



PERMIT APPLICATION REVIEW SUMMARY

New Hampshire Department of Environmental Services
Air Resources Division
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Facility:	Mt. Carberry Landfill – Androscoggin Valley Regional Refuse Disposal District (AVRRDD)	Engineer:	Cathy Beahm			
Physical Location:	Bean Brook Road, Success, NH	Mailing Address:	15 Mt. Forist St. PO Box 336, Berlin, NH			
AFS #:	3300790120	Application #:	12-0201	Date:	01/08/13	Page 1 of 5

PROJECT DESCRIPTION

Androscoggin Valley Regional Refuse Disposal District (AVRRDD) submitted an application on November 13, 2012 for a significant amendment to Temporary Permit TP-0108 to add one existing and one new diesel-fired emergency generator to the permit. When TP-0080 was issued, the existing emergency generator was considered an insignificant activity as defined in Env-A 609.04 because it combusts diesel fuel and has a design gross heat input greater than 0.15 MMBtu/hr but less than 1.5 MMBtu/hr and actual emissions less than 1,000 lbs/yr of all regulated air pollutants in aggregate. However, because AVRRDD is proposing to install a second diesel-fired emergency generator, the combined design gross heat input will exceed the 1.5 MMBtu/hr permitting threshold. In addition, both engines are subject to 40 CFR 60, Subpart IIII and these requirements will also be included in the amended permit.

FACILITY DESCRIPTION

AVRRDD owns the Landfill located in Success, New Hampshire. The Landfill has an existing LFG collection and control system that has been operational since October 1, 2007. The Landfill has been operational since approximately 1989 and currently has approximately 2.5 million tons of waste in place, including construction and demolition (C&D) waste, municipal solid waste (MSW) and paper/pulp sludge from the paper mill. The existing Landfill is a mound type landfill with two landfill phases: Phases 1 and 2. Phase 1 contains Stages 1 through 4 and is currently closed to filling, with a temporary plastic cover in place to prevent water infiltration and enhance odor control/LFG collection. Phase 2 consists of Stages 7, 8, and 9. Stages 7 and 8 are currently closed to filling with a temporary plastic cover in place. Stage 9 is part of the active landfill area. The Phase 2 vertical expansion area is currently permitted to operate and includes Stages 10 and 11, which consists of an overfill of Stages 7, 8 and 9. Filling in Stage 10 (overfill of Stage 9) began operation in 2012.

Future landfill expansion includes Stages 5 and 6, which will be an overfill of Stages 1 through 4 in Phase 1. Future landfill development includes Phase 3 (currently permitted capacity) which will consist of additional landfill expansion located to the east and the north of the existing Phase 2 area. Phase 3 North is a conceptual expansion of the planned Phase 3 landfill area. An application for additional expansion of Phase 3 North is currently under review by DES. The Landfill has current permitted disposal capacity to last approximately 40 years (i.e. through 2049).

In addition, AVRRDD has installed a LFGE project to convey all LFG collected at the Landfill to the existing paper mill located in Gorham (Mill), where the LFG will be combusted in boilers. The LFGE project will have capacity greater than the current LFG recovery model projections for the Landfill. The LFGE project will serve as the primary control for all LFG collected at the Landfill when the LFGE project is operational. The Flare will serve as the primary control device for all LFG collected when the LFGE project is offline.

AVRRDD operates an existing diesel-fueled emergency generator for back-up use for the flare and is proposing to install a second diesel-fueled emergency generator for the new LFG blower associated with the LFGE project. AVRRDD also operates an existing LPG-fired emergency generator for the scale house which is below permitting thresholds but is included in the calculations for facility-wide potential to emit which is included below.

The facility-wide potential emissions of SO₂ exceed the Title V permit threshold of 100 ton/yr. The facility is therefore considered a *major source* for this pollutant under Title V of the Clean Air Act. In addition, the facility is subject to 40 CFR 63, Subpart WWW which requires a Title V permit for these facilities.

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PERMIT HISTORY

Table 1 – Permitting History

Permit #	Application #	Description	Issue Date	Expiration Date
TP-B-0535	06-0159	Initial Temporary Permit	05/24/07	11/30/08
TP-B-0535a	07-0154	Minor Permit Amendment – Response to comments from AVRRDD.	10/02/07	11/30/08
TP-B-0535	08-0172	Minor Permit Amendment – Allow the discontinuation of use of the SulfaTreat system when it is not needed to meet the SO ₂ limit stated in the Temporary Permit.	08/15/08	11/30/08
TBD	07-0192	Initial Title V Operating Permit application	TBD	TBD ¹
TBD	08-0490	Amended Title V Operating Permit application	TBD	TBD
TP-0108	12-0102	Temporary Permit to allow LFG to be routed to Gorham Paper and Tissue, clarify flare as air pollution control equipment and revise monitoring, recordkeeping and reporting requirements.	09/28/12	03/31/14

PROCESS/DEVICE DESCRIPTION

Table 2 identifies the significant emission units at the facility. EU01 is the Landfill, which emits fugitive emissions of LFG. EU02 is the landfill gas utility flare, which emits secondary pollutants resulting from combustion of the collected LFG. EU03 is the existing emergency generator for the flare. EU04 is the proposed emergency generator for the LFG blower for the LFGE project.

