .06.02C(2). Visible Emission Standards
'In Areas Ill and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human

observers."

COMAR 26.11 .06.02A(2) General Exceptions. The visible emissions standards in §C of this regulation do not apply to emissions during startup and process modifications or adjustments, or occasional cleaning of control equipment, if:
(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any 60-minute period.

Compliance Methods for the Above (Description and Citation):
IV.2.2 A. Testing Requirements: - Compliance methods used are the same as for Section IV.2.4.A and IV.2.5.A.

IV.2.3 A. Monitoring Requirements:
Flares are properly operated and maintained to minimize visible emissions. Preventive maintenance logs are maintained.

IV.2.4 A. Record Keeping Requirements:
Preventive maintenance records are maintained as required and will be made available to MDE upon request.

IV.2.5 A. Reporting Requirements:
Incidents of visible emissions are reported in accordance with this Permit condition.

Status (Check one): ___ Intermittent Compliance _X__ Continuous Compliance

The permittee is subject to the Federal Plan requirements of 40 CFR 62 Subpart OOO, which became effective on June 21, 2021 and which replace NSPS 40 CFR 60 Subpart WWW. On September 27, 2021, the permittee began compliance with the updated requirements of NESHAP 40 CFR 63 Subpart AAAA, promulgated on March 26, 2020.

Emission Unit ID(s): **EU-2 and EU-3 (Flare System)**

Permit Term (Describe requirements and cross-reference)
IV.2.1 Applicable Standards/Limits:

B. Operational Standards
[Reference 40 CFR 60.752(b)]

(2) If the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, the owner or operator shall:
(iii) Route all the collected gas to a control system that complies with the requirements in either paragraph (b)(2)(iii) (A), (B), or (C) of this section.

(A) An open flare designed and operated in accordance with §60.18 except as noted in §60.754(e)

Compliance Methods for the Above (Description and Citation):

IV.2.2. B. Testing Requirements: Compliance methods used are the same as for Section IV.2.4.B and IV.2.5.B.

IV.2.3 B. Monitoring Requirements: **The** following equipment is installed on flares and is calibrated, maintained, and operated according to manufacturer recommendations.
(1) Thermocouple to indicate the continuous presence of a flame.
(2) Flow meter to measure gas flow to flares. A visual inspection of the closure mechanism seal is performed once a month.

IV.2.4 B. Record Keeping Requirements: Records of equipment maintenance and operational data are maintained and available upon request. Up-to-date flare records are maintained and available upon request.

IV.2.5 B. Reporting Requirements: Compliance methods used are the same as for Record Keeping Requirements, Section IV.2.4.B.

Status (Check one): __ Intermittent Compliance _X_ Continuous Compliance

The permittee is subject to the Federal Plan requirements of 40 CFR 62 Subpart OOO, which became effective on June 21, 2021 and which replace NSPS 40 CFR 60 Subpart WWW. On September 27, 2021, the permittee began compliance with the updated requirements of NESHAP 40 CFR 63 Subpart AAAA, promulgated on March 26, 2020.

C. DEVIATIONS FROM PERMIT TERMS AND CONDITIONS

Report all deviations from permit terms (whether reported previously or not) that occurred during the permit term. Cross-reference deviations already reported in the six-month report. Indicate whether each deviation is a "possible exception to compliance." Start and end period of each deviation should be in mo/day/yr, hr:min format (24-hour clock). Also, specify the date when the written deviation report was submitted (If written report required, but not submitted, leave the date field blank).

Permit Term for Which There was a Deviation:

None

Emission Units (unit IDs):

Deviation Start__/___/_____ End: :____/_____/_____

Date Written Report Submitted __/ _/___

Permit Term for Which There was a Deviation:

None

Emission Units (unit IDs):

Deviation Start_____/_____/_____ ____:____ End: :_____/_____/_____ ____:____

Date Written Report Submitted ____/____/_____

CERTIFICATION OF PLANT-WIDE CONDITIONS
(SECTION III OF PART 70 OPERATING PERMIT)

Indicate compliance with the following requirements of Section III of your Part 70 Operating Permit in the space provided below:

1. Particulate Matter from Construction and Demolition

Appropriate precautions are taken when construction or demolition activities occur.

