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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3365
Plant ID No.: 009-00131
Applicant: Blue Racer Midstream, LLC
Facility Name: Conley Station
Location: Brooke County
SIC/NAICS Code: 4613/486910
Application Type: Construction
Received Date: April 13, 2017
Engineer Assigned: Joe Kessler
Fee Amount: \$1,000
Date Received: April 13, 2017
Complete Date: May 1, 2017
Due Date: July 30, 2017
Applicant Ad Date: April 21, 1917
Newspaper: *The Brooke County Review*
UTM's: 538.8 km Easting • 4,454.1 km Northing • Zone 17
Latitude/Longitude: 40.23683/-80.54422
Description: Construction of a propane/butane quality control and pipeline injection station that will additionally utilize three (3) 30,000 gallon pressurized storage tanks for transfer of "off-spec" liquids to trucks.

DESCRIPTION OF PROCESS

Blue Racer Midstream, LLC (BRM) has submitted a permit application for the construction and operation of a natural gas liquids quality control and pipeline injection station consisting primarily of three (3) 30,000 gallon pressurized storage tanks, a pressurized truck loading station, and an emergency flare. The facility is proposed to be located in a rural area of Brooke County approximately 2.25 miles north of Bethany, WV.

The proposed facility will primarily receive propane and butane from Blue Racer's Natrium Plant and route them to injection pumps for offsite transportation through a pipeline. When liquids

in route are determined to be below specification, the facility will interrupt (before the point of custody transfer) the transportation and route the off-spec liquids into one of the storage tanks. This material will then be loaded into pressurized tanker trucks and taken back to the Natrium Plant for re-fractionation.

As the tanks and loading operations (loading operations will have a vapor return system in place) will be pressurized, no VOC emissions are expected from these operations. A small amount of fugitive VOC emissions will occur when the loading hoses are disconnected from the trucks. A 7,320 ft³/hr (17.00 mmBtu/hr) enclosed flare will be installed to control vapors emitted during blowdowns (using propane) and from the pump seal vents and will also serve as an emergency control device in case any of the storage tanks become depressurized. The flare will achieve a minimum hydrocarbon destruction and removal efficiency (DRE) of 98%.

SITE INSPECTION

On May 4, 2017, the writer conducted an inspection of the proposed location of the Conley Station. The proposed site is located in a rural area of Brooke County approximately 2.25 miles north of Bethany, Brooke County, WV just south of WV State Route 24 (McAdoo Ridge Road). The writer was primarily accompanied on the inspection by Ms. Jill Thornberry, Senior Environmental Specialist at BRM and several other employees of BRM. Observations from the inspection include:

- The proposed facility will be in a very rural area approximately 2.25 miles north of Bethany, Brooke County, WV just south of WV State Route 24 (McAdoo Ridge Road) and at the terminus of Whitetail Ridge Road. The area is hilly and rural in nature with scattered homes and farms within the vicinity of the proposed location. The Pennsylvania border is approximately 1.35 miles east of the proposed site;
- Co-located at the site is a metering station operated by Seneca Resources (Seneca) which will also be the site of the custody transfer of the propane and butane product into the Seneca pipeline;
- At the time of the inspection, much work was underway involving land clearing activities and other site preparation work. No emission units were visible on-site and no construction work had been observed to have begun in erecting emission units; and
- The occupied dwelling located nearest to the proposed site is approximately 300 yards north of the proposed facility. BRM stated that the land for the proposed facility was purchased from the closest resident.

The following is a picture of the proposed site of the Conley Station:



Directions: [Latitude: 40.23683, Longitude:-80.54422] From the junction of WV State Route (SR) 2 and SR 67 (Bethany Pile), take SR 67 South for approximately 2.5 miles and turn left onto WV County Route 24 (McAdoo Ridge Road) for approximately 3.2 miles. Then turn right onto Whitetail Ridge Road and proceed approximately 0.5 miles to the facility site (terminus of the road).

AIR EMISSIONS AND CALCULATION METHODOLOGIES

BRM included in Attachment N of the permit application an emission estimate for the proposed Conley Station. The following will summarize the calculation methodologies used by BRM to calculate the potential-to-emit (PTE) of the facility. As noted above, there are no emissions expected from the pressurized storage tanks or from the loading of pressurized trucks (with the exception of the fugitive emissions as noted below).

Flaring

BRM has estimated combustion exhaust and VOC pass-through emissions from flaring during blowdowns (using propane), evacuation of pump seal vents, and the continuous use of the pilot light.

