

COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection
Southwest Regional Office

TO AQ Case File TVOP-56-00181

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for 6/30/14

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RE Review Memo of Title V Renewal Application
Southern Alleghenies Landfill, Inc.
Conemaugh Township
Somerset County

APS 786528 AUTH 935745 PF 495355

Background

Southern Alleghenies Landfill, Inc. (a subsidiary of Waste Management of Pennsylvania, Inc.) operates a municipal solid waste landfill in Conemaugh Township, Somerset County, Pennsylvania. Southern Alleghenies Landfill accepted municipal waste in their old, unlined area (Phase I) from 1986 through 1990. Southern Alleghenies Landfill solid waste permit (SW #100081) was modified on April 18, 1990 to incorporate the new solid waste regulations requiring lined cells, etc. At that time, the regional office of the Bureau of Waste Management considered the design capacity of the site Phase II permit to be 4.2 million tons, giving the site a total capacity of 4.7 million tons of waste at that time. On August 19, 1998 Plan Approval PA-56-00181A was issued for the construction and operation of a Leachate Evaporator System (LES). Air Quality Plan Approval/Operating Permit 56-322-001 was issued to Southern Alleghenies Landfill on April 27, 1990 to allow the construction of, first, a temporary candle flare and, later, a permanent enclosed flare. Enclosed flare was installed in June 1992, and was stack tested with favorable results in August 1992. According to their Form G(A) and G(B) submittal of April 28, 1995, approximately 0.5 million tons of waste were placed in the Phase I area before it was capped. A flare was required to destroy landfill gas being extracted from the capped Phase I area and the active Phase II area. The extraction system has been expanded to keep up with lined cells, which have been closed since that time. On April 4, 2003 the Bureau of Waste Management granted the landfill an expansion permit of 59.4 acres of disposal area,

referred to as the Phase III area. Plan Approval PA-56-00181B issued on July 22, 2004 granted approval to increase the total site waste limit to 23.9 million tons, increase the gas system to cover the new Phase III area, and to add a second enclosed flare to the facility.

On June 26, 2001 the Department issued initial Title V Operating Permit (TVOP) to operate the Southern Alleghenies Landfill, LFG collection/control system (GCCS) and associated support activities. A Title V Renewal Application was issued on January 29, 2008 with an expiration date of January 29, 2013. A second Title V Renewal Application was received by the Department on July 25, 2012. The application was deemed timely and complete.

Changes to Proposed TVOP Renewal

Southern Alleghenies submitted a Plan Approval application on January 9, 2012. Company is requesting the authorization to operate the candle flare on a more flexible operating schedule than currently permitted. A revision to the Plan Approval was submitted on July 30, 2012 to reflect the stack testing result that was conducted in February, 2012. The Plan Approval was waived on April 21, 2014 and the requested changes are addressed and incorporated in this Title V renewal.

Collected landfill gas (LFG) at the Southern Alleghenies Landfill is routed to the following control / treatment devices:

- Separately owned/operated/permitted High BTU Plant;
- 3,500 standard cubic feet per minute (scfm) Parnell enclosed flare; and
- Backup Candle Flare.

In an effort to minimize sub-surface migration of LFG, the facility has installed wells that are located along the perimeter of the Site, known as 'rock wells.' The collected LFG from these wells typically has a heat content of approximately 250 BTU/scf (based on average CH₄ concentration of 24.8% from bi-weekly measurements of rock well gas system from 9/9/2011 through 11/4/2011). The LFG collected from the 'rock wells' is considered too poor in quality to be processed in the High BTU Plant. Therefore, it is considered more feasible to combust the gas in an on-site flare.

According to manufacturer specifications, the 3,500 cfm Parnell enclosed flare has a turn-down ratio of 10:1. Therefore, the enclosed flare will not operate when the flow of LFG drops below 350 scfm for LFG with a higher heating value of 550 BTU/scf. This corresponds to a lower operating limit of approximately 11.55 MMBtu/hour.

The backup candle flare can operate at flow rates as low as 50 scfm and can also combust gas that is of low heat content. However, the previous Title V Permit for Southern Alleghenies Landfill only allowed for limited operation of the backup candle flare. According to the previous Title V Permit, the collected LFG from the 'rock wells' must be combusted in the primary or enclosed flare. As a result, if the collected 'rock well' gas contains less than 11.55 MMBtu/hour of heat input, then the gas must be supplemented with LFG that would otherwise be processed in

the High BTU Plant, in order to allow the enclosed flare to run. This technical and economic analysis was conducted in order to determine the following:

- Potential lost revenue for the High BTU Plant due to the diversion of LFG to the enclosed flare;
- Increased carbon monoxide (CO) emissions for the enclosed flare; and
- Increased oxides of nitrogen (NOx) emissions for the enclosed flare.