2. Open Burning

The County did no open burning during the reporting period.

3. Air Pollution Episode (N/A)

4. Report of Excess Emissions and Deviations

The 1st and 2nd semi-annual monitoring reports were submitted in accordance with the permit. Deviations from the permit requirements, if any, are reported in the 1st and 2nd semi-annual monitoring reports. There were no occurrences of excess emissions during the reporting period.

5. Accidental Release Provisions (if applicable)

Not applicable.

6. General Testing Requirements

No testing has been required.

7. Emissions Test Methods

All testing is done in accordance with the permit.

8. Emission Certification Report

a. The report is submitted no later than April 1 of the year following the year for which emission certification is required.
b. The certificate regarding accuracy of information submitted was attached.
c. The required records necessary are maintained on site.

9. Compliance Certification Report

Compliance Certification Report is submitted to MDE and EPA by April 1. All required sections were addressed.

10. Certification by Responsible Official

Forms, reports, and compliance certifications have been certified by a responsible official.

11. Sampling and Emissions Testing Record Keeping

Not applicable. No sampling or emissions tests performed during this reporting period.

12. General Record Keeping

All required records are kept as specified in the permit.

13. General Conformity (Not Applicable except for federal facilities)

14. Asbestos Provisions (if applicable)

Not applicable. No demolition or renovation activity was carried out at the facility.

15. Ozone Depleting Regulations (if applicable)

Standards for recycling and emission as required, were complied to.

16. Acid Rain Permit (if applicable)

Not applicable.

Appendix D

Potential Emissions Update

1.0 INTRODUCTION

Note that cf, CH4, cm, dscf, dscfm, LFG, M, MM, NMOC, PM_{10}, ppmv, PTE, scf, scfm, scm, tpy, VOC, and yr means cubic feet, methane, cubic meter, dry standard cubic feet, dry standard cubic feet, per minute, landfill gas, thousands, millions, non-methane organic compounds, particulate matter (PM) of size 10 micron or smaller in size, parts per million volume, potential to emit, standard cubic feet, standard cubic feet per minute, standard cubic meter, tons per year, volatile organic compounds, and year respectively.

The Sandy Hill Creative Disposal Project (SHCDP) operates two (2) emission units in accordance with Title V / Part 70 Operating Permit (TVOP) No. 24-033-01862: MSW Landfill or Landfill (EU-1) and Landfill Gas Flare System comprising of EU-2 (main candlestick flare) & EU-3 (backup candlestick flare). Only one of the two flares operates at a time. The backup candlestick flare (EU-3) is only used during downtime of the main flare. Collected LFG is primarily routed to an off-site facility, which operates under a separate operating permit, for beneficial use. The flares control excess LFG above the demand of the off-site facility, if needed.

Potential to emit were previously calculated in the most-recent TVOP renewal application submitted in May 2017. Because the landfill is closed, the LFG generation rate of the landfill has declined since the previous renewal application was submitted. Due to the decreased maximum generation rate of the landfill, potential emissions are less than what was previously calculated.

Potential emissions are calculated herein to reflect current conditions at the SHCDP.

1.1 PERMIT PERIOD

The current TVOP period = June 1, 2018 through May 31, 2023

Next TVOP period = June 1, 2023 through May 31, 2028.

2.0 POTENTIAL TO EMIT CALCULATIONS

Calculation for uncontrolled fugitive emissions for Landfill (EU-1) and potential to emit (PTE) for the Landfill (EU-1) and flaring system (EU-2 & EU-3) are provided below. The off-site LFGE facility is not included in the SHCDP the calculations because it operates under a separate operating permit.

2.1 LANDFILL (EU-1) – UNCONTROLLED FUGITIVE EMISSIONS AND POTENTIAL TO EMIT

Landfill (EU-1) emissions includes volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) emission. Uncontrolled fugitive emissions and PTE calculations are based on the maximum LFG generation rate for the remaining life of the landfill, which is declining because landfill is closed and capped and no future waste placement can occur. The landfill operates an active gas collection and flaring system to control fugitive LFG emissions. As such, PTE will be much less than the uncontrolled fugitive emission rates. A conservatively assumed value of LFG collection efficiency was used estimate PTE.

