



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R14-0026M
Plant ID No.: 003-00006
Applicant: Essroc Cement Corporation
Facility Name: Martinsburg Facility
Location: Berkeley County
NAICS Code: 327310
Application Type: Class II Administrative Update
Received Date: February 11, 2016
Engineer Assigned: Thornton E. Martin Jr.
Fee Amount: \$1,300.00
Date Received: February 17, 2016
Complete Date: April 04, 2016
Applicant Ad Date: February 11, 2016
Newspaper: *The Journal*
UTM's: Easting: 243.5 km Northing: 4,369.0 km Zone: 18
Description: Addition of an alternate crushing system comprised of three (3) mobile crushers.

DESCRIPTION OF CHANGE

On January 5, 2016, major damage was sustained to the Plants' Primary Crusher (CD37.03) main rotor, causing all quarry limestone crushing operations to cease. On January 11, 2016, Essroc received permission from the WVDEP to operate two mobile crushers on a temporary basis not to exceed eight weeks while repairs to the Primary Crusher are completed. However, in the event that anticipated repairs to the Primary Crusher exceed the eight week time frame, as well as to provide an alternative means to crush limestone if the Primary Crusher again becomes inoperable, the Plant is proposing to make the following permanent modifications.

Essroc is proposing to bring three mobile crushers on-site, which will provide an alternative limestone crushing system when the Primary Crusher is inoperable. The mobile crushers will be located next to the existing Primary Crusher feed hopper. Each mobile

crusher will have its own feed hopper, crushing system and conveyor belt. Limestone will be fed into the mobile crusher feed hoppers and then be processed through the crushing system. Crushed stone from the mobile crushers will be fed directly to the Primary Crusher feed hopper and then through the existing Primary Crusher conveying system. Each of the mobile crusher hoppers will be equipped with its own water spray system to reduce fugitive dust generated by the transfer of limestone to the feed hoppers and the subsequent crushing. The existing water sprays on the Primary Crusher feed hopper will continue to be utilized and the Primary Crusher baghouse will continue to operate to control any fugitive dust from the transfer of the limestone through the existing conveying system.

Although three mobile crushers are to be brought on-site, the Plant is only proposing to operate two of the mobile crushers at any one time. The third mobile crusher will serve as a backup in the event one of the mobile crushers becomes inoperable, to assure that the Plant can continue to have two mobile crushers providing crushed limestone to the kiln.

The current Primary crusher system has the capability to process up to 1,322 short tons (1,200 metric tons) of limestone per hour and was permitted with a potential annual throughput of 4,125,933 short tons per year. Each of the mobile crushers will have an hourly throughput capacity to process up to 441 short tons (or 400 metric tons) of limestone per hour and will be permitted to operate twenty-four hours a day, seven days a week. The mobile crushers will also be permitted to have a combined potential annual throughput limit of 4,125,933 short tons per year, the same as the Primary Crusher.

The three mobile crushers are being provided by two vendors and each crusher will be powered by a diesel-fired engine. One mobile crusher will be a TESAB 1012TS mobile impact crusher that is rated at 440 HP and will be equipped with a CAT C13 engine. The other two mobile crushers will both be Lokotrack LT1213S mobile impact crushers that are rated at 415 HP each and will also be equipped with a CAT C13 diesel engine.

The proposed mobile crusher operations are expected to result in three types of new emissions. Fugitive dust emissions will be generated by both the limestone transfer to the mobile crusher hoppers and also from the crushing operation itself. In addition, combustion emissions will be generated by the operation of the mobile crusher diesel-fired engines. These new emissions will be accounted for by two new emission points:

- * EP37.14 - Limestone Dump to Mobile Crushers
- * EP37.15 - Mobile Limestone Crushers Operation

EP37.15 will account for both the fugitive dust generated from two mobile crushers processing limestone and the combustion emissions from the operation of the two mobile crushers' diesel-fired engines. Fugitive dust emissions from the transfer of limestone from the mobile crushers to the Primary Crusher feed hopper is already accounted for by emission point EP37.02.01. Also, because the crushed limestone will utilize the existing

conveying system, there will be no additional transfer points downstream of the mobile crushers.

Emission calculations were included that estimate the combustion emissions from each of the three mobile crushers, however, the emissions summary includes the combustion emissions from the two worst-case (i.e., highest HP rated) engines being operational.

SITE INSPECTION

A site inspection of the facility was not deemed necessary for this permitting action. Additionally, the facility has been the subject of multiple partial onsite inspections conducted by Joe Kreger of DAQ's compliance and enforcement section with the most recent being on December 04, 2015. At the time of these inspections, the facility was found to be out of compliance for opacity from the clinker silo.

