



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-0426B
Plant ID No.: 039-00110
Applicant: Rhodes Brick & Block Company
Facility Name: St. Albans Facility
Location: Kanawha County
NAICS Code: 327331
Application Type: Modification
Received Date: October 14, 2016
Engineer Assigned: Thornton E. Martin Jr.
Fee Amount: \$1,000
Date Received: October 17, 2016
Complete Date: December 27, 2016
Applicant Ad Date: October 28, 2016
Newspaper: *Charleston Gazette Mail*
UTM's: Easting: 425.039 km Northing: 4251.883 km Zone: 17
Description: Applicant proposes to make a like-kind replacement of the current cement silo (BS-1) and also the replacement of the existing shaker-style baghouse (BH-1) with a new, more efficient Pulse Jet Baghouse. Also, the Applicant would like to reflect an increase in various aggregate throughputs due to an anticipated increase in production once new equipment has been installed.

DESCRIPTION OF PROCESS

Existing (Taken from Application R13-0426B)

Aggregate is delivered to the facility via truck and then transferred to each material's respected storage area. Sand, limestone and light aggregate are transferred to their respective open stockpiles (Sand - OS-1 & OS-2; Limestone - OS-3 - OS-6; Light Aggregate - OS-9). These stockpiles use three-sided (partial) enclosures to control the fugitive emissions from loading, wind erosion and haul road traffic. Cinder is trucked into a large open stockpile (OS-8) on the west end of the property where it is stored with no fugitive control. The cinder from OS-8 is fed to a vibrating screen (SC-1) where it is separated into fine and oversized cinders. The fine cinders pass through the screen to truck and then are transferred to the cinder fines stockpile (OS-7). The oversized cinder unable to

pass through the screen is transferred to a hammer mill crusher (CR-1) where it is broken down into fines and then recycled to the vibrating screen via front end loader.

Sand, limestone, light aggregate and fine cinders are transferred to their respective aggregate hoppers (AH-1 - AH-4) via end-loader bucket transfer. Once these materials are in their respective aggregate hopper, the material is then fed via conveyor belt to the plant building and deposits in the weigh hopper. Cement from BS-1 is fed into the plant building and into the weigh hopper via screw conveyor.

Once the material is weighed, the weigh hopper transfers the aggregate batch into the block manufacturing process that is water saturated (no emission source). The material is compressed into block molds. The un-cured blocks are then placed on to steel pallets and are conveyed to an automated stacker or loader which places them in a curing rack. Each rack holds several hundred blocks. When a rack is full, it is rolled onto a set of rails and moved into a curing kiln. The kiln is an enclosed room with the capacity to hold several racks of blocks at a time. There are two basic types of curing kilns. The steam kiln holds the blocks for one to three hours at room temperature to allow them to harden slightly. Steam is then gradually introduced to raise the temperature at a controlled rate. When the curing temperature has been reached, the steam is shut off and the blocks are allowed to soak in the hot, moist air for 12-18 hours. After soaking, the blocks are dried by exhausting the moist air. The whole curing cycle takes about 24 hours.

The racks of cured blocks are rolled out of the kiln and the pallets of blocks are unstacked and placed on a chain conveyor. The blocks are pushed off the steel pallets. The blocks pass through a “cuber” which aligns each block and then stacks them. These cubes are carried outside with a forklift and placed in storage.

Modification (Taken from Application R13-0426B)

Cement is delivered to the facility via truck and then pneumatically transferred to the fully enclosed cement silo/storage bin (BS-1) at a maximum rate of 25 tons per hour. The point source emissions from the pneumatic transfer (T-28) from the truck to the cement silo (BS-1) are controlled by the baghouse (BH-1), which has a control efficiency of 99.98%. BS-1 feeds the currently permitted block processing facility. The proposed changes will be replacing the existing Cement Silo Storage and Shaker Style Baghouse.