EPA's Landfill Gas Emissions Model (LandGEM) tool is used to estimate emissions from landfills. Historically at this site, landfill gas (LFG) collected has always been more than modeled generation. As such, adjustment factor was used to estimate landfill's emissions generation rates.

Modeled generation using EPA's LandGEM version 3.03, adjusted generation, and potential to emit (PTE) and uncontrolled fugitive emissions estimates are discussed below.

2.1.1 Landfill Gas Generation

SCS estimated LFG generation rates and landfill emissions using the EPA's LandGEM model version 3.03. The LandGEM uses a first-order decay equation to project the annual generation of LFG from a landfill based on the following coefficients and inputs:

- Quantity of waste disposed (Mg) – SCS used the historical filling rates experienced by the landfill up to the closure. Because the landfill is closed and no longer accepting waste, the subsequent waste acceptance rates are zero.
- The methane recovery potential, L_0 (m^3 CH_4 per Mg waste) – SCS used a value of 100 m^3/Mg, which is the default value published in EPA's AP-42 Section 2.4.
- LFG decay rate constant, k (yr^{-1}) – SCS used a value of 0.04 yr^{-1}, which is the default value published in AP-42 Section 2.4.
- Methane concentration of generated gas (%) – SCS assumed that the generated LFG will consist of a methane concentration of 50 percent by volume.

Modeling results are presented in **Table D-1** in this appendix.

Table D-1. Modeled CH4, LFG, NMOC and VOC Generation Rates by LandGEM Version 3.03

Year	Disposal Rate (tpy)	Refuse In-Place (tons)	Modeled Generation Rates			
			CH4 (m^3/yr)	LFG (cfm)	NMOC (tpy)	VOC (tpy)
1978	286,577	0	0	0	0.000	0.000
1979	286,577	286,577	1,023,576	137.55	4.803	1.897
1980	286,577	573,154	2,007,017	269.70	9.417	3.719
1981	286,577	859,731	2,951,896	396.68	13.850	5.470
1982	286,577	1,146,308	3,859,726	518.67	18.110	7.153
1983	286,577	1,432,885	4,731,960	635.88	22.203	8.769
1984	286,577	1,719,462	5,569,993	748.49	26.135	10.322
1985	286,577	2,006,039	6,375,166	856.69	29.913	11.814
1986	286,577	2,292,616	7,148,768	960.65	33.543	13.248
1987	286,577	2,579,193	7,892,037	1,060.53	37.030	14.625
1988	286,577	2,865,770	8,606,161	1,156.49	40.381	15.949
1989	286,577	3,152,347	9,292,285	1,248.69	43.600	17.220
1990	286,577	3,438,924	9,951,505	1,337.28	46.693	18.442
1991	286,577	3,725,501	10,584,877	1,422.39	49.665	19.616
1992	286,577	4,012,078	11,193,413	1,504.17	52.520	20.743
1993	286,577	4,298,655	11,778,089	1,582.74	55.264	21.827
1994	286,577	4,585,232	12,339,839	1,658.22	57.899	22.868
1995	202,455	4,871,809	12,879,563	1,730.75	60.432	23.868