The total heat input of the 'rock well' gas for a range of flow rates, assuming a heat content of approximately 250 BTU/scf and flow rates approaching as high as 800 scfm, there is not enough heat input available to operate the enclosed flare (gas flow rates from the rock well gas system typically range from 250 to 350 scfm). Additional heat input needed to operate the Parnell enclosed flare have be provided by gas that is diverted from the High BTU Plant. The 'supplemental' gas from the High BTU Plant results in lost revenue since the gas would otherwise be processed in the High BTU Plant if the backup candle flare were able to combust the 'rock well' gas. The supplemental gas from the High BTU Plant also results in increased CO and NOx emissions since the gas would otherwise be processed in the High BTU Plant and pipelined off-site if the backup candle flare were able to combust the 'rock well' gas. Table in section EMISSIONS AND CONTROL EQUIPMENT shows the summery of the facility's potential emissions.

The amount of lost revenue (in dollars per year) was determined by calculating the amount of additional heat input needed to operate the Parnell enclosed flare (in MMBTU/year for a range of 'rock well' flow rates) and applying an average market price of \$3.25 per MMBtu of natural gas. Table 1 shows that even if the backup candle flare were operated under the guidelines of *Best Available Technology and Other Permitting Criteria for Municipal Solid Waste Landfills* which allows for a maximum flow rate of 500 dry standard cubic feet per minute (dscfm) for open flares, the High BTU Plant could lose as much as \$115,304 per year in total revenue. Southern Alleghenies, Inc. is requesting the flexibility to operate the backup candle flare at flow rates as high as 800 scfm (for gas with a heat content of 250 BTU /scf or a heat input of less than 11.55 MMBtu/hour). The company claims that proposed expanded use of the open flare provides significant environmental as well as economic benefits.

The company is requesting the following operating guidelines:

- If the heat input of the collected 'rock well' gas is less than 11.55 MMBtu per hour, the company requests the capability to combust the gas in the backup candle flare; and
- If the heat input of the collected 'rock well' gas is greater than or equal to 11.55 MMBtu per hour, the LFG shall be combusted in the Parnell enclosed flare.

The requested changes are granted and incorporated in this Title V renewal.

REGULATORY ANALYSIS

All of the conditions derived from Title 25 of the Pennsylvania Code in the original Title V permit have been included in this renewal. The applicable emission limitations, monitoring,

recordkeeping, reporting and work practice standard requirements of Pa. Code Title 25 Sections 123.1, 123.2, 123.13, 123.21, 123.31, 123.41, 123.42, 127.511, 127.513 and 135.5 have been included in this in this renewal Title V permit.

The collection and control system is subject to the Department's Bureau of Air Quality Permit Manual, Section 7.10; Air Quality Permitting Criteria Including Best Available Technology (BAT) Criteria for Municipal Waste Landfills New Source Performance Standards (NSPS).

Title 25 PA Code Section 122.3 adopts in entirety the Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources promulgated in 40 CFR Part 60 Subpart www. The applicable requirements of Subpart WWW have been exhaustively included in this Title V renewal permit.

Part 63 National Emission Standards for Hazardous Air Pollutants (NESHAP): Title 25 PA Code Section 127.35(b), Part 63 NESHAP for Source Categories are incorporated by reference into the Department's permitting program. Per 40 CFR Part 63 Section 63.1955, the applicable requirements of 40 CFR Part 63 Subpart AAAA- National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills has been included in this Title V renewal permit.

The portable soil/stone processing plant is owned and operated by a separate identity is subject to NSPS Subpart OOO. Conditions for the portable soil/stone processing plant is included as an Alternative Operation.

The diesel engines in emergency generators are subject to NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE) from 40 CFR Part 63 Subpart ZZZZ. Requirements include basic maintenance work practices.

Greenhouse Gases Tailoring Rule for PSD: U.S. EPA determined on December 07, 2009 that GHGs are a threat to public health and welfare. U.S. EPA issued a final Title V Greenhouse Gas Tailoring Rule on May 13, 2010. On June 3, 2010, the EPA published the Greenhouse Gas Tailoring Rule in the Federal Register. The rule established an approach to addressing GHGs from new or modified stationary sources under the Clean Air Act (CAA) Prevention of Significant Deterioration (PSD) permitting program. This rule established an applicability timeline and GHG emission thresholds for requiring facilities to be permitted for GHG emissions after January 2, 2011.

On July 20, 2011, EPA published Bioenergy and Other Biogenic Sources under the Prevention of Significant Deterioration (PSD) and Title V Programs in the Federal Register. This action defers for a period of three (3) years the consideration of CO2 emissions from bioenergy and other biogenic sources (hereinafter referred to as "biogenic CO2 emissions") when determining whether a stationary source meets the PSD and Title V applicability thresholds, including those for the application of BACT. Therefore, the GHG Tailoring Rule has not applied to this facility.

Mandatory Greenhouse Gas Reporting Rule

This part was promulgated on October 30, 2009. In accordance with 40 CFR § 98.2(a), the Greenhouse Gas (GHG) reporting requirements and related monitoring, recordkeeping, and reporting requirements of this part apply to the owners and operators of any facility that is located in the United States and that meets the requirements of either paragraph 40 CFR § 98.2 (a)(1), (a)(2), or (a)(3) of this section.

