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**west virginia department of environmental protection**

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**ENGINEERING EVALUATION / FACT SHEET**

**BACKGROUND INFORMATION**

Application No.: G20-B005A *After-the-Fact*  
Plant ID No.: 061-00126  
Applicant: Greer Industries, Inc. d.b.a. Buckeye Asphalt Company  
Facility Name: Morgantown Facility  
Location: Morgantown, Monongalia County  
NAICS Code: 324121  
Application Type: Modification  
Received Date: June 02, 2016  
Engineer Assigned: Thornton E. Martin Jr.  
Fee Amount: \$1,500.00  
Date Received: June 03, 2016  
Complete Date: July 15, 2016  
Applicant Ad Date: June 03, 2016  
Newspaper: *The Dominion Post*  
UTM's: Easting: 603.8 km Northing: 4,395.2 km Zone: 17  
Description: Applicant proposes to modify Permit G20-A005 to include a second asphalt silo, 4 conveyors, 6 transfer points and 2 asphaltic cement tanks. An internal environmental audit of the facility was completed in 2013 and found sources that were not listed under the current air permit. There will be no change in throughput.

**BACKGROUND**

Greer Industries, Inc. d.b.a. Buckeye Asphalt Company is currently permitted under General Permit Registration G20-A005. This permit was issued on April 25, 2000. The plant consists of a Parallel Flow Drum Mixer (D1; Fab-Spec, Model No. 644-12) w/Dryer (Hauck, Model No. 55-520), a Baghouse (BH1; Fab-Spec, Model No. 644-12), six (6) Cold Feed Bins (B1-B6), two (2) Silos (S1 and S2; Dust Fines and Asphalt Mix, respectively), an Asphalt Heater (H1; 1,000 scf/hr / 7.25 gal/hr; PNG / #2FO, respectively), two (2) Tanks (T1 and T2; #2FO and Asphalt Cement, respectively) and a water truck (WT) to control fugitive emissions from the roadways and work areas.

The plant is permitted for 350 tons/hr and a maximum yearly production of 400,000 tons/year. The plant is permitted to operate 6,360 hours/year. There are no hot elevators, pugmills, hot bins, etc. associated with its' operation. The plant dryer (D1) is exhausted to the baghouse (BH1).

## DESCRIPTION OF PROCESS

Buckeye Asphalt is supplied aggregate from Buckeye Stone Company's open stockpiles. All stockpiles which aggregate is transferred from, are permitted under Buckeye Stone Company's permits (R13-2238, R13-2276B and G40-C060). Aggregate is transferred (TP1/PE) via endloader to a feed bin (B1-B6/PE) which uses belt feeders to transfer the material (TP2/N) to a screen (SN1-SN3/PE). Oversize material drops to the ground (TP3/N) and pass through material transfers (TP4/N) onto a belt conveyor (BC1/N). The material is transferred (TP5/PE) to another belt conveyor (BC2/N), where it is fed directly into the dryer (D1/BH). BC2 has the potential to also direct the material (TP6/PE) onto a third belt conveyor (BC3/N) for the purpose of product sampling and testing. From BC3, the material drops to the ground (TP7/N).

D1 is fueled by either natural gas or No.2 fuel oil. The natural gas is pipeline gas and the fuel oil is trucked to the facility and fed from the No.2 Fuel Oil Tank (F1). Asphaltic cement tanks (A1-A3) feed into D1, where it is mixed with aggregate to form Hot Mix Asphalt (HMA). HMA is transferred to a slat conveyor (SLC1/FE) and then either fed directly into an asphalt silo (S2/FE), or to a transverse conveyor (TC1/FE) and finally into a second asphalt silo (S3/FE). HMA is transferred via a chute into trucks, during load out. An additional Bypass Chute is located on SLC1 for direct truck loading, which bypasses the silos.

D1 is controlled by a baghouse (BH1) [E-001]. BH1 collects particulate matter from D1 and the fines silo (S1/BH). Fines from BH1 are pneumatically transferred (TP9/BH) by a screw conveyor (SC1/BH) and a blower into S1. Fines from S1 are either transferred via a fixed chute into a truck (TP8/Fixed Spout), or through the fines return, which transfers fines pneumatically (TP10/BH) using a blower, into D1.

Heater (H1/N) [E-002] is fueled by either natural gas or No.2 fuel oil and is used to heat A1-A3 as well as other plant components in order to successfully transfer asphaltic cement and HMA through the process.

