

**COMMONWEALTH OF VIRGINIA  
Department of Environmental Quality  
Northern Regional Office**

**STATEMENT OF LEGAL AND FACTUAL BASIS**

Loudoun County Department of General Services, Waste Management Division  
801 Sycolin Road SE, Suite 300, MSC #48, Leesburg, Loudoun County, Virginia 20175  
Permit No. NRO - 72348

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Loudoun County Department of General Services applied for a Title V Operating Permit for its 21101 Evergreen Mills Road, Leesburg, Loudoun County, Virginia facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact: \_\_\_\_\_ Date: \_\_\_\_\_

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Thomas A. Faha

## **FACILITY INFORMATION**

### Permittee

Loudoun County Department of General Services  
801 Sycolin Road SE, Suite 300, MSC #48  
Leesburg, Virginia 20175

### Facility

Loudoun County Solid Waste Management Facility  
21101 Evergreen Mills Road  
Leesburg, Virginia 20175

State-County-Plant Identification Number: 51-107-00135

## **SOURCE DESCRIPTION**

NAICS Code: NAICS 562212 – Solid Waste Landfill

The main process occurring at Loudoun County Solid Waste Management Facility (Loudoun County Landfill) is the sanitary landfilling of municipal solid waste (MSW).

The MSW received is hauled in trucks along paved and gravel roads for transport to the working face of the landfill for final disposal in different Resource Conservation and Recovery Act (RCRA) "Subtitle D" units at the facility.

Over time, the landfilled MSW undergoes anaerobic decomposition forming landfill gas (LFG) which primarily consists of methane and carbon dioxide (an approximate 50%/50% by volume mixture) and a small amount of non-methane organic compounds (NMOC). This NMOC fraction often contains various organic hazardous air pollutants (HAPs) and volatile organic compounds (VOC). The LFG produced is collected and combusted in the facility's permitted enclosed flare system and/or sold or used as fuel.

LFG is collected or "captured" from the interior of the landfill by a series of vertical extraction wells and horizontal trenches, which are embedded in the landfill at various depths. The extraction wells or trenches are connected to header pipes that direct the LFG to the enclosed flare.

Loudoun County's Department of General Services operates a municipal solid waste (MSW) landfill with two disposal units: Loudoun County Landfill Disposal Unit (LCLFDU) and Woods Road Disposal Unit (WRDU). LCLFDU consists of six phases which occupy a 71.7 acre waste disposal footprint and has a maximum design capacity of 1,555,418 Mg (1,714,526 tons). WRDU disposal unit is being developed in five phases with a total airspace capacity of 22.4 million cubic yards and a design life of 47 years. WRDU has been designed with a waste

disposal capacity of approximately 7,569,000 tons (6,866,559 Mg). The landfill operates Landfill Gas (LFG) Collection and Control System equipped with an enclosed flare with a design capacity of 900 scfm to control emissions and maintain a synthetic minor classification.

The enclosed flare has a maximum rated capacity of 900 scfm. The blower supplies the necessary pressure and momentum to supply LFG to the flare when in operation. Air emissions from the enclosed flare primarily include NO<sub>x</sub>, SO<sub>2</sub>, CO, VOCs, NMOCs, HAPs, and PM<sub>10</sub>/PM<sub>2.5</sub>. The design of the existing LFG blower/flare system allows for expansion by adding new blowers or flares as needed. When total LFG generation volume exceeds 90% of the capacity of the existing flare (900 scfm), Loudoun County will notify DEQ and will submit a design for a blower/flare system expansion for DEQ's approval. This condition is not expected to occur before 2018. The 2013 Landfill Gas Flare Compliance Test Report shows that the LCSWMF gas flow rate averaged 429 scfm during the compliance test completed on April 23, 2013.

The facility is a not Title V major source of any criteria pollutants or hazardous air pollutants (HAPs), but is a Title V source by rule, in accordance with 40 CFR 60, Subpart WWW: Standards of Performance of Municipal Solid Waste Landfills, because the landfill design capacity is greater than 2.5 million megagrams (mass) and/or 2.5 million cubic feet (volume). This source is located in an ozone and PM<sub>2.5</sub> non-attainment area and an attainment area for all other pollutants. The facility is currently permitted under a Minor NSR Permit issued on August 7, 2009 (provided as Attachment A).

## **COMPLIANCE STATUS**

A full compliance evaluation of this facility, including a site visit, was conducted on March 24, 2011. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

**EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION**

The emissions units at this facility consist of the following:

<b>Emission Unit ID</b>	<b>Stack ID</b>	<b>Emission Unit Description</b>	<b>Size/Rated Capacity*</b>	<b>Pollution Control Device (PCD) Description</b>	<b>PCD ID</b>	<b>Pollutant Controlled</b>	<b>Applicable Permit Date</b>
<b>Landfill</b>							
WRDU	N/A	Woods Road Disposal Unit	6,866,559 megagrams (Mg)	One (1) LFG Specialties enclosed flare rated at 900 SCFM	P0001	Non-methane Organic Compounds	08/07/09
LCLFDU	N/A	Loudoun County Landfill Disposal Unit	1,555,418 Mg				

\*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

**EMISSIONS INVENTORY**

A copy of the facility's 2012 annual emission update is provided as Attachment B. The emissions (including emissions from the flare and fugitive NMOCs and VOCs (i.e., from uncollected LFG) are summarized in the following tables.