To get to the facility from Martinsburg, take I-81 south to exit 12. Then turn left on Apple Harvest Drive (State Route 45). Go approximately 0.9 miles and take the Queen Street exit off State Route 45. At the end of the exit turn right (south) on Queen Street. Go approximately 1/4 mile to the plant entrance.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions from this project will include fugitive dust emissions generated by both the limestone transfer to the mobile crusher hoppers (AP-42 Section 13.2.4.3) and also from the crushing operation itself (AP-42 Section 11.19.2). In addition, combustion emissions will be generated by the operation of the mobile crusher diesel-fired engines (40 CFR 98 Tier III).

Emission calculations were included that estimate the combustion emissions from each of the three mobile crushers, however, the emissions summary includes the combustion emissions from the two worst-case (i.e., highest HP rated) engines being operational.

A control efficiency of 75% was used for the transfer and crushing of limestone since the operation is located within a quarry, use of water sprays and partial enclosures. A control efficiency of 25% was applied to the diesel combustion of 2 engines since they are located within a quarry.

Emission Point	Annual Potential Emissions (tons/year)						
	NOx	CO	VOC	SO ₂	PM	PM ₁₀	PM _{2.5}
EP37.14 - Limestone Dump to Mobile Crushers					1.73	0.82	0.12
EP37.15 - Mobile Limestone Crushers Operations ¹	22.16	21.55	2.46	7.60	1.54	1.20	0.98
Total Emission Increase	22.16	21.55	2.46	7.60	3.28	2.02	1.10

¹ Emissions account for operation of two worst case (i.e., largest HP) mobile crushers.

Emission Point	Hourly Potential Emissions (lbs/hour)						
	NOx	CO	VOC	SO ₂	PM	PM ₁₀	PM _{2.5}
EP37.14 - Limestone Dump to Mobile Crushers					0.40	0.19	0.03
EP37.15 - Mobile Limestone Crushers Operations ¹	5.06	4.92	0.56	1.74	0.35	0.27	0.22
Total Emission Increase	5.06	4.92	0.56	1.74	0.75	0.46	0.25

¹ Emissions account for operation of two worst case (i.e., largest HP) mobile crushers.

Emission Point	Greenhouse Gas Emission Summary (tons/year)			
	CO ₂	CH ₄	N ₂ O	CO ₂ e
EP37.15 - Mobile Limestone Crushers Operations ¹	6,350.11	0.26	0.05	6,371.90

¹ Emissions account for operation of two worst case (i.e., largest HP) mobile crushers.

REGULATORY APPLICABILITY

The changes addressed by this permitting action are subject to the following state rules:

45CSR7 *To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations*

The facility is subject to the requirements of 45CSR7 because it meets the definition of "Manufacturing Process" found in subsection 45CSR7.2.20. The facility should be in compliance with Subsection 3.1 (no greater than 20% opacity), Subsection 3.7 (no visible emissions from any storage structure pursuant to subsection 5.1 which is required to have a full enclosure and be equipped with a control device), Subsection 4.1 (PM emissions shall not exceed those allowed under Table 45-7A), Subsection 5.1 (manufacturing process and storage structures must be equipped with a system to minimize emissions), Subsection 5.2 (minimize PM emissions from haulroads and plant premises) when the particulate matter control methods and devices proposed

within application R14-0026M are in operation.

According to Table 45-7B, for a type 'a' source with a maximum process weight rate of 1,764,000 lb/hour, the maximum allowable emission rate is 50 lb/hour of particulate matter. The maximum emission rate is 0.75 lb/hour of particulate matter according to estimated emissions in fact sheet R14-0026M.

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

The addition of the three mobile crushers has the potential to increase emissions above what is permitted in R14-0026L. Therefore, Essroc is required to change their permit under 45CSR13. However, since the increase in emissions will be less than 6 pounds per hour and greater than 10 tons per year, they are eligible for a Class II Administrative Update.

As required under §45-13-8.3 ("Notice Level A"), Essroc placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." The ad ran on February 11, 2016 in *The Journal*. and the affidavit of publication for this legal advertisement was submitted on March 08, 2016.

45CSR16 *Standards of Performance for New Stationary Sources*
40 CFR 60 *Subpart OOO: Standards of Performance for Nonmetallic Mineral Processing Plants*

The proposed construction is subject to 40 CFR 60 Subpart OOO because it will occur after April 22, 2008 and the mobile plant processes more than 150 tons of aggregate per hour. The proposed construction will include three (3) mobile crushers, which are defined as affected facilities in 40 CFR 60 Subpart OOO. Therefore, the proposed construction is subject to 45CSR16, which incorporates by reference 40 CFR 60 Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants. The facility should be in compliance with 60.672 (b) no greater than 7% opacity from any transfer point on belt conveyors or from any other affected facility (as defined in 60.670 and 60.671) and no greater than 12% opacity from any crusher when the particulate matter control methods and devices proposed within application R14-0026M are in operation.