## MODIFICATION

Buckeye Asphalt Company proposes to modify Permit G20-A005 to include a second asphalt silo, 4 conveyors, 6 transfer points and 2 asphaltic cement tanks. An internal environmental audit of the facility was completed in 2013 and found sources that were not listed under the current air permit. This *After-the-Fact* application encompasses the entire process and includes all sources, not just sources missed during the original registration, to update the entire permit to current status. Some Source ID's have been updated and a chart has been provided that corresponds the current Source ID's to the new Source ID's. The increase in the PTE for all pollutants was determined by subtracting the TPY values from the original permit application, submitted in 1999.

See the following table for description, maximum throughput, control equipment, and maximum storage for all proposed and permitted equipment at the Morgantown facility:

Table 1: Equipment Summary

Equipment ID No.	Description	Installation/Modification Date	Maximum Capacity		Control Equipment <sup>1</sup>
<b>Equipment</b>					
D1	Fab-Spec Model 644-12 Burner to be Hauck Model 55-520	2000	350 tons/hour	400,000 tons/yr	BH1
SN1 - SN3	Screens	2000	350 tons/hour	400,000 tons/yr	PE
BH1	Fab-Spec Model 644-12	2000	N/A	N/A	N/A
H1	Asphalt Heater – #2 fuel oil/PNG	2000	63,510 gal/yr (#2 fuel oil)	8,760,000 scf/yr (natural gas)	N
<b>Conveyors</b>					
BC1	Belt Conveyor	2000	350 tons/hr	400,000 tons/yr	N
BC2	Belt Conveyor	2000	350 tons/hr	400,000 tons/yr	N
BC3	Belt Conveyor	2000	350 tons/hr	400,000 tons/yr	N
SLC1	Slat Conveyor (Asphalt Mix)	2000	350 tons/hr	400,000 tons/yr	FE
TC1	Transverse Conveyor (Asphalt Mix)	2000	350 tons/hr	400,000 tons/yr	FE
SC1	Screw Conveyor (Fines)	2000	1.26 tons/hr	8,000 tons/yr	BH
<b>Storage</b>					
S1	Fines Silo	2000	75 tons	8,000 tons/yr	FE/BH1
S2	Asphalt Mix Silo	2000	240 tons	400,000 tons/yr	FE
S3	Asphalt Mix Silo	2004	240 tons	400,000 tons/yr	FE
B1-B6	Cold Feed Bins	2000	350 tons/hr	400,000 tons/yr	PE
<b>Tanks</b>					
F1	#2 Fuel Oil	2000	15,000 gal	800,000 gal/yr	N/A
A1	Storage Tank - Liquid Asphalt	2000	20,000 gal	2,000,000 gal/yr	N/A
A2	Storage Tank - Liquid Asphalt	2000	20,000 gal	2,000,000 gal/yr	N/A
A3	Storage Tank - Liquid Asphalt	2000	20,000 gal	2,000,000 gal/yr	N/A

<sup>1</sup> BH1 - Baghouse; PE - Partial Enclosure; FE - Full Enclosure; N - None; N/A - Not Applicable

**DESCRIPTION OF FUGITIVE EMISSIONS**

Buckeye Asphalt Company proposes a few changes to the fugitive emissions in Permit G20-A005. The one-way haulroad length will remain 0.17 miles of unpaved, gravel haulroad. However, the maximum truck travel will be 14 trucks/hour and 16,000 trucks/year, based on 25 ton maximum load per truck. Empty and full trucks weigh, on average, 15 and 40 tons, respectively. These changes are due to a recalculation in truck weight and load capacity. There is no change to the maximum throughput of the facility. A water truck will be used as necessary with up to 50 gpm of water being applied to the haulroad, consistent with the current permit. There are no stockpiles associated with this permit.

**SITE INSPECTION**

Brian Tephabock of the Compliance and Enforcement section from our North Central Regional Office performed a targeted full on-site inspection on October 24, 2013. The facility was

given a status code - 30, "In-Compliance". Mr. Tephabock noted - "Thorough records, facility maintained well."

Directions: The facility is located off of Blaney Hollow Road, which is on the right, approximately 3 miles North on EV Rt. 857, off of I-68.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emission calculations for this facility were performed by the Applicant and checked for accuracy and completeness by the writer.

The dryer and associated emissions were calculated using emission factors from EPA's AP-42., a "Compilation of Air Pollutant Emission Factors", 5<sup>th</sup> edition, specifically Chapter 11.1 - "Hot Mix Asphalt Plants". The emissions are based on throughputs of 350 TPH and 400, 000 TPY (PM emissions reflect the use of a baghouse).

The asphalt heater emissions are calculated using emission factors from EPA's AP-42., a "Compilation of Air Pollutant Emission Factors", 5<sup>th</sup> edition, specifically Chapter 1, "External Combustion Sources", Section 1.3, "Fuel Oil Combustion and Section 1.4, "Natural Gas Combustion".

