COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection
Southwest Regional Office

MEMO

TO Air Quality Permit File GP5-26-00587C

FROM Alexander Sandy
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DATE December 23, 2013

RE Review of General Permit Application
Laurel Mountain Midstream Operating, LLC
Springhill #2 Compressor Station
Springhill Township, Fayette County
APS 817164 Auth 984180 PF 719219

Background

On July 5, 2013, Laurel Mountain Midstream Operating, LLC (LMM) submitted an application for authorization to use GP-5 for the existing Springhill #2 Compressor Station (Springhill) located in Springhill Township, Fayette County. LMM has proposed to replace the two existing rental compressor engines with units owned by LMM. The new compressor engines will be relocated from the Clyde Compressor Station (GP5-32-00399B); the engines are being stored at Clyde and were never installed at that facility. The engines will be considered new engines per GP-5 Section B Condition 2. Springhill provides compression and dehydration for a natural gas gathering system in the Marcellus Shale. Natural gas is drawn from nearby wells, compressed, dewatered, and discharged to a natural gas transmission pipeline. This site is located southeast of SR 119, on Hope Hollow Road in Lake Lynn, PA. LMM has proposed authorization for the following:

- Two (2) new (relocated) 1,380 bhp Caterpillar G3516B 4SLB natural gas-fired compressor engines; each controlled by a Miratech oxidation catalyst.
- Remove two (2) 1,340 bhp Caterpillar G3616LE 4SLB natural gas-fired compressor engines.
- One (1) previously installed 25 MMscfd triethylene glycol dehydrator with associated 0.25 MMBtu/hr natural gas-fired reboiler.

- Four (4) previously installed produced water tanks – three (3) 150 bbl capacity and one (1) 24 bbl capacity.

Other emission sources include truck load-out, startup/shutdown/maintenance including blowdowns, and fugitive emissions from component leaks. This facility also includes one (1) previously installed 1,500 bhp electric compressor

On July 2, 2013, prior to the receipt of this application, the Department received comments and a request for a public hearing from a citizens group in regards to this application via email. A hard copy was received on July 8, 2013, via mail. On July 11 and 12, 2013, the Department received additional comments from the Fayette County Commissioners and Fayette County Planning Commission.

This application was received on July 5, 2013. On August 1, 2013, the Department requested a revised application on a form provided by the Department in accordance with 25 Pa. Code § 127.621(a). LMM altered the GP-5 application form on the original submittal. The revised application form was received on August 14, 2013. Additional technical information and an updated catalyst performance sheet were received on October 4, 2013.

General plan approvals and general operating permits are issued on a state-wide basis by the Department's Central Office in Harrisburg. Once a general permit is issued, its use may be authorized for individual applications by a regional office provided that the proposed source meets the standard parameters of the general permit.

The notice and comment provision, 25 Pa. Code § 127.611(b), pertains to the issuance of the general state-wide permit, not authorization for use at any particular locations. Section 127.611(b) states "Prior to issuance or modification, the Department will provide an opportunity for public notice and comment as provided in § 127.612 (relating to public notice and review period)." The notice of availability of the proposed GP-5 was published in the Pennsylvania Bulletin (Vol. 42, Pa.B. 1187) on Saturday, March 3, 2012. A 60-day public comment period was provided. On May 2, 2012, the Department extended the public comment period to May 23, 2012, to provide adequate time to fully consider the federal New Source Performance Standards and National Emission Standards for Hazardous Air Pollutant regulations. A comment and response document that addressed comments received on the proposed GP-5 was prepared and sets forth the Department's responses to the comments received. The revised GP-5 was issued on February 1, 2013 (43 Pa.B. 740). Thus, the regulations provide for holding a public hearing when the general permit is proposed, not when a person seeks a specific authorization to use a previously issued general permit.

The application submitted by the applicant, Laurel Mountain Midstream, shows that the proposed sources satisfy all applicable requirements for use of the GP-5. Accordingly, the Southwest Regional office intends to authorize its use. For the reasons explained in the preceding paragraph, no public hearing will be held prior to issuance.