Table 2 – Significant Activities

Emission Unit ID	Device	Manufacturer Model Serial Number	Construction Start Date	Maximum Design Capacity and Fuel Type(s) ²
EU01	Landfill	N/A	1989 ³	3,421,741 cubic meters (Phase I, Stages 1 – 4 and Phase II, Stages 7 – 11) ⁴
EU02	Landfill Gas Utility Flare	Parnel Biogas Skid Mounted Utility Flare System SN 07-051	2007	36 MMBtu/hr Landfill Gas – equivalent to 1,200scfm at 50% methane equivalent
EU03	Emergency Generator for Flare	Caterpillar D100-4 F3A01959	2006	1.08 MMBtu/hr (100 kW; 40 CFR 60, Subpart III, EPA Certified Tier 2) Diesel – equivalent to 7.9 gal/hr
EU04	Emergency Generator for New LFG Blower	Caterpillar D150-8 TBD	2012	1.62 MMBtu/hr (150 kW; 40 CFR 60, Subpart III, EPA Certified Tier 3) Diesel – equivalent to 11.8 gal/hr

¹ FY07-0192 was deemed complete in a letter from NHDES to AVRRDD dated December 7, 2007.

² Note that only one value, the flow rate in *scfm*, is designated as the maximum permitted capacity of the flare. The heat input value is provided for informational purposes only and does not represent an enforceable permit limitation.

³ DES issued approval for the Stage 9 landfill expansion on May 24, 2006 which constitutes a modification under 40 CFR 60, Subpart WWW. In addition, the landfill expansion resulted in a permitted design capacity of greater than 2.5 million cubic meters and subjects AVRRDD to part 70 permitting and increased regulatory responsibility under 40 CFR 60, Subpart WWW.

⁴ The volume referenced for EU01 is based on the Landfill units that currently have full operational approval, specifically Phase I, Stages 1-4 and Phase II, Stages 7-11. Additional capacity is permitted, but has not yet received operational approval, which includes Phase I, Stages 5 and 6, and Phase 3.

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POLLUTION CONTROL EQUIPMENT

AVRRDD does not operate any pollution control equipment on the diesel-fired emergency generators.

EMISSION CALCULATIONS

The attached spreadsheet shows the short and long-term emission calculations for the two diesel-fired emergency generators as well as an existing LPG-fired emergency generator that is below the permitting threshold of Env-A 607.01. The two diesel-fired emergency generators’ emission rates are calculated based on 40 CFR 60, Subpart IIII Tier 2 limits for 100 kW engines (EU03) and Tier 3 for 150 kW engines (EU04) except for SO₂ which is based on AP-42, Chapter 3.3 (10/96) *Gasoline and Diesel Industrial Engines*. The LPG-fired emergency generators’ emission rates were calculated based on AP-42, Chapter 3.2, (07/00) *Natural Gas-fired Reciprocating Engines (Table 3.2-1 Uncontrolled Emission Factors for 2-Stroke Lean-Burn Engines)*.

Table 3 contains the emission summary of potential emissions from the individual emission units as well as facility-wide totals.

Table 3 – Emission Summary (tpy)							
Device/Process	SO₂	NO_x	PM₁₀	CO	VOCs	H₂S	HCl
EU01 – Landfill (75% capture efficiency)	--	--	--	--	6.9	19.7	--
EU02 – Flare (with Sulfatreat) ⁵	212.2	10.9	2.7	59.0	0.5	0.3	0.2
EU03 – Emergency Generator for Flare	0.08	0.36	0.02	0.28	0.36	--	--
EU04 – Emergency Generator for New LFG Blower	0.12	0.33	0.02	0.29	0.33	--	--
Emergency Generator for Scale House (LPG-fired)	2.7E-05	0.15	1.8E-03	0.02	0.01	--	--
Facility Total	212.4	11.7	2.7	59.6	8.1	20.0	0.2

AVRRDD installed a methane analyzer on the outlet of the new compressor to monitor methane concentration of LFG going to the Mill. Because the line is under high pressure (30 – 50 psi) and the amount of LFG sampled is low (0.07 cfm), it is infeasible to return the sample of LFG back into the pipe. Due to the small amount of analyzer emissions in relation to the fugitive emissions emitted from the landfill, DES has agreed that analyzer emissions will be considered as fugitive emissions.

MODELING

DES performed a review of the modeling files that were provided in the addendum to application 12-0102 dated June 26, 2012 using the emission rates described above. All of the maximum predicted impacts are below the National Ambient Air Quality Standards (NAAQS) and Ambient Air Limits (AALs).

