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**west virginia** department of environmental protection

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Earl Ray Tomblin, Governor  
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## **ENGINEERING EVALUATION / FACT SHEET**

### BACKGROUND INFORMATION

Application No.:	R13-2937
Plant ID No.:	079-00170
Applicant:	Rhodes Brick & Block
Facility Name:	Red House Facility
Location:	Putnam County
NAICS Code:	327331
Application Type:	Construction
Received Date:	June 1, 2012
Engineer Assigned:	Steven R. Pursley, PE
Fee Amount:	\$2,000.00
Date Received:	June 4, 2012
Complete Date:	June 28, 2012
Due Date:	September 26, 2012
Applicant Ad Date:	June 5, 2012
Newspaper:	<i>The Putnam Standard</i>
UTM's:	Easting: 423.422 km    Northing: 4,266.701 km    Zone: 17
Description:	Construction of a new block and precast concrete plant.

### DESCRIPTION OF PROCESS

#### **Block Plant**

Cement is delivered by bulk tanker and pneumatically pumped into a 200 ton cement silo. Aggregates are delivered to the site and are stored in the aggregate stockpile area for the block plant. The stockpile area will have a concrete floor and 3 block walls and will hold 1,000 tons.

Aggregates will be moved from the stockpile area by end loader or truck to transfer hopper AB-1. A conveyor belt transfers the material to the crusher. Aggregates are also transferred from the stockpile area by end loader or truck to transfer hopper AB-2. Material from both the crusher and the transfer hopper drop onto a conveyor belt and are

transferred to the aggregate bin AB-3, which is inside a building. AB-3 drops material via a clam-shell gate into a weight bin. From the weight bin material is dropped onto a conveyor belt. This conveyor will feed an aggregate holding hopper above the mixer. The aggregates are then dropped into a two cubic yard mixer.

Cement is conveyed from the cement silo with a screw conveyor to a weight hopper above the mixer. Cement is added to the mixer from the weight hopper. Liquid admixes, water and coloring are then added. After mixing, the material is discharged onto three mud conveyor belts. The material from the three belts are conveyed onto one mud belt that feeds the block machine. The block machine forms blocks from the wet material. The blocks are then stacked onto steel racks and loaded into the kilns. A Curetec steam generator is used to provide the heat that cures the blocks. After curing, the blocks are taken out of the kilns, run through a block curer and transferred by fork lift to the block storage yard. The blocks are then loaded onto trucks as needed with a fork lift.

### **Concrete Plant**

Aggregates are delivered and stored in a 300 ton aggregate stockpile. The stockpile area will have a concrete floor and 3 block walls. An endloader picks up material from the stockpile area and loads it into a 72 ton, three compartment aggregate bin. Aggregate is dropped by clamshell into a weigh bin under the aggregate bin. Then the material is transferred from the weigh bin into the mixer by conveyor belt.

Cement is then conveyed from the cement silo by screw conveyor to the cement weigh bin above the mixer. The cement is then dropped from the weigh bin into the mixer. Next, admixes, coloring and water is added. The admixes are liquid and are added with a liquid pump. Coloring (when needed) will be added using pre-weighed bags that dissolve in the mixer. The half yard mixer mixes the material and then discharges it onto one of two mud belts. Molds are poured at the end of the mud belts.

Blocks are removed from the molds after curing and transferred to the block storage area by fork lift. As needed, trucks will be loaded with block from the block storage area.

### **SITE INSPECTION**

A site inspection of the proposed site was performed by the writer on August 30, 2012. The company has already erected two shell buildings on the site. Additionally, some block was also being stored on the site. The applicant has stated that the block that was being stored was made at their St. Albans plant. The site is located between the Kanawha River and State Route 62 in a fairly populated area. There are several residences adjacent to the facility.

To get to the facility from Charleston, take I-64 west to exit 45. Turn right and go approximately 9.3 miles and the facility is on the left.

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## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions from the facility should be as follows: All emission calculations are based on AP-42 emission factors and process rates/capacities limits that will be included in the permit.