Year	Disposal Rate (tpy)	Refuse In-Place (tons)	Modeled Generation Rates			
			CH4 (m^3/yr)	LFG (cfm)	NMOC (tpy)	VOC (tpy)
1996	202,690	5,074,264	13,097,663	1,760.06	61.455	24.272
1997	387,430	5,276,954	13,308,050	1,788.33	62.442	24.662
1998	387,430	5,664,384	14,170,030	1,904.17	66.487	26.260
1999	332,309	6,051,814	14,998,210	2,015.46	70.373	27.794
2000	154,709	6,384,123	15,597,040	2,095.93	73.182	28.904
2001	0	6,538,832	15,538,050	2,088.00	72.906	28.795
2002	0	6,538,832	14,928,795	2,006.13	70.047	27.666
2003	0	6,538,832	14,343,428	1,927.47	67.300	26.581
2004	0	6,538,832	13,781,014	1,851.89	64.661	25.538
2005	0	6,538,832	13,240,653	1,779.28	62.126	24.537
2006	0	6,538,832	12,721,480	1,709.51	59.690	23.575
2007	0	6,538,832	12,222,663	1,642.48	57.350	22.651
2008	0	6,538,832	11,743,406	1,578.08	55.101	21.763
2009	0	6,538,832	11,282,940	1,516.20	52.940	20.909
2010	0	6,538,832	10,840,530	1,456.75	50.864	20.089
2011	0	6,538,832	10,415,467	1,399.63	48.870	19.302
2012	0	6,538,832	10,007,070	1,344.75	46.954	18.545
2013	0	6,538,832	9,614,688	1,292.02	45.113	17.818
2014	0	6,538,832	9,237,690	1,241.36	43.344	17.119
2015	0	6,538,832	8,875,475	1,192.68	41.644	16.448
2016	0	6,538,832	8,527,463	1,145.92	40.011	15.803
2017	0	6,538,832	8,193,096	1,100.99	38.443	15.183
2018	0	6,538,832	7,871,840	1,057.82	36.935	14.588
2019	0	6,538,832	7,563,181	1,016.34	35.487	14.016
2020	0	6,538,832	7,266,625	976.49	34.095	13.466
2021	0	6,538,832	6,981,696	938.20	32.759	12.938
2022	0	6,538,832	6,707,940	901.41	31.474	12.431
2023	0	6,538,832	6,444,918	866.07	30.240	11.944
2024	0	6,538,832	6,192,209	832.11	29.054	11.475
2025	0	6,538,832	5,949,409	799.48	27.915	11.025
2026	0	6,538,832	5,716,129	768.13	26.820	10.593
2027	0	6,538,832	5,491,997	738.01	25.769	10.178
2028	0	6,538,832	5,276,652	709.08	24.758	9.779
2029	0	6,538,832	5,069,752	681.27	23.788	9.395
2030	0	6,538,832	4,870,964	654.56	22.855	9.027

Notes: 1. Shading indicates the maximum generation rate during the Permit period 2021-26.
2. Disposal rates come from landfill's 2021 Emission Certification Report.
3. Assumed value of k, L_0, CH4, VOC, and NMOC are provided below.

Assume decay rate constant (k) =	0.04	yr^{-1} [AP-42]
Assumed ultimate methane recovery rate (L_0) =	100.0	m^3/Mg [AP-42]
Or =	3,203.7	scf/ton
Assumed CH4 content of LFG =	50.0%	[AP-42]
Assumed NMOC concentration of LFG =	595	ppmv [AP-42]
Assumed VOC concentration of LFG =	235	ppmv [AP-42]

2.1.2 Adjusted Generation Rates

As shown in the Emission Certifications submitted annually to MDE, the modeled generation rates using EPA's LandGEM model and AP-42 inputs have been less than the annual collection rates. This indicates that the EPA's LandGEM model underestimates generation rates at the landfill. As such, following the methodology in 40 CFR Part 98, the generation rates were set equal to the calculated generation rate adjusted for actual collection and typical collection efficiency of 95% for closed and capped landfill, and calculated adjustment factor results from 2017 through 2021 are presented in **Table D-2**. Results indicate that the adjustment factor varied from 1.26 in 2021 to 1.40 in 2017 and average adjustment factor during the current TVOP period is 1.35 (**Table D-2**).

Table D-2. Adjustment Factor

Year	Modeled LFG Generation Rate (scfm)	Collected LFG at 50% Methane (scfm)	Adjustment Factor[1]
2017	1,100.99	1,462.30	1.40
2018	1,057.82	1,330.30	1.32
2019	1,016.34	1,326.91	1.37
2020	976.49	1,195.45	1.29
2021	938.20	1,124.24	1.26
		Average =	1.35

[1] Adjustment factor assumes a LFG collection efficiency of 95% which is typical for a closed and capped landfill (40 CFR Part 98).