2012 Actual Emissions

2012 Emission in Tons/Year					
NMOC	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>	NO <sub>x</sub>
4.797	1.871	45.732	0.918	1.037	2.439

## **LANDFILL REQUIREMENTS – (Emission Unit ID# LCLFDU and WRDU)**

### **Limitations, Monitoring, Corrective Actions, Testing, Recordkeeping and Reporting**

The following limitations are derived from Conditions 2 – 21, 23 – 25, and 28 – 31 of the August 7, 2009 minor new source review permit issued to the Department of General Services for the Loudoun County Solid Waste Management Facility (LCSWMF).

Condition 1: Limits landfill design capacity for Loudoun County Landfill Disposal Unit (LCLFDU) and Woods Road Disposal Unit (WRDU) to 8,421,977 Mg (9,283,529 tons) combined, per Condition 2 of the 8/7/09 NSR Permit.

Condition 2: Prescribes design and operational standards for the landfill gas collection and control system (GCCS) per Condition 4 of 8/7/09 NSR Permit.

Condition 3: Prescribes emission controls of non-methane organic compounds (NMOC) as controlled by an enclosed flare, per Condition 5 of the 8/7/09 NSR permit.

Condition 4: Requires the enclosed flare achieve control efficiency for NMOCS of no less than 98% (on a mass basis) or reduce NMOC outlet concentration to less than twenty ppmvd, as hexane at three percent oxygen, per Condition 6 of the 8/7/09 NSR permit.

Condition 5: Requires the facility to implement fugitive dust emission controls in accordance with Condition 7 of 8/7/09 NSR permit.

Condition 6: Requires LCSWMF to develop a startup, shutdown, and malfunction (SSM) plan in accordance with 40 CFR 63, Subpart AAAA (40 CFR 63.6(e)(3)), per Condition 8 or 8/7/09 NSR permit.

Condition 7: Requires LSCWMF to operate the LFG GCCS all time when collected gas is routed to the system in accordance with Condition 18 of 8/7/09 NSR permit.

Condition 8: Requires facility to assure proper operation and maintenance of the enclosed flare, proper training for each operator, and all associated records in accordance with Condition 19 of 8/7/09 NSR permit.

Condition 9: States the approved fuel for the enclosed flare is LFG, with propane or natural gas to light the pilot light, per Condition 20 of 8/7/09 NSR permit.

Condition 10: Outlines the procedures for removal of the GCCS per Condition 21 of 8/7/09 NSR permit.

Condition 11: Sets NO<sub>x</sub> (as NO<sub>2</sub>) and CO emission limits for the enclosed flare per Condition 23 of 8/7/09 NSR permit.

Condition 12: Sets visible emission limits for the enclosed flare per Condition 24 of 8/7/09 NSR permit.

Condition 13 through 17: Outlines GCCS and surface monitoring requirements for LCSWMF, requires LCSWMF implement a program for cover integrity as well as repairs in accordance with 40 CFR 60.755(c)(5), requires GCCS be equipped with a continuous gas flow rate measuring device and the enclosed flare be equipped with a temperature monitoring device. Also requires proper maintenance, observations, and recordkeeping per Conditions 9, 11, 12, 13, and 14 of 8/7/09 NSR permit.

Conditions 18 through 20: Specifies corrective actions that shall be taken in case of exceedances of Oxygen concentrations, landfill surface methane emissions or positive gauge pressure at well heads per Conditions 15, 16, and 17 of 8/7/09 NSR permit.

Condition 21: Outlines all associated recordkeeping to demonstrate compliance with the requirements contained in the permit per Condition 28 of 8/7/09 permit.

**INSIGNIFICANT EMISSION UNITS**

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
G001	One (1) Caterpillar Model # D40P1S, engine-generator set.	9 VAC 5-80-720.C	--	40 kW
G002	One (1) Cummins Model #35DSFAA engine-generator set	9 VAC 5-80-720.C	--	35 kW (145 HP)
G003	One (1) Cummins Model #10DSKAA engine-generator set	9 VAC 5-80-720.C	--	10 kW (27 HP)
P002	One (1) Leachate Treatment Stripper Tower	9 VAC 5-80-720.B	VOC	--
P003	One (1) Above Ground Diesel Fuel Storage Tank	9 VAC 5-80-720.B	VOC	--
P004	One (1) Above Ground Gasoline Storage Tank	9 VAC 5-80-720.B	VOC	--

P005	One (1) Above Ground Diesel Fuel Storage Tank	9 VAC 5-80-720.B	VOC	--
P006	One (1) Propane Storage Tank	9 VAC 5-80-720.B	VOC	--
P007A-P007B	Two (2) Propane Storage Tanks	9 VAC 5-80-720.B	VOC	--