45CFR60 *Subpart III—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*

Essroc is subject to this subpart because the engines were manufactured after April 1, 2006. The mobile units will utilize a CAT C13 diesel engine to operate the systems for both movement around the site and aggregate processing. The engine emissions for the three mobile crushers are EPA Tier III certified engines.

40CFR63 *Subpart ZZZZ—National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Essroc is subject to 40CFR63 Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, because the three (3) mobile crushers are considered a new area source of HAPs since the facility was constructed on or after June 12, 2006, however, the only requirements that apply are those required under 45CFR60 Subpart III.

45CSR14 *Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration*

The Martinsburg facility is an existing major source as defined in 45CSR14. However, a “major modification” is defined under section 2.40 of 45CSR14 as a:

. . . physical change in or change in the method of operation of a major stationary source which results in: a significant emissions increase (as defined in subsection 2.75) of any regulated NSR pollutant (as defined in subsection 2.66); and a significant net emissions increase (as defined in subsections 2.46) of that pollutant from the major stationary source. [. . .]

Section 3.4 of 45CSR14 provides guidance on the process of determining if proposed changes are a major modification. §45-14-3.4(a) states that:

. . . consistent with the definition of major modification contained in subsection 2.40, a project is a major modification for a regulated NSR pollutant if it causes two types of emissions increases -- a significant emissions increase (as defined in subsection 2.75), and a significant net emissions increase (as defined in subsections 2.46 and 2.74). The proposed project is not a major modification if it does not cause a significant emissions increase. [. . .]

Therefore, for the proposed changes to meet the definition of a major modification, the changes themselves must result in a significant emissions increase. The

methodology for calculating the emissions increase under the first step is given under Sections 3.4(b), 3.4(c), 3.4(d) and 3.4(f). The substantive language of each is given below:

[§45-14-3.4(b)]

The procedure for calculating (before beginning actual construction) whether a significant emissions increase (i.e., the first step of the process) will occur depends upon the type of emissions units being modified, according to subdivisions 3.4.c through 3.4.f.

[§45-14-3.4(c)]

Actual-to-projected-actual applicability test for projects that only involve existing emissions units. -- A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions (as defined in subsection 2.63) and the baseline actual emissions (as defined in subdivisions 2.8.a and 2.8.b), for each existing emissions unit, equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

[§45-14-3.4(d)]

Actual-to-potential test for projects that only involve construction of a new emissions unit(s). -- A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the potential to emit (as defined in subsection 2.58) from each new emissions unit following completion of the project and the baseline actual emissions (as defined in subdivision 2.8.c) of these units before the project equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

[§45-14-3.4(f)]

Hybrid test for projects that involve multiple types of emissions units. -- A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the emissions increases for each emissions unit, using the method specified in subdivisions 3.4.c through 3.4.d as applicable with respect to each emissions unit, for each type of emissions unit equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

It is important to note that when any emissions decrease is claimed, the second step of the test is triggered - a determination if the project results in a "significant net emissions increase." This determination is defined under the definition of "net emissions increase" [§45-14-2.46] and must include "any other increases and decreases in actual emissions at the major source that are contemporaneous with the particular change and are otherwise creditable." A change is contemporaneous if it "occurs not more than five (5) years prior to the date on which construction on the particular change commences nor later than the date on which the increase

from the particular change occurs.”

However, since no decreases are claimed with this proposed project, the determination of a significant net emissions increase” is not needed.

Pollutant	Emission Increase (tpy)	Significance Threshold (tpy)	Significant ?
PM	3.28	25	No
PM ₁₀	2.02	15	No
PM _{2.5}	1.10	10	No

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

No non-criteria regulated pollutants are expected to be emitted due to this modification.

AIR QUALITY IMPACT ANALYSIS

Because the modification to this existing major stationary source is not “major” as defined in 45CSR14, no modeling was performed.

MONITORING OF OPERATIONS

In addition to the monitoring already required by R14-0026L, the permittee shall monitor and record the following:

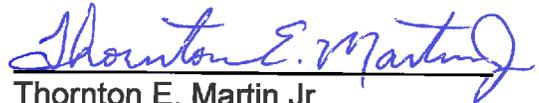
- * Must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer’s written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. You must also meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.
- * Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

CHANGES TO PERMIT R14-0026L

- * Condition A.2 was changed to reflect the new facility wide emissions.
- * Condition A.5 was changed to reflect the fugitive emissions associated with the operation of two worst case mobile crushers.

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that permit R14-0026M for the addition of three mobile crushers to a portland cement manufacturing facility in Martinsburg, Berkely County, be granted to Essroc Cement Corporation.



Thornton E. Martin Jr.
Engineer

April 04, 2016

Date