Conservatively, adjustment factor of 1.5 was used to calculate adjusted CH4, LFG, NMOC and VOC generation rate from modeled generation rate. Calculated adjusted generation rates are provided in **Table D-3**.

Table D-3. Adjusted Methane, LFG and VOC Generation Rates

Year	Adjusted Generation Rates			
	CH4 (m^3/yr)	LFG (scfm)	NMOC (tpy)	VOC (tpy)
2023	9.6674E+06	1,299	45.360	17.916
2024	9.2883E+06	1,248	43.581	17.213
2025	8.9241E+06	1,199	41.873	16.538
2026	8.5742E+06	1,152	40.231	15.890
2027	8.2380E+06	1,107	38.653	15.267
2028	7.9150E+06	1,064	37.138	14.669
2029	7.6046E+06	1,022	35.681	14.093
2030	7.3064E+06	982	34.282	13.541

2.1.3 Landfill Uncontrolled Fugitive Emissions and Potential to Emit Calculations

Calculations for uncontrolled fugitive emissions and potential to emit for landfill are provided in section. The calculations for uncontrolled fugitive emissions assume that none of the LFG is collected and combusted. The calculations for potential to emit assume that 75 percent of the LFG is collected and controlled. This is a conservative assumption, in that the EPA AP-42 Section 2-4 recommends a typical range of collection efficiency of 60 to 85 percent. Furthermore, 40 CFR 98 Subpart HH recommends a collection efficiency of 95 percent for a closed and capped landfills.

Uncontrolled fugitive emissions and potential to emit VOC and HAP are summarized in **Table D-4**.

Table D-4. Summary of Uncontrolled Fugitive Emissions and Potential to Emit for Landfill (EU-1)

Pollutant	Uncontrolled Fugitive Emissions		Potential to Emit (tpy)	
	(tpy)	(lb/hr)	(tpy)	(lb/hr)
VOC	17.92	4.09	4.48	1.02
HAP	10.54	2.42	2.61	0.58

Notes:
1. Adjusted maximum CH4 generation rate during the Permit period = 9.6674 MM m³/yr.
2. Adjusted maximum VOC generation rate during the Permit period = 17.916 tpy
3. Assumed CH4 content = 50% by volume [EPA AP-42 Section 2.4]
4. Assumed VOC content of LFG = 235 ppmv [EPA AP-42 Section 2.4 Table 2.4-2
5. HAP emissions estimated using mass-balance method and AP-42 (Section 2.4) concentrations and molecular mass of individual HAP in LFG.

Sample calculations for VOC emissions are provided below.

Volume Flowrate of VOCs –

$$= \left[\text{Adjusted } CH_4 \text{ gen. rate}, \frac{\text{MMm}^3}{\text{yr}}\right]\left[\frac{1}{50\%\ CH_4}\right]\left[\frac{10^6}{\text{MM}}\right]\left[\frac{235\ \text{ppmv}}{\frac{10^6}{\text{ppmv}}}\right]$$

$$= \left[9.6674, \frac{\text{MMm}^3}{\text{yr}}\right]\left[\frac{1}{50\%\ CH_4}\right]\left[\frac{10^6}{\text{MM}}\right]\left[\frac{235\ \text{ppmv}}{\frac{10^6}{\text{ppmv}}}\right]$$

= 4,543.667 m³/yr VOC

Mass Emissions of VOCs –

$$= \left[\text{Vol flow of VOC}, \frac{\text{m}^3}{\text{yr}}\right]\left[86.18\frac{\text{g}}{\text{mol}}\right]\left[\frac{1\text{atm}}{(298\ \text{K})\left\{8.205\text{x}10^{-5}\ \frac{\text{m}^3\cdot\text{atm}}{\text{mol}\cdot\text{K}}\right\}\left\{\frac{1000\ \text{g}}{\text{kg}}\right\}}\right]\left(\frac{2.2\ \text{lb}}{\text{kg}}\right)\left(\frac{1\ \text{ton}}{2{,}000\ \text{lb}}\right)$$

$$= \left[4{,}543.667\,\frac{\mathrm{m}^3}{\mathrm{yr}}\right]\left[86.18\,\frac{\mathrm{g}}{\mathrm{mol}}\right]\left[\frac{1\mathrm{atm}}{(298\ \mathrm{K})\left\{8.205\mathrm{x}10^{-5}\ \frac{\mathrm{m}^3\cdot\mathrm{atm}}{\mathrm{mol}\cdot\mathrm{K}}\right\}\left\{\frac{1000\ \mathrm{g}}{\mathrm{kg}}\right\}}\right]\left(\frac{2.2\ \mathrm{lb}}{\mathrm{kg}}\right)\left(\frac{1\ \mathrm{ton}}{2{,}000\ \mathrm{lb}}\right)$$