On July 19, 2013, Mark Gorog (Environmental Engineer Manager) and I visited Springhill to observe the operation due to complaints in the past and the public comments received. The facility was operating during the inspection. To enter the facility required additional personal protective equipment (PPE) so only the perimeter was surveyed for odors and visible emissions. We met with Operating Technician Mr. Andrew McClain of Williams outside the fence line of the facility. According to Mr. McClain, LMM is in the process of replacing

rental compressor engines at various stations with units they own; the compressor engines at Springhill had not yet been replaced. Slight odors were detected beyond the fence line and visible emissions were observed emitting from the dehydrator. Reference Method 9 visible emissions readings were not able to be taken due to the sun angle at the time of the inspection. Per 25 Pa. Code § 123.31(b), "A person may not permit the emission into the outdoor atmosphere of any malodorous air contaminants from any source, in such a manner that the malodors are detectable outside the property of the person on whose land the source is being operated. Per 25 Pa. Code §121.1, malodor is defined as "An odor which causes annoyance or discomfort to the public and which the Department determines to be objectionable to the public." The Department did not determine there to be any malodors during the inspection.

Per the Department's request, Dick Baker, Lindsay Sumpter, and Joe McCay of LMM reviewed operations at Springhill on November 11, 2013. According to a letter from LMM received on December 23, 2013, "The group walked around the surrounding area and found no odors outside the fenceline. However, an acrid odor accumulation was noticeable within the fenceline. The odor appears to be coming from the produced water tank attached to the dehydrator. The vent on the tank is below the roofline of the surrounding compressor buildings. The vent's location is resulting in an accumulation and concentration of odor around the tank at ground level." LMM proposes the following measures in an effort to remedy the odor concerns:

1. Enhance odor monitoring by technicians when onsite.
2. Evaluate raising the elevation of the tank vent above the roofline of the surrounding buildings. Expected completion of evaluation and changes is by February 28, 2014.
3. Based on effectiveness of item 2, evaluate installing a flare. LMM will update the Department on feasibility and provide a schedule for installation and obtain any necessary authorization(s), if relevant, by June 30, 2014.

Regulatory Analysis

New Source Performance Standards (NSPS) from 40 CFR 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 does not apply to this facility. Per 40 CFR 60.110b(a), the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 m^3 (19,800 gallons, 471 bbl) that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984. The existing storage tanks at this facility are less than 19,800 gallons; therefore this subpart does not apply.

NSPS from 40 CFR Part 60 Subpart KKK – Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants does not apply to this facility. Per 40 CFR 60.630(a)(1), "The provisions of this subpart apply to affected facilities in onshore natural gas processing plants." This facility does not meet the definition of a natural gas processing plant since it does not engage in the extraction of natural gas liquids from field gas.

NSPS from 40 CFR Part 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition (SI) Internal Combustion Engines (ICE) applies to the proposed Caterpillar engines since each engine is a lean burn engine with maximum power greater than 1,350 bhp and were manufactured after July 1, 2007, in accordance with 40 CFR§ 60.4230(a)(4)(i). Applicable requirements include NOx, CO, and VOC emission limits per § 60.4233, compliance requirements per § 60.4243, initial and subsequent performance testing per §

60.4244, and notifications, reporting and recordkeeping per § 60.4245. Note that the applicable emission standards of GP-5 are more stringent than those required by § 60.4233. Table 1 below compares the applicable emissions standards of GP-5 and NSPS JJJJ.

Table 1: GP-5 and NSPS JJJJ Emissions Standards Comparison

Pollutant	GP-5[a]		NSPS JJJJ		Proposed
	g/bhp-hr	ppmvd @ 15% O_2	g/bhp-hr	ppmvd @ 15% O_2	g/bhp-hr
NOx	0.5	-	1.0	82	0.5
CO	-	47 (or 93% reduction)	2.0	270	0.17 (93% reduction)
NMNEHC/VOC[b]	0.25	-	0.7	60	0.25
HCHO	0.05	-	-	-	0.05

[a] GP-5 emissions standards for new stationary natural gas-fired lean burn engines > 500 bhp.
[b] NMNEHC/VOC emissions do not include formaldehyde.

NSPS from 40 CFR Part 60 Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution applies to the reciprocating compressors since they are located between the wellhead and point of custody transfer and constructed after August 23, 2011. Requirements include replacing rod packing systems per § 60.5385(a), along with notification, monitoring, recordkeeping, and reporting requirements.
This subpart does not apply to the pneumatic controllers because the bleed rate is ≤ 6 scfh [§ 60.5365(d)(i)].

This subpart does not apply to the storage vessels (tanks) since they were constructed prior to August 23, 2011. Furthermore, the VOC emission rates are less than 6 tpy.