<sup>1</sup>The citation criteria for insignificant activities are as follows:  
 9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application  
 9 VAC 5-80-720 B - Insignificant due to emission levels  
 9 VAC 5-80-720 C - Insignificant due to size or production rate

**MACT ZZZZ EMISSION UNIT**

The source submitted a permit application for their initial Title V permit and that application included one emergency generator (Ref. No. G001) that is subject to MACT ZZZZ. The authority to enforce this regulation has been retained by the EPA and not incorporated by reference into the Virginia regulations (9 VAC 5-60-100). The emissions unit is subject to MACT ZZZZ and the source must comply with the applicable requirements of the regulation. The applicable requirements for this regulation have not been included in this Title V permit because Virginia regulations (9 VAC 5-80 110.A.2) states that for any source other than a major source subject to this article [Federal Operating Permits for Stationary Sources], the board shall include in the permit all applicable requirements that apply to emissions units that cause the source to be subject to this article. LCSWMF is not a major source and the landfill is the emission unit that causes the source to be subject to Title V permitting. This permitting approach has been discussed with Kathleen Cox, EPA Region III.

**INAPPLICABLE REQUIREMENTS**

The applicant did not identify any inapplicable requirements in its application. For clarification purposes, the following three requirements were included in this section for reference purposes only:

Citation	Title of Citation	Description of Applicability
40 CFR 60, Subpart Kb	Volatile Organic Liquid Storage Vessels	The leachate storage tanks have vapor pressures less than the NSPS Kb specified threshold limits.
40 CFR 64	Compliance Assurance Monitoring	The landfill is subject to an NSPS that was proposed after 11/15/1990; therefore the regulation is not applicable.
40 CFR 72	Acid Rain Regulations	The landfill is not considered a "qualifying facility".

9 VAC 5, Rule 4-43	Emission Standards for Municipal Solid Waste Landfills	Does not apply since the facility was modified after 05/30/91.
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July 1, 2011 – EPA’s final rule defers, for a period of three years, greenhouse gas (GHG) permitting requirements for carbon dioxide (CO<sub>2</sub>) emissions from biomass-fired and other biogenic sources. The municipal solid waste landfill is considered a biogenic source and therefore there are no applicable GHG permitting requirements.

**STREAMLINED CONDITIONS**

Condition 3 of 8/7/09 mNSR permit, Landfill Gas (LFG) Collection and Control System Design Plan, has been streamlined out. The requirements of this condition were fulfilled by submittal of the final WRDU GCCS design plan dated 2/23/11, and approved by DEQ on 3/21/11, and the submittal of the LCLFDU GCCS design plan from LSCWMF dated 6/17/11, and approved by DEQ on 6/27/11.

**GENERAL CONDITIONS**

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

**Comments on General Conditions**

**Permit Expiration**

These conditions refer to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit applications has been delegated to the Regions as allowed by §§2.2-604 and §10.1-1185 of the *Code of Virginia*, and the “Department of Environmental Quality Agency Policy Statement No. 2-09”.

These general conditions cites the Article that follow:

Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources

**Failure/Malfunction Reporting**

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to

both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

This general condition cites the sections that follow:

- 9 VAC 5-40-41. Emissions Monitoring Procedures for Existing Sources
- 9 VAC 5-40-50. Notification, Records and Reporting
- 9 VAC 5-50-50. Notification, Records and Reporting

### **Permit Modification**

This general condition cites the sections that follow:

- 9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources
- 9 VAC 5-80-190. Changes to Permits.
- 9 VAC 5-80-260. Enforcement.
- 9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources
- 9 VAC 5-80-1605. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
- 9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

### **Malfunction as an Affirmative Defense**

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Conditions 55 thru 58.

### **STATE ONLY APPLICABLE REQUIREMENTS**

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

- 9 VAC 5, Chapter 50, Part II, Article 2: Standards of Performance for Odorous Emissions (Rule 5-2)

### **CONFIDENTIAL INFORMATION**

The permittee did not submit a request for confidentiality. All portions of the Title V permit and application are suitable for public review.

## **PUBLIC PARTICIPATION**

A public notice was placed in the Loudoun Times-Mirror newspaper on October 23, 2013, for comments to be received on the proposed permit from October 23, 2013 to November 25, 2013. However, the required initial notification to EPA, affected states and those on the agency mailing list were not completed. Therefore, the DEQ regional office will readvertise the proposed permit with public notice placed in the Loudoun Times-Mirror newspaper on November 20, 2013, for comments to be received from November 20, 2013 to December 20, 2013. In addition, a copy of the notice was sent to EPA Region III staff, contacts for the affected states and individuals or organizations on the agency mailing list for Title V permits. No public comments were received by the end of the comment period on December 20, 2013. The concurrent EPA review period of the proposed permit ended January 4, 2014. The EPA staff also did not provide any comments.