11/9/16

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3344
Plant ID No.:	049-00194
Applicant:	Perennial CMM West Virginia LLC
Facility Name:	Grays Run Road
Location:	Marion County
NAICS Code:	333999
Application Type:	Construction
Received Date:	October 12, 2016
Engineer Assigned:	Dan Roberts
Fee Amount:	$1,000
Date Received:	October 13, 2016
Applicant Ad Date:	October 14, 2016
Newspaper:	*The Dominion Post*
Complete Date:	November 1, 2016
UTM Coordinates:	Easting: 559.278 km • Northing: 4,373.008 km • NAD83 Zone 17N
Lat/Lon Coordinates:	Latitude: 39.504655 • Longitude: -80.310510 • NAD83
Description:	Construction of a Perennial Energy Model CSF6-750 750 ft^3/minute (scfm) or 18 MMBtu/hr coal mine methane utility flare.

BACKGROUND

Perennial CMM West Virginia LLC (PCMMWV), a subsidiary of Perennial CMM, LLC, has submitted a permit application for the construction of a Perennial Energy Model CSF6-750 750 scfm or 18 MMBtu/hr coal mine methane 6" utility flare to be located near Mannington, Marion County, WV.

On October 14, 2016, the applicant published a Class I legal advertisement in *The Dominion Post*, which is based in Morgantown, Monongalia County, WV and had a circulation of 20,246 and no party affiliation (according to the 2014-2015 Qualified Newspapers as Reported to the West Virginia Secretary of State). The proposed site location is actually located near Mannington, Marion County, WV and the county newspaper is the *Times West Virginia*, which is based in Fairmont, WV

and had a circulation of 10,571 and no party affiliation. On October 25, 2016, the writer spoke with Bev McKeone, NSR Permitting Manager, and it was decided that the applicants ad was appropriately published in *The Dominion Post* since it is a "newspaper of general circulation in the area where the source is or will be located." It was also decided that the DAQ's Notice of Intent to Approve shall be published in the *Times West Virginia* in order to ensure that the readers of both newspapers have been notified.

On July 22, 2016, Perennial CMM West Virginia LLC submitted application R13-3333 for the construction of an identical coal mine methane 6" utility flare to be located near Mannington, Marion County, WV. The DAQ published the Notice of Intent to Approve on October 10, 2016. Therefore, the 30-day comment period will expire on November 9, 2016.

On May 12, 2016, Perennial CMM West Virginia LLC submitted application R13-3319 for the construction of an identical coal mine methane 6" utility flare to be located near Adrian, Upshur County, WV. The DAQ approved permit R13-3319 on August 22, 2016.

DESCRIPTION OF PROCESS

Perennial CMM West Virginia LLC has proposed to construct a Perennial Energy Model CSF6-750 750 scfm or 18 MMBtu/hr coal mine methane 6" utility flare. An electrically driven centrifugal blower, powered by the local electrical utility, will provide the methane gas to the flare from a closed underground coal mine. Compressed nitrogen shall be used to operate a pneumatic safety shutdown valve on the flare. The proposed flare shall be equipped such that it closes the fuel shutdown valve and ceases venting to the atmosphere and sends an alarm notification if a flame is not present. The flare will be designed to operate 8,760 hours per year.

SITE INSPECTION

On November 3, 2016, Karl Dettinger of the DAQ's North Central Regional Office conducted an inspection of the proposed location for the Grays Run Road utility flare. Notes from Mr. Dettinger regarding the inspection are as follows: "I went to the Perennial CMMM West Virginia, LLC site on 11-3-16. I spoke with Mr. Boys to get the exact location of the site. Here are a few photos of the site and residences that are nearby. The property is owned by James May. I went to the door to see if Mr. May was there, but there was no answer. I could see the road that had been cut in to access the site. Mr. Boys said that they will need to clear trees for a certain radius around the flare. There was no construction of the flare taking place at the time I was there. There are several houses that are fairly close by. The closest appears to be around 500 feet from the site, according to Google Earth. I think the site will be acceptable. The first photo is from the driveway of the May residence looking up to the site. The second photo is of the closest residence to the site (other than the May residence) - the brown house is the one that is approximately 500 feet from the site. The third photo shows the houses across the road from the May residence. Hope this helps."

Directions from Charleston, WV are to take I77 North and travel 1.9 miles, keep right to take

I19 North and travel 135.0 miles, take Exit 136 to Fairmont Gateway Connector N and travel 0.5 miles, turn left onto Fairmont Gateway Connector N and enter the roundabout and take the 2nd exit onto State St/WV-273 and travel 0.2 miles, enter the next roundabout and take the 2nd exit onto WV-273 and travel 0.2 miles, WV-273 becomes Jefferson St./County Highway 19/73 and cross bridge and travel 0.4 miles, turn left onto Jackson Street and travel 0.1 miles, turn right onto US-250 N and travel 10.6 miles, turn left onto Grays Run Road and travel 0.7 miles and the site will be on the left.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

PCMMWV included in Attachment N of the permit application an emission estimate for the proposed flaring of coal mine methane gas. Emissions of CO, NO_x, and VOCs were based on emission factors as given in AP-42 (AP-42 is a database of emission factors maintained by USEPA) Section 13.5. - "Industrial Flares." However, these emission factors are based on tests using crude propylene containing 80% propylene and 20% propane, not coal mine methane. Therefore, these emission factors may be conservative and overestimate the potential to discharge, specifically for VOCs, but they are the only ones available for a flare. Emissions of particulate matter and SO_2 are expected to be negligible.