National Emission Standards for Hazardous Air Pollutants (NESHAPS) from 40 CFR Part 63 Subpart HH - Oil and Natural Gas Production Facilities applies to the existing dehydrator at this facility. Per 40 CFR 670(b)(2), for area sources, this subpart applies to the owners and operators of TEG dehydration units that are located at oil and natural gas production facilities that meet the specified criteria in paragraph (a) of this section.

According to the model GRI-GLYCalc report included with this application, the actual average emissions of benzene from the dehydration unit are expected to be 0.33 tpy. Per § 63.764(e)(ii), because actual average emissions of benzene are less than 0.9 Mg (1 ton) per year, LMM is exempt from the requirements of § 63.764(d), except that the record of the determination must be maintained as required in § 63.774(d)(1).

NESHAPS from 40 CFR Part 63 Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines (RICE) applies to the proposed compressor engines. Per 40 CFR § 63.6585, a person is subject to this subpart if they own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand. This facility is an area source of HAP emissions and does not include stationary RICE test cells/stands. Therefore the engines are subject to 40 CFR 63 Subpart ZZZZ.

Per 40 CFR § 63.6590(2)(iii), each proposed engine is classified as a "new" stationary RICE since construction commenced after June 12, 2006. Per 40 CFR 63.6590(c)(1), "new" stationary RICE have no further

requirements under 40 CFR 63 Subpart ZZZZ, and must meet the requirements of this part by meeting the requirements of 40 CFR Part 60 Subpart JJJJ.

New Source Review (NSR) Applicability and Aggregation

Per 40 CFR 81.339, Springhill Township, Fayette County is classified as an area of attainment for all National Ambient Air Quality Standards (NAAQS) except for 8-hour ozone. The entire Commonwealth is considered a "moderate" ozone nonattainment area for NOx and VOCs because Pennsylvania is a jurisdiction in the Ozone Transport Region established by operation of law under Section 184 of the Clean Air Act. Recognized precursor pollutants for ozone are NOx and VOCs. For purposes of nonattainment NSR, a facility is major if the PTE exceeds 100 tons of NOx or 50 tons of VOCs. For this type of facility, the major source threshold for PSD is potential emissions of 250 tpy of a single attainment pollutant. The Title V major source criteria for Hazardous Air Pollutants (HAPs) is an emission potential of 10 tpy of a single HAP or 25 tpy of the sum of all emitted HAPs. Notwithstanding the previous sentence, emissions from an oil or gas exploration or production well, with its associated equipment and emissions from a pipeline compressor or pump station may not be aggregated with emissions from other similar units, whether or not the units are in a contiguous area or under common control, to determine whether the units or stations are a major source for HAPs, per the definition of *Title V Facility* under 25 Pa. Code § 121. A facility with a PTE that does not exceed major source thresholds for HAPs is known as an area source.

U.S. EPA issued a final Title V Greenhouse Gas Tailoring Rule on May 13, 2010, which was implemented in two phases. The initial phase commenced on January 2, 2011, applying to facilities already subject to PSD or Title V for non-GHG pollutants that also have a CO_2e PTE of at least 75,000 tpy. The subsequent phase commenced on July 1, 2011, and applies to facilities not previously subject to Title V with a CO_2e equal to or greater than 100,000 tpy.

Springhill does not have PTE in excess of any major source thresholds, including GHGs. However, whether or not emissions from Springhill and emissions from any other exploration, extraction, or production activities should be considered a single source has been examined to determine the applicability of permitting requirements including the Prevention of Significant Deterioration (PSD), nonattainment NSR (NNSR), and Title V permitting programs. The determination has been made in accordance with the Department's final technical guidance document 270-0810-006, *Guidance for Performing Single Stationary Source Determinations for Oil and Gas Industries*, effective October 6, 2012.

For PSD and Title V, the three-part regulatory criteria to determine whether emissions from two or more facilities should be aggregated and treated as a single source are whether the activities:

1. Belong to the same industrial grouping;
2. Are located on one or more contiguous or adjacent properties; and
3. Are under control of the same person (or persons under common control).

For NNSR applicability, the case-by-case determination is a two-part test which considers whether the air contamination sources or combination of sources are:

1. Located on one or more contiguous or adjacent properties; and
2. Owned and operated by the same person under common control.