Source	PM		PM <sub>10</sub>		PM <sub>2.5</sub>	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Transfer Points	11.77	51.65	5.48	24.01	5.48	24.01
Crusher	0.78	3.42	0.30	1.31	0.30	1.31
Steam Generator	0.02	0.09	0.02	0.09	0.02	0.09
Stockpiles	2.64	11.56	1.24	5.43	1.24	5.43
Unpaved HRs	3.55	15.54	1.05	4.59	1.05	4.59
<b>Total</b>	<b>18.76</b>	<b>82.26</b>	<b>8.09</b>	<b>35.43</b>	<b>8.09</b>	<b>35.43</b>

Source	SO <sub>2</sub>		NO <sub>x</sub>		VOC		CO	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Diesel Tanks	--	--	--	--	0.01	0.01	--	--
Steam Generator	0.01	0.01	0.27	1.16	0.02	0.07	0.23	0.98
<b>Total</b>	<b>0.01</b>	<b>0.01</b>	<b>0.27</b>	<b>1.16</b>	<b>0.03</b>	<b>0.08</b>	<b>0.23</b>	<b>0.98</b>

Additionally, total HAP emissions from the entire facility (mainly natural gas combustion but also trivial amounts from material handling) will be 0.01 pound per hour and 0.03 tons per year.

## REGULATORY APPLICABILITY

The following state and federal regulations apply to the facility:

### STATE RULES

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

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Per §45-2-3.1 visible emission 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 proposed steam generator is only 2.5 mmbtu/hr and is therefore exempt from this standard.

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

The main requirement of 45CSR7 is the process weight rate based PM stack emission rate in section 4 of the rule. The only source at the facility subject to this portion of the rule is the crusher. It is capable of processing 100 tons per hour. In Table 45-7A, (for a type 'a' source) this equates to a PM emission limit of 37 pounds per hour. Total PM emissions from the crusher will be limited to 0.78 pounds per hour.

The facility is also subject to a twenty (20) percent opacity limit on all process source operations and must have a plan to minimize fugitive emissions. The applicant proposes to meet these requirements through the use of enclosures, a baghouse and use of a water truck.

The facility is also subject to the fugitive particulate matter control systems requirement of section 5.1 of 45CSR7.

**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 proposed 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, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation).**

Because uncontrolled emissions from the facility exceed 6 pounds per hour and 10 tons per year of PM and because the source is subject to an NSPS the facility is subject to 45CSR13.

45CSR30 Requirements for Operating Permits

Since the facility is subject to 40 CFR 60 Subpart OOO, it is subject to 45CSR30. Because the facility wide PTE is less than 100 tons per year the facility will be a Title V minor source.

FEDERAL RULES

Part 60, Subpart OOO STANDARDS OF PERFORMANCE FOR NONMETALLIC MINERAL PROCESSING PLANTS

This Subpart is applicable because the facility crushes nonmetallic minerals as defined in the rule. The main requirement applicable to the facility is the 7% opacity limit per §60.672.b and per §60.672.e. The applicant will be required to demonstrate compliance with this limit using Method 9 as outlined in §60.675.c.

**Nonapplicability Determinations**

40 CFR 60 Subpart Kb Standards of Performance for Volatile Organic Liquid Storage Vessels.

Subpart Kb applies to tanks with a capacity greater than 75 cubic meters (19,810 gallons). The two diesel storage tanks to be constructed at the facility will be 1,000 and 2,000 gallons. Therefore, Subpart Kb does not apply.

40 CFR 63 Subpart JJJJJJ 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 JJJJJJ.

40 CFR 60 Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

The responsible official (Richard Rhodes) stated via telephone on September 4, 2012 that the diesel storage tanks will be used to supply fuel for delivery trucks, front endloaders etc. and that there will be no stationary engines on site.

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 construction is defined as minor in 45CSR14, no modeling was performed.

MONITORING OF OPERATIONS

In addition to the monitoring requirements of 40 CFR 60 Subpart OOO, the permit will require the permittee to monitor and record the following:

- \* Monthly amount of natural gas used by the steam generator.
- \* Amount of cement brought into the facility.
- \* Amount of aggregate brought into the facility.
- \* Amount of fuel oil loaded into tanks.
- \* Pressure drop across the baghouse (on a daily basis).
- \* Records of all maintenance activities related to the baghouse.
- \* Water truck usage (on a daily basis).

## 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 R13-2937 for the construction of a block and precast concrete facility near Red House, Putnam County, be granted to Rhodes Brick and Block Company.

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Steven R. Pursley, PE  
Engineer

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August 30, 2012

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