Hourly emissions from the flare were based on the MDHI of the unit (18.00 MMBtu/hr). Annual emissions were based on operating 8,760 at MDHI. The following table details the calculated emissions from the proposed flare:

Table 1: Perennial Energy Model CSF6-750 Flare PTE

Pollutant	Emission Factor	Source	Hourly (lb/hr)	Annual (ton/yr)
CO	0.31 lb/MMBtu	AP-42, Table 13.5-2	5.58	24.44
NO_x	0.068 lb/MMBtu	AP-42, Table 13.5-1	1.22	5.36
VOCs	0.57 lb/MMBtu	AP-42, Table 13.5-2	10.26	44.94

REGULATORY APPLICABILITY

This section will address the potential regulatory applicability/non-applicability of substantive state and federal air quality rules relevant to the proposed Grays Run Road utility flare.

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

PCMMWV has proposed use of a flare for combusting coal mine methane to generate carbon credits. 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 are 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:

Emissions (lb/hr) = F x 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

Incinerator Capacity	Factor F
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 proposed flare of 750 scfm (45,000 ft^3/hour), and using the density of methane (0.0422 lb/scf), the capacity of the flare in lbs/hr would be approximately 1,900 lbs/hour (0.95 tons/hr). Using this value in the above equation produces a PM emission limit of 5.16 lb/hr. When operating correctly, there is expected to be only trace amounts of particulate matter from the flare and, therefore, the flare 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 flare has a 20% limit on opacity during operation. As a primary constituent in the vapors combusted in the unit will be clean burning methane, particulate matter emissions from the unit is 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 Grays Run Road utility flare will have a maximum emission rate of a regulated pollutant (VOCs) in excess of six (6) lbs/hour and ten (10) TPY (see Table 1 above) and, therefore, pursuant to §45-13-2.24, the facility is defined as a "stationary source" under 45CSR13. Pursuant to §45-13-5.1, "No person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, PCMMWV is required to obtain a permit under 45CSR13 for the construction and operation of the proposed Grays Run Road utility flare.

As required under §45-13-8.3 ("Notice Level A"), PCMMWV placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is or will be located." The applicant published an ad on October 14, 2016 in *The Dominion Post* and the affidavit of publication for this legal advertisement was received on October 26, 2016.

45CSR14 (NON APPLICABILITY)

The facility-wide PTE of the proposed Grays Run Road utility flare (see Table 1 above) will be below the levels that would define the source as "major" under 45CSR14 and, therefore, the construction 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 proposed Grays Run Road utility flare is not subject to 45CSR30.

TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the proposed Grays Run Road utility flare and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM_{10}), Particulate Matter less than 2.5 microns ($PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants (with the exception of PM) have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The proposed Grays Run Road utility flare will not produce any substantive amount of non-criteria regulated pollutants.

AIR QUALITY IMPACT ANALYSIS

The proposed construction does not meet the definition of a "major stationary source" pursuant to 45CSR14 and, therefore, an air quality impact (computer modeling) analysis is 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

The following substantive monitoring, compliance demonstration, reporting, and record-keeping requirements (MRR) shall be required:

- To demonstrate compliance with flow and heat input limits given under 4.1.2(a) of the draft permit, the permittee shall be required to install instrumentation to monitor and record, at a minimum of fifteen (15) minute intervals, the flow of coal mine methane to the flare and BTU content of the coal mine methane sent to the flare;

- Flame compliance demonstration, monitoring and record-keeping is extensive and shall be required as given under 4.2.1(b) through (e) of the draft permit and may be reviewed there; and

- Recording and reporting for visible emissions testing shall be required as given under 4.4.4. and 4.5.1 of the draft permit and may be reviewed there.

PERFORMANCE TESTING OF OPERATIONS

The following substantive performance testing requirements shall be required:

- Visible emissions testing to show compliance with 45CSR6 shall be required initially within 180 days of start-up and thereafter at a minimum of at least once per each period of 12 months. Additionally, a visible emission check shall be conducted each time the flare is manually started. Specific visible emissions testing requirements shall be as given under 4.3.1. of the draft permit and may be reviewed there.

RECOMMENDATION TO DIRECTOR

The information provided in permit application R13-3344 indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of Permit Number R13-3344 to Perennial CMM West Virginia LLC for the construction and operation of the proposed Grays Run Road facility to be located off of US-250 approximately 0.7 miles south on Grays Run Road near Mannington, Marion County, WV.

Daniel P. Roberts, Engineer Trainee
NSR Permitting Section

November 9, 2016
Date