= **17.916 tpy**

Uncontrolled fugitive emissions = 17.916 tpy or 4.09 lb/hr (17.916 tpy x 2,000 lb/ton)/(8,760 hr/yr)

Potential to emit = Adjusted VOC generation x (1 – collection efficiency)

= 17.916 tpy x (1 – 75%) = **4.48 tpy or 1.02 lb/hr**

2.1.4 Landfill Gas Flare System's Potential to Emit Calculations

The main (EU-2) and backup (EU-3) flares are both rated for a maximum LFG flow rate of 3,000 scfm, with only one flare operating at a time. However, at this site, the flare operation is limited to the maximum gas collected from the landfill, which is well-below 3,000 scfm; the maximum flow rate of the flare (see **Table D-2** of this appendix). Potential to emit for the flaring system is based on the 2021 LFG collection rate of 1,124.24 scfm during the current permit period (**see Table D-2**) plus a conservative 20 percent safety factor for a total maximum flare LFG flow rate of approximately 1,350 scfm.

A summary of the potential flare emissions is provided in **Table D-1.**

Table D-1. Summary of Potential to Emit for EU-2 & EU-3 (Flares)

Compound	Emission Factor	Potential to Emit	
		(tpy)	(lb/hr)
NO_x	0.068 lb/MMBtu[1]	12.06	2.75
CO	0.31 lb/MMBtu[2]	65.63	14.98
PM_{10}	17 lb/10^6-scf methane[3]	3.02	0.69
SO_x	200 ppmv[3]	11.61	2.65
VOCs	235 ppmv[4] and 98% destruction efficiency[5]	0.37	0.08
HAPs	Varies[6]	1.45	0.33

Notes:

1. Emission factors for NOx and CO are based on manufacturer guarantees.
2. Emission factor for PM_{10} is based on EPA AP-42 Section 2.4.
3. SOx emissions computed as a mass-balance based on the AP-42 LFG sulfur concentration of 46.9 ppmv plus a conservative safety factor.
4. VOC emissions computed as a mass-balance based on AP-42 data regarding NMOC content of LFG.
5. VOC destruction efficiency is based on manufacturer guarantees.
6. Total HAPs computed as a summary of individual HAP compounds typically found in LFG.

Flare operating data are presented in **Table D-2.**

Table D-2. Flare Operating Data

Parameter	Value
Hours of operation	8,760 hr/yr
Btu content of LFG[1]	500 Btu/scf
Maximum Average Annual LFG flow	1,350 scfm
Hourly Heat Rate[3]	40.5 MMBtu/hr

Notes:

1. Btu content based on the flare rating [higher heating value (HHV) of methane] and LFG methane content of 50 percent.
2. Maximum LFG flow rate is based on the LFG collection rates in 2021 (reported in the 2021 Annual Emissions Certification) plus a 20 percent safety factor and rounding up to next 10th place.
3. Heat rate based on maximum available LFG flow and the higher heating value (HHV) of 1,000 Btu/scf for CH4.

Sample emissions calculations for NO_X, SO_X and VOC are provided below.