Natural gas is gathered at Springhill by three main gathering pipelines. Once compressed and dewatered, the natural gas is discharged to a Columbia Gas transmission line. Springhill is not connected to any other natural gas compression or processing facilities

Same Industrial Grouping

Springhill and the upstream gas wells share the same two-digit major SIC code 13 for oil and gas extraction; and therefore meet the same industrial grouping criteria.

Contiguous or Adjacent

The Department's technical guidance document 270-0810-006 (*Guidance for Performing Single Stationary Source Determinations for Oil and Gas Industries*) establishes a quarter mile rule of thumb when determining if sources are located on adjacent or contiguous properties. Properties located within a quarter mile are considered contiguous or adjacent and properties located beyond this quarter mile range may only be considered contiguous or adjacent on a case-by-case basis. The application of the quarter mile or less rule takes a "common sense approach" to determining if sources are located on adjacent or contiguous properties and does not aggregate pollutant emitting activities that, as a group, would not fit within the ordinary meaning of "building," "structure," "facility," or "installation." The guidance document places a focus on the spatial relationship, distance, or proximity of each source, but each situation is analyzed on a case-by-case basis.

According to the applicant, the upstream wells range from 1 mile to 12.5 miles from Springhill. Neither Pennsylvania nor federal regulations define the terms "contiguous" or "adjacent" or place any definitive restrictions on how distant two emission units can be and still be considered located on contiguous or adjacent properties for the purposes of a single source determination. The Department has taken the plain meaning of these words and considers that they mean and relate to a spatial relationship or spatial distance or proximity. While interdependence may be considered when conducting a single source determination, the plain meaning of the terms "contiguous" and "adjacent" should be the dispositive factor when determining whether stationary sources are located on contiguous or adjacent properties.

Considering the above-mentioned factors, Springhill and the upstream production wells do not fit within the ordinary meaning of "building," "structure," "facility," or "installation," and are not consistent with the meanings of "contiguous" or "adjacent." Therefore, Springhill is not considered contiguous or adjacent with any other facilities.

Common Control

As with the contiguous or adjacent factor, common control is determined on a case-by-case basis and is guided by the general definition of control used by Securities and Exchange Commission (SEC). The SEC defines "control" (including the terms "controlling," "controlled by," and "under common control with") as the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a person, whether through the ownership of voting securities, by contract, or otherwise.

According to the applicant, Williams has no ownership stake in any production well that may send natural gas to the station. This is demonstrated by the fact that LMM and Williams have no ownership interest in Chevron or Atlas (the well owners/operators), or any of their respective parents, subsidiaries, or affiliates. Although

LMM has financial agreements with the upstream producers to treat and transport natural gas, Springhill and the upstream producers do not share intermediaries, products, byproducts, or other manufacturing equipment. Based on the above information, Springhill and the upstream production wells are not considered under common control.

Determination

Springhill is not considered contiguous or adjacent or under common control with any other sources. Since all of the above criteria must be met, emissions from Springhill shall not be aggregated with emissions from any other air contamination sources. Note that even if emissions from Springhill were aggregated with those from the upstream production wells, it is not expected that any major source thresholds would be exceeded or even approached.

Sources, Control Devices, and Emissions

Compressor Engines – Two (2) 1,380 bhp Caterpillar G3516B engines

Emissions from the proposed compressor engines were calculated by LMM based upon Caterpillar's "not to exceed" emission data, the proposed oxidation catalyst control efficiency, GP-5 emission limits, AP-42 factors, and an operating time of 8,760 hours per year. Each identical proposed engine is ultra-lean burn and are capable of meeting the applicable GP-5 NOx standard of 0.5 g/bhp-hr according Caterpillar's "not to exceed" emission data. In order to meet the applicable GP-5 CO, NMNEHC, and HCHO standards, each engine will be equipped with a Miratech (or equivalent) oxidation catalyst. Compliance with the emission standards will be demonstrated by performance testing required under Section B Condition 4. Potential emissions for NOx, CO, NMNEHC, and HCHO have been based upon the applicable GP-5 emission standards. Miratech has guaranteed the emission rates will meet or be below the applicable standards. Potential emissions from a single Caterpillar G3516B engine (2 total) are listed in Table 2 below.