Table 1: Emission Units Summary

Emission ID No.	Emission Point ID	A M R ¹	Description	Year Installed/ Modified	Design Capacity	Control Equipment ²
Equipment						
BS-1	E01	A M	Cement Silo	1978 2017	37.5 ton	BH-1
CR-1	E03	E	Hammer Mill Crusher	1978	15,040 TPY	PE
SC-1	E04	E	Vibrating Screen	1978	15,040 TPY	FE
BLR-1	E05	E	Steam Generator	1978	2.5 MMBtu/hr	NA
OS-1	E06	E	Open Stockpile - Sand	1978	18,800 TPY	PE
OS-2	E07	E	Open Stockpile - Sand	1978	18,800 TPY	PE

Emission ID No.	Emission Point ID	A M R ¹	Description	Year Installed/ Modified	Design Capacity	Control Equipment ²
OS-3	E08	E	Open Stockpile - Limestone	1978	22,560 TPY	PE
OS-4	E09	E	Open Stockpile - Limestone	1978	22,560 TPY	PE
OS-5	E10	E	Open Stockpile - Limestone	1978	22,560 TPY	PE
OS-6	E11	E	Open Stockpile - Limestone	1978	22,560 TPY	PE
OS-7	E12	E	Open Stockpile - Cinder (small)	1978	14,100 TPY	PE
OS-8	E13	E	Open Stockpile - Cinder (large)	1978	14,100 TPY	N
OS-9	E14	E	Open Stockpile - Light Aggregate	1978	18,800 TPY	PE
AH-1	E15	E	Aggregate Hopper - Sand	1978	3,760 tons	FE
AH-2	E16	E	Aggregate Hopper - Limestone	1978	3,760 tons	FE
AH-3	E17	E	Aggregate Hopper - Light Aggregate	1978	3,760 tons	FE
AH-4	E18	E	Aggregate Hopper - Cinder	1978	3,760 tons	FE
Tanks						
T-1	E19	E	Off road Diesel	1978	1,000	N
T-2	E20	E	On road Diesel	1978	1,000	N
Control Equipment					Total Cloth Area (ft²)	Air/Cloth Ratio (ft/min)
BH-1	E02	A M	Baghouse – Belgrade Steel Tank Co.- Pulse Jet (used for loading/unloading cement silo)	1978 2017	330	4.8

¹ A - Addition; M - Modification; R - Removal (Existing unmodified equipment to be included in the permit is labeled with an E)

² FE - Full Enclosure. PE - Partial Enclosure; WS - Water Spray; N - None; BH-1 - Baghouse.

SITE INSPECTION

Mike Kolb of the Division of Air Quality Enforcement Section performed a full, on-site, targeted inspection on August 25, 2014. The facility received a score of 30 - In Compliance. The writer deemed that a site inspection was unnecessary at this time based on the size and scope of the proposed modification.

Directions: Traveling along WV-817 S / Winfield Rd., take a left onto Co. Rte. 35/21. Take an immediate left onto Industrial Road and the site is on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The estimated emission calculations were performed by the applicants' consultant and were checked for accuracy and completeness by the writer. There is no emission change as a result of this modification. All emission factors are based on AP-42, Fifth Edition, Revised 6/2006 for concrete batch plants (Section 11.12-2); aggregate handling and storage piles (Section 13.2.4) and Revision 1/2011 for industrial paved roads (Section 13.2.1).

Fugitive emissions sources include those generated from the delivery and unloading of aggregate and sand by trucks, and the subsequent use of the wheel loader to transfer these materials to the bins or trucks. Fugitive emissions resulting from delivery and transfer by wheel

loader are minimized by drop height. Fugitive emissions generated from weighing the aggregate and sand is controlled by enclosing the weigh hopper for these materials.

Cement transfer emissions are controlled by the use of a baghouse attached to an enclosed silo for the cement.

The baghouse is equipped with a device to measure pressure drop across the filter elements and is monitored and recorded daily. Filter elements are cleaned and/or replaced whenever the pressure drop is outside of the manufacturer's recommended operating parameters.