Nitrogen Oxides (NO_X) and Carbon Monoxide (CO) Emissions

Nitrogen oxides and carbon monoxide emissions were calculated by using heat input rate, hours of operation, and emission factor. Sample calculations of NO_X emissions are provided below.

$$= \left(40.5\frac{\text{MMBtu}}{\text{hr}}\right) \text{x} \left(8{,}760\frac{\text{hr}}{\text{yr}}\right) \text{x} \left(\frac{0.068 \text{ lb } NO_X}{\text{MMBtu}}\right)\left(\frac{1 \text{ ton}}{2{,}000 \text{ lb}}\right)$$

= **12.06 tpy or 2.75 lb/hr** [(12.06 tpy) x (2,000 lb/ton) / (8,760 hr/yr)

Sulfur Oxides (SO_X) Emissions

Sulfur oxides (reported herein as sulfur dioxide [SO_2]) are emitted as a product of combustion of total sulfur compounds in the raw LFG. The emission of SO_2 is estimated using mass-balance methods using a sulfur content of the raw LFG and assuming that all sulfur in the raw LFG is converted to SO_2 during combustion.

A conservatively-high inlet sulfur concentration of 200 ppm was assumed. This is based on the EPA's AP-42 suggested value plus a conservative safety factor.

Volume Flowrate of Sulfur

$$= [1{,}350 \text{ scfm}] \left[\frac{1 \text{ scf}}{35.315 \text{ m}^3}\right] \left[\frac{8{,}760 \text{ hr}}{\text{yr}}\right] \left[\frac{60 \text{ min}}{\text{hr}}\right] \left[\frac{200 \text{ ppmv}}{\frac{10^6}{\text{ppmv}}}\right]$$

= 4,018.462 m^3/yr sulfur

Mass Emission Rate of Sulfur Oxides

$$= \left[4{,}018.462\,\frac{\mathrm{m}^3}{\mathrm{yr}}\right]\left[64.07\,\frac{\mathrm{g}}{\mathrm{mol}}\right]\left[\frac{1\mathrm{atm}}{(298\ \mathrm{K})\left\{8.205\mathrm{x}10^{-5}\ \frac{\mathrm{m}^3\cdot\mathrm{atm}}{\mathrm{mol}\cdot\mathrm{K}}\right\}\left\{\frac{1000\ \mathrm{g}}{\mathrm{kg}}\right\}}\right]\left(\frac{2.2\ \mathrm{lb}}{\mathrm{kg}}\right)\left(\frac{1\ \mathrm{ton}}{2{,}000\ \mathrm{lb}}\right)$$

= 11.61 tpy or 2.65 lb/hr

Particulate Matter (PM and PM10) Emissions

AP-42 emissions factors do not distinguish between PM and PM_{10} emissions, though AP-42 does suggest that, for LFG combustion emissions, PM and PM_{10} emissions are equivalent. Thus the potential emissions represent that for both PM and PM_{10}. PM10 emission calculations are provided below.

$$= [1{,}350\ \mathrm{scfm}\ ]\left[\frac{17\ \mathrm{lb\ PM}}{10^6\ \mathrm{scf\ CH4}}\right][50\%\ \mathrm{CH4}]\left[\frac{8{,}760\ \mathrm{hr}}{\mathrm{yr}}\right]\left[\frac{60\ \mathrm{min}}{\mathrm{hr}}\right]\left[\frac{1\ \mathrm{ton}}{2{,}000\ \mathrm{lb}}\right]$$

= 3.02 tpy or 0.69 lb/hr

VOC and HAP Emissions Rate:

The emission of VOC and HAP species from flares is estimated using mass-balance methods and typical pollutant concentration, molecular mass, and destruction efficiency published in the current EPA's AP-42 Section 2-4. Sample calculations for VOC are provided below.

VOC volume inflow to flare =

$$[1{,}350\ \mathrm{scfm}\ ]\left[\frac{1\ \mathrm{scf}}{35.315\ \mathrm{m}^3}\right]\left[\frac{8{,}760\ \mathrm{hr}}{\mathrm{yr}}\right]\left[\frac{60\ \mathrm{min}}{\mathrm{hr}}\right]\left[\frac{235\ \mathrm{ppmv}}{\frac{10^6}{\mathrm{ppmv}}}\right]$$