Table 2: Caterpillar G3616B w/Miratech Oxidation Catalyst PTE

Pollutant	GP-5 Limit	Pre-Control	Post-Control	lbs/hr	tpy
	g/bhp-hr	g/bhp-hr	g/bhp-hr		
NOx	0.5	0.5	0.50	1.52	6.66
NMNEHC[a]	0.25	0.48	0.25	0.76	3.33
VOC[b]	-	0.91	0.30	0.91	4.00
CO[c]	-	2.43	0.17	0.52	2.27
HCHO	0.05	0.43	0.05	0.15	0.67
Total HAPs[d]	-	-	0.07	0.21	0.91

[a] NMNEHC is non-methane, non-ethane hydrocarbons excluding HCHO.
[b] VOC includes NMNEHC + HCHO.
[c] CO emissions shall not exceed 47 ppmvd @ 15 % O_2 or 93% reduction.
[d] Total HAPs based upon catalyst vendor guarantee for HCHO and AP-42 factors for other HAPs. LMM has assumed catalyst vendor guaranteed control efficiency for NMNEHC for all other HAPs (besides HCHO).

Dehydrator – One (1) 25 MMscfd TEG dehydrator

Emission were calculated by the applicant for the glycol dehydrator using GRI-GLYCalc version 4.0, recent natural gas analysis, the maximum natural gas throughput of 25 MMscfd, and an operation time of 8,760 hours per year. Table 3 below summarizes the natural gas analysis from January 10, 2013, input into the GRI-GLYCalc model.

Table 3: Natural Gas Analysis

Component	Mol %
Nitrogen	0.502
CO_2	0.244
Methane	96.444
Ethane	2.412
Propane	0.245
iso Butane	0.034
n-Butane	0.051
iso Pentane	0.018
n-Pentane	0.013
Hexanes Plus	0.037
Total VOCs	0.397
Total HAPs	0.007

Emission points from the dehydration unit include the regenerator and combustion emissions from the reboiler (this unit does not have a flash tank). Emissions from the reboiler were calculated by the applicant based upon emission factors from AP-42 Tables 1.4-1 and 2. Table 4 lists the dehydrator PTE.

Table 4: 25 MMscfd Dehydrator PTE

Source	NOx		CO		VOC		HAPs[a]	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Reboiler	0.03	0.12	0.02	0.10	<0.01	0.01	-	-
Regenerator	-	-	-	-	2.27	9.95	0.87	3.80

[a] Actual HAPs emissions from GRI-GLYCalc are 0.97 tpy. To be conservative, LMM assumed worst case 0.95 tpy n-hexane, 0.95 tpy benzene, 0.95 tpy toluene, and 0.95 tpy other HAPs for a total of 3.80 tpy total HAPs.

Other Sources

Other emission sources include produced water storage tanks, truck load-out, startup/shutdown/maintenance (SSM) including blowdowns, and fugitive emissions from component leaks. Potential emissions were calculated by the applicant from the produced water tank based upon factors from EPA-450/3-85-001a –

Volatile Organic Compound Emissions from Petroleum Refinery Wastewater Systems; from truck load-out based upon emission factors from AP-42 Section 5.2; startup, shutdown, maintenance, and blowdown emissions based upon operational data; and fugitive emissions from component leaks based upon emission factors from EPA-453/R-95-017 – Protocol for Equipment Leak Emission Estimates. Note that in the previous authorization, SSM emissions were calculated assuming 7 blowdowns/engine/week. Operating experience has shown that this number is overly conservative. SSM emissions have been based upon 2 blowdowns/engine/week in this application which is more representative of operating data with some contingency. The applicant has also revised the produced water tank emissions based upon EPA factors rather than E&P Tanks. According to LMM, their position is EPA's method for estimating "Volatile Organic Compound Emissions from Refinery Wastewater Systems" to be more representative. LMM also changed methodologies in this application to be consistent with other applications they have recently submitted. All calculations have been found acceptable and are included in the facility-wide emissions in Table 5 below.

Table 5: Springhill #2 Facility-Wide PTE

Source	VOC[a]		NOx		CO		Total HAPs		GHG (CO_2e)	
	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
CAT G3516B (1,380 bhp)	0.91	4.00	1.52	6.66	0.52	2.27	0.21	0.91	1,695	7,424
CAT G3516B (1,380 bhp)	0.91	4.00	1.52	6.66	0.52	2.27	0.21	0.91	1,695	7,424
Dehy (25 MMscfd)	2.27	9.95	-	-	-	-	0.87	3.8	2,397	10,500[c]
Reboiler (0.25 MMBtu/hr)	-	0.01	0.03	0.12	0.02	0.1	-	-	33	142
Produced Water Tanks[b]	0.05	0.24	-	-	-	-	0.03	0.12	-	-
Component Leaks	0.19	0.84	-	-	-	-	0.05	0.24	152	666
Truck Load Out	-	0.25	-	-	-	-	-	0.13	-	-
SSM	-	1.74	-	-	-	-	-	0.51	294	1,287
Facility-Wide PTE	**4.33**	**21.03**	**3.07**	**13.44**	**1.06**	**4.64**	**1.36**	**6.60**	**6,265**	**27,443**

[a] VOC includes formaldehyde

[b] A total of four (4) existing produced water tanks are to be included in this authorization; three (3) 150 bbl capacity tanks and one (1) 24 bbl capacity tank.