Estimated emissions from the replaced equipment and increased throughputs will result in an increased potential to discharge 0.0007 TPY of particulate matter (PM) and 0.0004 TPY of particulate matter less than 10 microns in diameter (PM₁₀). Emission estimates are shown for the St. Albans facility based on 1,880 operating hours and summarized in the following tables:

Table 2: Emissions Summary (R13-0426B)

Source	PM		PM ₁₀	
	lb/hr	TPY	lb/hr	TPY
Transfer Points	0.66	0.62	0.31	0.29
Crusher/Screen	0.43	0.41	0.20	0.19
Steam Generator	0.02	0.02	0.01	0.01
Stockpiles	0.0003	0.0012	0.0001	0.0005
Paved HR	0.14	0.14	0.06	0.06
Total	1.25	1.19	0.58	0.55

Table 2a: Emissions Summary (continued)

Source	SO ₂		NO _x		VOC		CO		Total HAPs		CO ₂ e	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Tanks	--	--	--	--	0.001	0.002	--	--			--	--
Steam Generator	0.00	0.00	0.25	0.24	0.01	0.01	0.21	0.20	0.005	0.004	300	282
Total	0.00	0.00	0.25	0.24	0.011	0.012	0.21	0.20	0.005	0.004	300	282

REGULATORY APPLICABILITY

NESHAPS and PSD have no applicability to the proposed facility. The proposed modification of a brick and block facility is subject to the following state and federal rules:

45CSR2 To Prevent and Control Particulate Matter Air Pollution From Combustion of Fuel in Indirect Heat Exchangers

Per §45-2-3.1 visible emissions from the source shall not exceed 10% opacity based on a six minute block average. Because the steam generator will use natural gas exclusively, this requirement should be met.

§45-2-4.1.b limits the amount of PM released into the air from indirect heat exchangers. However, §45-2-11 exempts units with a heat input under 10 MMBtu/hr. The steam generator is only 2.5 MMBtu/hr and is therefore exempt from the standard.

45CSR10 To Prevent and Control Air Pollution From the Emission of Sulfur Oxides

§45-10-10.1. exempts units with a heat input under 10 MMBtu/hr from most of the standards. The steam generator is only 2.5 MMBtu/hr. Therefore only the §45-10-4.1 prohibition of an in stack sulfur concentration greater than 2,000 ppm applies. Because the steam generator will use natural gas exclusively, this requirement should be met.

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 net change in potential to discharge controlled emissions is less than six (6) pounds per hour and ten (10) tons per year of a regulated air pollutant (PM), the applicant submitted the \$1000 application fee and published a Class I legal advertisement in the *Charleston Gazette Mail* on October 28, 2016 pursuant to Section 2.24.e. of 45CSR13.

45CSR17 To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage and Other Sources of Fugitive Particulate Matter

Per §45-17-3.1 no person shall cause, suffer, allow or permit fugitive particulate matter to be discharged beyond the boundary lines of the property on which the discharge originates or at any public or residential location, which causes or contributes to statutory air pollution.

45CSR22 — Air Quality Management Fee Program

In accordance with 45CSR22 - "Air Quality Management Fee Program", the permittee shall not operate nor cause to operate the permitted facility or other associated facilities on the same or contiguous sites comprising the plant without first obtaining and having in current effect a Certificate to Operate (CTO). Such Certificate to Operate (CTO) shall be renewed annually, shall be maintained on the premises for which the Certificate has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

The proposed modification of a brick and block facility will not be subject to the following state and federal rules:

40CFR60, Subpart OOO Standards of Performance for Nonmetallic Mineral Processing Plants

This facility is not subject to 40 CFR 60, Subpart OOO as the facility is well under the limit of crushing nonmetallic minerals at 8 tons per hour (applicability: >25 TPH fixed and >125 TPH portable) as defined in the rule.

40CFR63, Subpart JJJJJ National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial and Institutional Boilers

Since the steam generator will be fired exclusively with natural gas, it is exempt from the requirements of Subpart JJJJJ.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Total HAP emissions from the entire facility are less than 0.01 pounds per hour.

AIR QUALITY IMPACT ANALYSIS

Since the modification is defined as minor in 45CSR14, no modeling was performed.

RECOMMENDATION TO DIRECTOR

The information contained in this modification application indicates that compliance with all applicable regulations should be achieved when all proposed particulate matter control methods are in operation. Due to the location, nature of the process, and control methods proposed, adverse impacts on the surrounding area should be minimized. Therefore, the granting of a Rule 13 registration to Rhodes Brick & Block Company for the modification of their cement block plant located in St. Albans, Kanawha County, WV is hereby recommended.

Thornton E. Martin Jr.
Permit Engineer

December 27, 2016
Date

Fact Sheet R13-0426B
Rhodes Brick & Block Company
St. Albans Facility