⁵ The Sulfatreat System is required to be operated when H₂S in the LFG is measured at 4,000 ppm. At that level, potential emissions of SO₂ are calculated to be 212.2 TPY using the ideal gas law.

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COMPLIANCE STATUS**Emission Testing**

There has been no testing conducted on the open flare. There has been sampling of landfill gas conducted at the header coming from the landfill. There has not been any historical testing of the emergency generators.

Inspections

The facility was inspected on July 20, 2009. No deficiencies were identified during the inspection.

Reports/Fees

DES received the 2011 annual emission report on April 16, 2012 and the associated fees on April 12, 2012.

REVIEW OF REGULATIONS**State Regulations***Env-A 600 – Permitting*

- 606.02(c)(1) – Applicable – The emergency generators need to be limited to 500 hours per year to be exempt from air dispersion modeling.
- 607.01(a) – Applicable – The flare is rated > 10 MMBtu/hr.
- 607.01(d)(1) – Applicable – EU03 and EU04 have a combined design gross heat input greater than 1.5 MMBtu/hr.
- 607.01(d)(2) – NOT Applicable – LPG-fired emergency generator does not have a design gross heat input greater than 1.5 MMBtu/hr.
- 607.01(n) – Applicable – The facility is limiting SO₂ emissions below 250 TPY for PSD avoidance based on limitations on H₂S concentration in the LFG.
- 607.01(u) – Applicable – The facility is required to operate a collection and control system for compliance with Env-A 1400.

Env-A 618 – Additional Requirements in Non-Attainment Areas and the New Hampshire Portion of the Northeast Ozone Transport Region

- NOT Applicable – All emissions are below NSR major source and major modification thresholds.

Env-A 619 – Prevention of Significant Deterioration of Air Quality Permit Requirements

- NOT Applicable – The facility is a synthetic minor source for SO₂ and the modification to put in the LFGE system is below the major modification thresholds and did not trigger a PSD review.

Env-A 810 – Air Pollution Control Equipment Monitoring Plan; Additional Testing and Monitoring

- Applicable – The GCCS Monitoring Plan was submitted with application 12-0102.

Env-A 1000 – Prevention, Abatement, and Control of Open Source Air Pollution

- 1002 – Applicable – The source shall control the emissions of fugitive dust.

Env-A 1200 – Prevention, Abatement and Control of Stationary Source Air Pollution

- NOT Applicable – Potential emissions of VOCs are less than 50 tpy.

Env-A 1300 – Nitrogen Oxides Reasonably Available Control Technology

- NOT Applicable – Potential emissions of NO_x are less than 50 tpy.

Env-A 1400 - Regulated Toxic Air Pollutants

- A collection and control system is required for the Landfill to show compliance with AALs for H₂S.

Env-A 1600 – Fuel Specifications

- NOT applicable to landfill gas.
- Applicable to No. 2 fuel oil but Federal Regulations (40 CFR 60, Subpart IIII) pertaining to sulfur content in diesel fuel for the two emergency generators is more restrictive.

Env-A 2000 – Fuel Burning Devices

- 2002.02 – Applicable to EU02, EU03 and EU04 – Visible emissions limited to 20%
- 2002.08 – Applicable to EU02, EU03 and EU04 – Total suspended particulate (TSP) emissions limited to 0.30 lb/MMBtu.

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Federal Regulations

40 CFR 60, Subpart WWW – *Standards of Performance for Municipal Solid Waste Landfills*

- Applicable – The facility has a design capacity exceeding 2.5 million megagrams, making the facility subject to the Title V permit program. The facility must also comply with reporting requirements and the requirement to calculate NMOC emissions.

40 CFR 63, Subpart AAAA – *Municipal Solid Waste Landfills for Facilities without a Bioreactor*

- NOT Applicable – Requirements for startup, shutdown, and malfunction plan will not apply unless the NMOC generation rises to 50 megagrams per year.

40 CFR 60, Subpart IIII – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines –*

- Applicable to EU03 and EU04 – The facility has one existing and one proposed emergency generator that are subject to the requirements of 40 CFR 60, Subpart IIII.

40 CFR 63, Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

- Applicable to EU03 and EU04 – A stationary RICE located at an area source of HAP emissions is new if the facility commenced construction of the stationary RICE on or after June 12, 2006 pursuant to §63.6590(a)(2)(iii). A new or reconstructed stationary RICE located at an area source must meet the requirements of 40 CFR 63, Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart IIII, for compression ignition engines. No further requirements apply for such engines under 40 CFR 63, Subpart ZZZZ.
- Applicable to the LPG-fired emergency generator – A stationary RICE located at an area source of HAP emissions is existing if the facility commenced construction of the stationary RICE before June 12, 2006 (In this case, the LPG-fired emergency generator was purchased by AVRRDD on December 22, 2003.). An existing stationary emergency RICE must meet the requirements of 40 CFR 63, Subpart ZZZZ which include work practice standards. These requirements will be included in the Title V permit since this device does not meet the applicability requirements for a Temporary Permit under Env-A 607.01.