However, public comments to the Greenhouse Gas Mandatory Reporting Rule (GHG MRR) questioned the requirements of this rule to meet current definitions of “applicable requirement” at 40 CFR §§ 70.2 and 71.2. The commentators requested that USEPA confirm their interpretation of the regulations. The EPA provided the following response: “As currently written, the definition of “applicable requirement” in 40 CFR §§ 70.2 and 71.2 does not include a monitoring rule such as today’s action, which is promulgated under CAA sections 114(a)(1) and 208.” The preamble of the final version of the GHG MRR, located at 74 Fed Reg 209, pp. 56287-56288, states that the GHG MRR is not considered an “applicable requirement” under the Title V Operating Permit program. Therefore, this Subpart, while it may be an obligation for Southern Alleghenies, is not considered an applicable condition for this Title V Operating Permit.

In accordance with 40 CFR §64.2(b)(i), Southern Alleghenies Landfill is not subject to the requirements of the Compliance Assurance Monitoring (CAM) requirements of 40 CFR 64 because the facility is subject to emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the act. This facility is subject to 40 CFR Part 63 Subpart AAAA, which was proposed on August 30, 1999 pursuant to Section 112 of the act.

EMISSIONS AND CONTROL EQUIPMENT

Sources and emissions at this facility consist of the landfill itself (consisting of disposal areas being constructed, disposal areas actively accepting waste, and closed disposal areas), emitting fugitive VOCs, roads, and earthmoving equipment emitting fugitive PM₁₀, a landfill gas collection system (wells, manifolds, routed to a flare or gas processing facility emitting undestroyed VOCs, NO_x, CO, PM₁₀, emergency generators and a soil processing system (fugitive PM₁₀). Table below shows the summery of facility’s potential emissions.

Table 1: Summary of facility wide potential emissions

<i>Emission Source</i>	<i>Potential Emissions (tons/year)</i>									
	<i>NMOC</i>	<i>VOCs</i>	<i>HAPs</i>	<i>HCL¹</i>	<i>NO_x</i>	<i>CO</i>	<i>SO₂</i>	<i>PM-10</i>	<i>Biogenic GHG²</i>	<i>Anthropogenic GHG²</i>
Landfill Fugitive Emissions ³	30.7	12.0	8.4	---	---	---	---	41.9	16,680	127,735
Flare Combustion Emissions	1.8	0.7	4.0	3.8	34.7	90.2	7.5	8.1	94,542	4,510
Paved and Unpaved Roadways ⁴	---	---	---	---	---	---	---	17.6	---	---
Paint Booth Emissions ⁵	---	1.9	---	---	---	---	---	0.7	---	---
Soil Screening Emissions	---	1.1	---	---	13.6	2.9	0.9	3.2	503.7	---
Emergency Diesel Generators	---	0.1	---	---	0.8	0.2	0.1	0.1	28.8	---
Diesel Furnace Emissions ⁶	---	0.02	---	---	0.7	0.2	2.4	0.1	764.4	---
Used Oil Furnace Emissions ⁶	---	0.003	---	---	0.1	0.01	0.2	0.4	70.7	---
Diesel Storage Tanks ⁶	---	---	---	---	---	---	---	---	---	---
Lube Oil Storage Tanks ⁶	---	---	---	---	---	---	---	---	---	---
Used Oil Storage Tanks ⁶	---	---	---	---	---	---	---	---	---	---
Heating Oil Storage Tanks ⁶	---	---	---	---	---	---	---	---	---	---
Mobile Lube Truck ⁶	---	---	---	---	---	---	---	---	---	---
Mobile Diesel Fuel Tanker ⁶	---	---	---	---	---	---	---	---	---	---
Totals	32.5	15.7	12.4	3.8	49.8	93.5	11.0	72.0	112,590	132,245

Note:

- ¹ HCl is the HAP emitted in greatest quantities
- ² Total greenhouse gas emissions are expressed as tons of carbon dioxide equivalents (tons CO₂ eq)
- ³ Fugitive PM emissions referenced from December 2005 Title V Renewal Application,
- ⁴ Emissions referenced from December 2005 Title V Renewal Application, Table 1
- ⁵ Emissions referenced from December 2005 Title V Renewal Application, Table 2
- ⁶ Source is considered insignificant due to size or emissions

The flares are equipped with a flue gas temperature monitor, ultraviolet flame scanner, automatic fail safe valve, auxiliary fuel supply, automatic start-re-start, flow/temperature recorder, purge blower, automatic and manual temperature control louvers, and an aluminum flame arrestor. A 90% collection efficiency was assumed for synthetically capped areas being extracted. It is estimated that the flare would achieve a 98% destruction efficiency.

The Leachate Evaporator unit and the IT-McGill Flare have been decommissioned. The related conditions to these units have been removed from Title V Operating Permit renewal.

The gasoline, diesel storage tanks, mobile lube truck and mobile diesel fuel tankers are insignificant sources at this site. There are no specific regulations governing these sources.

CONCLUSIONS AND RECOMMENDATIONS

Southern Alleghenies has met the regulatory requirements associated with this application submittal. The attached draft permit reflects the applicable regulatory requirements associated with this facility. I recommend that the proposed Title V Operating Permit renewal be issued for this site.