4,721.693 m^3/yr of VOC

VOC mass inflow to flare =

$$\left[4{,}721.693\,\frac{\mathrm{m}^3}{\mathrm{yr}}\right]\left[86.18\,\frac{\mathrm{g}}{\mathrm{mol}}\right]\left[\frac{1\mathrm{atm}}{(298\ \mathrm{K})\left\{8.205\mathrm{x}10^{-5}\ \frac{\mathrm{m}^3\cdot\mathrm{atm}}{\mathrm{mol}\cdot\mathrm{K}}\right\}\left\{\frac{1000\ \mathrm{g}}{\mathrm{kg}}\right\}}\right]\left(\frac{2.2\ \mathrm{lb}}{\mathrm{kg}}\right)\left(\frac{1\ \mathrm{ton}}{2{,}000\ \mathrm{lb}}\right)$$

= 18.345 tpy

VOC emissions rate from flare = $18.345\ \mathrm{tpy}\ \mathrm{x}[1 - 98.0\%\ \mathrm{destruction\ efficiency}]$

= 0.37 tpy or 0.08 lb/hr

3.0 POTENTIAL TO EMIT SUMMARY

A summary of the total facility potential emissions of the SHCDP is included in **Error! Reference source not found.**.

Table D-7. Summary of Facility's Uncontrolled Fugitive Emissions and Potential to Emit

Pollutant	Landfill (EU-1) Emissions,		Landfill Gas Flare System (EU-2 & EU-3) Potential to Emit (tpy)	Facility's Total Potential to Emit (tpy)
	Uncontrolled Fugitive Emissions (tpy)	Potential to Emit (tpy)		
NO_X	--		12.06	12.06
CO	--		65.63	65.63
PM_{10}	--		3.02	3.02
SO_X	--		11.61	11.61
VOC	17.92	4.48	0.37	4.85
HAP	10.54	2.61	1.45	4.06

Appendix E

Actual Emissions Summary

1.0 INTRODUCTION

The Sandy Hill Creative Disposal Project (SHCDP) operates two (2) emission units in accordance with Title V / Part 70 Operating Permit (TVOP) No. 24-033-01862: MSW Landfill or Landfill (EU-1) and Landfill Gas Flare System comprising of EU-2 (main candlestick flare) & EU-3 (backup candlestick flare). Only one of the two flares operates at a time. The backup flare is only used during downtime of the main flare. Collected landfill gas (LFG) is primarily routed to an off-site facility, which operates under a separate operating permit, for beneficial use. The flares control excess LFG above the demand of the off-site facility, if needed.

2.0 ACTUAL EMISSIONS ESTIMATES

As stated in Section 2.1 of Appendix D, LFG collection rates have been higher than the modeled LFG generation rate. Further, SHCDP is closed and capped, the LFG emissions are on the decline. As such, we summarized previously reported actual emissions reported in the annual emissions certification reports.

A summary of the previously reported facility-wide actual emissions reported in the annual emissions certification reports is provided in **Table E-1**.

Table E-1. Summary of Actual Emissions from Annual Emissions Certification Reports

Year	NO_X (tpy)	SO_X (tpy)	PM_{10} (tpy)	CO (tpy)	VOC (tpy)	HAP (tpy)
2017	2.31	0.52	0.14	12.57	0.84	0.35
2018	3.72	0.84	0.22	20.22	0.85	0.45
2019	1.63	0.37	0.10	8.90	0.76	0.25
2020	0.98	0.22	0.06	5.31	0.71	0.13
2021	0.83	0.19	0.05	4.52	0.86	0.13

Source: Facility's Annual Emissions Certification Reports for calendar years 2017 through 2021.

Because LFG emissions are on the decline, a summary of the latest previously reported 2021 actual emissions from various emission units is provided in **Table E-2**.

Table E-2. Summary of Actual Emissions from 2021 Annual Emissions Certification Report

Year	NO_X (tpy)	SO_X (tpy)	PM_{10} (tpy)	CO (tpy)	VOC (tpy)	HAP (tpy)
Landfill (16-1862)	n/a	n/a	n/a	n/a	0.83	0.03
Landfill Gas Flare System (9-0658)	0.83	0.19	0.05	4.52	0.03	0.10
Total	0.83	0.19	0.05	4.52	0.86	0.13

Source: Facility's Annual Emissions Certification Reports for calendar year 2021 (Appendix B).