[c] Dehydrator CO_2e PTE based upon methane emissions from the GRI-GLYCalc report (multiplied by global warming potential factor for methane of 21) with an additional safety factor to account for potential changes in natural gas quality.

The Clean Air Act required the EPA to set NAAQS for pollutants considered harmful to public health and the environment and establishes two levels of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Springhill is classified as a natural minor facility and as such, would not typically be required to perform modeling to demonstrate that the emissions from this facility will not cause or contribute to a violation of any NAAQS. As a minor facility, worst case potential emissions are not expected to exceed the NAAQS or significant impact limits for the NAAQS.

Formaldehyde is a known carcinogen and the primary HAP expected to be emitted from air contamination sources from Springhill. The Department has recently received air quality screening data on behalf of Pennsylvania Waste Industries Association for a model landfill scenario in which multiple landfill gas-fired engines emit formaldehyde. The PTE for formaldehyde in this scenario is approximately 12.17 tpy compared to

the worst case 1.34 tpy potentially emitted from Springhill. The nearest resident in this scenario was modeled at 374 feet from the point source of emissions. Cumulative cancer and non-cancer risks from the model scenario were found to be below the Department's human health risks benchmarks. Formaldehyde PTE from Springhill is approximately 11% of the model landfill scenario. The comparison is not absolute due to possible differences in local terrain and meteorological data, but the modeling produces conservative results and the differences would not be expected to offset the lower PTE at Springhill.

The Department has also received air dispersion modeling and risk assessment for formaldehyde and other hazardous air pollutants potentially emitted by SCI Laurel Highlands. Formaldehyde emissions from two landfill gas-fired engines at this facility were modeled considering their maximum potential emission rate of 6.86 tpy compared to the worst case 1.34 tpy potentially emitted from Springhill. Model receptors in this case were placed at 50-meter intervals out to 2,000 meters from the sources. Formaldehyde concentrations from the landfill gas-fired engines were shown to be less than the acute (1-hour average) and chronic (5-year average) toxicity benchmarks provided by the Department. Total HAP risk levels from the two landfill gas-fired engines were also shown to be less than the long-term hazard quotient and calculated cancer risk thresholds. Based on the above comparison, HAP emissions from this facility are expected to be below levels considered harmful to public health and the environment.

Conclusions and Recommendations

After review, I have determined that LMM has demonstrated in this application that the installation and/or operation of the proposed engines and continued operation of the previously installed equipment meets the requirements of the GP-5, NSPS, and NESHAP, and is not expected to cause air pollution as defined in 25 Pa. Code § 121.1. The facility is below the thresholds for Title V, NNSR, and PSD, and is not considered a Major Source by these programs. Therefore, I recommend the authorization to install and/or operate the following equipment:

- Two (2) new 1,380 bhp Caterpillar G3516B 4SLB natural gas-fired compressor engines; each controlled by a Miratech oxidation catalyst.
- One (1) previously installed 25 MMscfd triethylene glycol dehydrator with associated 0.25 MMBtu/hr natural gas-fired reboiler.
- Four (4) previously installed produced water tanks – three (3) 150 bbl capacity and one (1) 24 bbl capacity.

Upon authorization of GP5-26-00587C, LMM will remove the following:

- Two (2) 1,340 bhp Caterpillar G3616LE 4SLB natural gas-fired compressor engines (to be replaced with two (2) 1,380 bhp Caterpillar G3516B 4SLB natural gas-fired compressor engines; each controlled by a Miratech oxidation catalyst).

Authorization to use the GP-5 will be granted for a period of 5 years in accordance with GP-5 Condition 12 of Section A. GP5-26-00587C will include all authorized sources at this facility; therefore, I also recommend inactivating GP5-26-00587B after authorizing GP5-26-00587C.