The 0.57 mmBtu/hr pilot light is fired by propane and emissions were based on emission factors taken from AP-42, Section 1.5 (AP-42 is a database of emission factors maintained by USEPA). The hourly emissions were based on the maximum design heat input (MDHI) of the unit (and a propane heat content of 2,572 Btu/scf and 91,500 Btu/gallon). The annual emissions from the pilot light were based on operating 8,760 hours/year.

The emissions during blowdowns were based on a worst-case propane flow rate of 6,629 ft³/hr and again on emission factors taken from AP-42, Section 1.5 (with the exception of VOCs). Additionally, emissions were again based on propane heat contents of 2,572 Btu/scf and 91,500 Btu/gallon. Hourly emissions were based on a worst-case flow rate of 6,629 ft³/hr. Annual emissions were based on a worst-case flow scenario of one blowdown per day or 2,419,585 ft³/yr. VOC emissions were based on a material balance equation of 100% pure propane (which is a VOC) sent to the flare for destruction and a flare destruction and removal efficiency of 98%.

Emissions from the small amount of vapors sent to the flare from the pump seal vents were based on the same methodology as described above for blowdowns and based on a maximum hourly rate of 5.85 ft³/hr and a maximum annual rate of 51,246 ft³/yr.

Fugitives

Component Leaks

BRM based their VOC fugitive equipment leak calculations (leaked from valves, connectors, flanges, etc.) on emission factors taken from the document EPA-453/R-95-017 - "Protocol for Equipment Leak Emission Estimates" Table 2-4 (VOCs). No control efficiencies, as based on a Leak Detection and Repair (LDAR) protocol, were applied. Component counts were estimated and shall be limited in the draft permit. Conservative VOC by-weight percentages of 100% were used in the calculations.

Truck Loading Disconnects

BRM also estimated the potential VOC emissions associated with removing the hoses from the pressurized trucks after loading is complete. When the hose is disconnected, a small amount of vapor might remain trapped at the end of the hose and the truck's connection port. After disconnection, this vapor can escape into the atmosphere. BRM calculated these emissions based on the volume of butane/propane in the line, the line pressure, and the number of disconnects in an hour and year along with using the gas law. Again, conservative VOC by-weight percentages of 100% were used in the calculations.

Haul Roads

BRM included in their application an estimate of fugitive emissions created by truck traffic removing liquids from the tanks. As all the roadways around the station are unpaved, BRM used the equation given in Section 13.2.2 of AP-42 and appropriate variables to estimate potential emissions.

Emissions Summary

Based on the above estimation methodology, the facility-wide emissions of the Conley Station is given in the following table:

Table 1: Conley Facility-Wide Potential-to-Emit (PTE)

Source	CO		NO _x		PM ⁽¹⁾		SO ₂		VOCs		HAPs	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Truck Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.24	0.73	0.00	0.00
Flaring	1.40	0.28	2.43	0.48	~0.00	~0.00	0.19	0.04	15.38	2.81	0.00	0.00
Leak Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.25	23.00	0.00	0.00
Haul Roads	0.00	0.00	0.00	0.00	3.30	0.32	0.00	0.00	0.00	0.00	0.00	0.00
Facility-Wide Totals	1.40	0.28	2.43	0.48	3.30	0.32	0.19	0.04	35.87	26.54	0.00	0.00

(1) PM emissions are total PM and include condensables where applicable. Lower emission rates of PM_{2.5} and PM₁₀ are produced from haulroads but were not included for simplicity.

REGULATORY APPLICABILITY

This section will address the potential regulatory applicability/non-applicability of substantive state and federal air quality rules relevant to the Conley Station.

45CSR6: To Prevent and Control Particulate Air Pollution from Combustion of Refuse

BRM has proposed use of an enclosed flare for combusting propane during blowdowns. This flare will meet the definition of an “incinerator” under 45CSR6 and is, therefore, subject to the requirements therein. The substantive requirements applicable to the unit is discussed below.

45CSR6 Emission Standards for Incinerators - Section 4.1

Section 4.1 limits PM emissions from incinerators to a value determined by the following formula:

$$\text{Emissions (lb/hr)} = F \times \text{Incinerator Capacity (tons/hr)}$$

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

<u>Incinerator Capacity</u>	<u>Factor F</u>
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

Based on the maximum capacity of the enclosed flare of 7,320 ft³/hour (as stated in the permit application), and using the density of propane (0.125 lb/ft³), the capacity of the flare would be approximately 915 lbs/hour (0.46 tons/hr). Using this value in the above equation produces a PM

emission limit of 2.48 lb/hr. When operating correctly, there is expected to be only trace amounts of particulate matter from the enclosed flare and, therefore, the unit shall easily meet this limit.

45CSR6 Opacity Limits for - Section 4.3, 4.4

Pursuant to Section 4.3, and subject to the exemptions under 4.4, the enclosed flare has a 20% limit on opacity during operation. As the vapors combusted in the unit shall be pure propane and butane, and the flare is designed to be smokeless, particulate matter emissions from the unit are expected to be nominal. Therefore, the unit should easily meet this requirement.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed Conley Station has a maximum emission rate of a regulated pollutant in excess of six (6) lbs/hour and ten (10) TPY (See Table 1 above). Therefore, pursuant to §45-13-2.24, the facility is defined as a “stationary source” under 45CSR13. Pursuant to §45-13-5.1, “[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct.” BRM is required to obtain a permit under 45CSR13 for the proposed construction and operation of Conley Station.

As required under §45-13-8.3 (“Notice Level A”), BRM placed a Class I legal advertisement in a “newspaper of *general circulation* in the area where the source is . . . located.” The ad ran on April 21, 2017 in *The Brooke County Review* and the affidavit of publication for this legal advertisement was submitted on April 26, 2017.

45CSR14 (NON APPLICABILITY)

The facility-wide PTE of the proposed Conley Station (see Table 1 above) is below the levels that would define the source as “major” under 45CSR14 and, therefore, the facility evaluated herein is not subject to the provisions of 45CSR14.

45CSR30: Requirements for Operating Permits (NON APPLICABILITY)

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The facility does not meet the definition of a "major source under § 112 of the Clean Air Act" as outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. Therefore, the Conley Station is not subject to 45CSR30.

40 CFR60, 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 (NON APPLICABILITY)

Subpart Kb of 40 CFR 60 is the New Source Performance Standard (NSPS) for storage tanks containing Volatile Organic Liquids (VOLs) which construction commenced after July 23, 1984.

The Subpart applies to storage vessels used to store volatile organic liquids with a capacity greater than or equal to 75 m³ (19,813 gallons). However, storage tanks with a capacity greater than or equal to 151 m³ (39,890 gallons) storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m³ but less than 151 m³ storing a liquid with a maximum true vapor pressure less than 15.0 kPa are exempt from Subpart Kb. Additionally, pursuant §60.110b(b)(2), “[p]ressure vessels designed to operate in excess of 204.9 kPa and without emissions to the atmosphere” are exempt from Subpart Kb. Therefore, based on the above, the three (3) proposed 30,000 gallon pressurized storage tanks at the Conley Station are not subject to Subpart Kb.

Subpart OOOOa: Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015 (NON APPLICABILITY)

40CFR60 Subpart OOOOa establishes emission standards and compliance schedules for the control of the pollutant greenhouse gases (GHG) and VOCs in the crude oil and natural gas source category. The greenhouse gas standard in this subpart is in the form of a limitation on emissions of methane from affected facilities in the crude oil and natural gas source category that commence construction, modification or reconstruction after September 18, 2015.

Affected facilities include, pursuant to §60.5365a(f), “[t]he group of all equipment within a process unit . . .” A process unit is defined as “components assembled for the extraction of natural gas liquids from field gas, the fractionation of the liquids into natural gas products, or other operations associated with the processing of natural gas products. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the products.” Based on information provided by BRM, the Conley station does not meet the definition of a process unit under Subpart OOOOa and therefore, the proposed Conley Station is not applicable.

TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS

BRM did not identify any potential emissions of non-criteria regulated pollutants from the proposed Conley Station.

AIR QUALITY IMPACT ANALYSIS

The facility does not meet the definition of a “major stationary source” pursuant to 45CSR14 and, therefore, an air quality impact (computer modeling) analysis was not required. Additionally, based on the nature of the construction , modeling was not required under 45CSR13, Section 7.

MONITORING, COMPLIANCE DEMONSTRATIONS, RECORD-KEEPING, AND REPORTING REQUIREMENTS

Refer to Section 4.2 of the draft permit for the unit-specific monitoring, compliance demonstration, reporting, and record-keeping requirements (MRR).

Fact Sheet R13-3365
Blue Racer Midstream, LLC
Conley Station

PERFORMANCE TESTING OF OPERATIONS

Refer to Section 4.3 of the draft permit for the unit-specific performance testing requirements.

RECOMMENDATION TO DIRECTOR

The information provided in permit application indicates that compliance with all applicable state and federal air quality regulations should be achieved. Therefore, I recommend to the Director the issuance of Permit Number R13-3365 to Blue Racer Midstream, LLC for the construction and operation of the Conley Station located in Brooke County, WV.

Joe Kessler, PE
Engineer

Date