The applicant listed the maximum emission for each pollutant whether it be from fuel oil combustion or natural gas combustion. Facility emissions (G20-B005A) are summarized in the following tables 2a, 2b and 2c:

Table 2a: Proposed Criteria Pollutant Emissions Summary (G20-B005A)

Source	PM		PM <sub>10</sub>		VOC		SO <sub>2</sub>		NO <sub>x</sub>		CO	
	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr
Haulroads	9.51	5.44	4.53	2.59								
Materials Handling <sup>1</sup>	11.30	6.22	5.02	2.76	5.64	3.22						
Dryer	14.00	8.00	10.85	6.20	24.15	13.80	19.60	11.20	26.25	15.00	19.60	11.20
Asphalt Heater	0.01	0.06	0.01	0.03	0.01	0.02	0.51	2.25	0.15	0.64	0.08	0.37
Stockpiles	Permitted under (R13-2238, R132276B and G40-C060)											
<b>TOTAL</b>	<b>34.82</b>	<b>19.72</b>	<b>20.41</b>	<b>11.58</b>	<b>29.80</b>	<b>17.04</b>	<b>20.11</b>	<b>13.45</b>	<b>26.40</b>	<b>15.64</b>	<b>19.68</b>	<b>12.08</b>

<sup>1</sup> Material Handling is a Total of Transfer Points, Screening, Asphalt Silo Loading and Asphalt Truck Loading Emissions.

Table 2b: Proposed Hazardous/Toxic Pollutant Emissions Summary (G20-B005A)

Source	Acetaldehyde		Benzene		Ethylbenzene		Toluene		Xylene		Formaldehyde	
	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr	PTE lbs/hr	PTE tons/yr
Dryer	0.46	0.26	0.42	0.24	0.13	0.08	0.26	0.15	0.14	0.08	1.26	0.72
Asphalt Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials Handling <sup>1</sup>			0.002	0.001	0.005	0.003	0.005	0.003	0.017	0.010	0.031	0.018
<b>TOTAL</b>	<b>0.46</b>	<b>0.26</b>	<b>0.42</b>	<b>0.24</b>	<b>0.14</b>	<b>0.08</b>	<b>0.27</b>	<b>0.15</b>	<b>0.16</b>	<b>0.09</b>	<b>1.29</b>	<b>0.74</b>

<sup>1</sup> Material Handling is a Total of Transfer Points, Screening, Asphalt Silo Loading and Asphalt Truck Loading Emissions.

Table 2c: Proposed Change in Emissions (G20-B005A)

	Current PTE G20-A005	Proposed PTE G20-B005A	Change in PTE
Pollutant	TPY	TPY	TPY
PM-TSP	17.322	19.72	2.40
PM <sub>10</sub>	10.880	11.58	0.70
VOC	13.83	17.04	3.21
SO <sub>2</sub>	13.46	13.45	-0.01
NOx	15.64	15.64	--
CO	11.57	12.08	0.51
Acetaldehyde	0.26	0.26	--
Benzene	0.24	0.24	--
Ethylbenzene	0.08	0.08	--
Toluene	0.15	0.15	--
Xylene	0.08	0.09	0.01
Formaldehyde	0.721	0.74	0.02

### REGULATORY APPLICABILITY

NESHAPS and PSD have no applicability to the proposed facility. The proposed modification of a hot mix asphalt plant is subject to the following state and federal rules:

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

The purpose of this rule is to establish limitations for smoke and particulate matter which are discharged from fuel burning units. Per this rule, Section 2.14 defines an indirect heat exchanger as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. Section 2.10 defines a fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. The facility will be subject to the opacity requirements in this rule, which is 10% opacity based on a six minute block average.

**45CSR3** *To Prevent and Control Air Pollution from the Operation of Hot Mix Asphalt Plants*

The purpose of this rule is to establish emission limitations for hot mix asphalt plants and the plant property. The facility is subject to this rule because it meets the definition of Hot Mix Asphalt Plant as found in Section 2.14. The facility must meet visible emission limits of 40% opacity during start-up or shutdown and 20% opacity during operations of any fuel burning equipment. The facility shall be operated and maintained in a manner as to prevent emission of particulate matter from any point other than a stack outlet. The facility will utilize water sprays and a baghouse to minimize particulate emissions.

*45CSR7 To Prevent and Control Particulate Matter Air Pollution from Manufacturing Processes and Associate Operations*

The purpose of this rule is to prevent and control particulate matter air pollution from manufacturing processes and associated operations. The facility is subject to the requirements of this rule because it meets the definition of "Manufacturing Process" found in Section 2.20 of this rule.; Subsection 4.1 – PM emissions shall not exceed those under Table 45-7A (see paragraph below); Subsection 5.1 – manufacturing process must be equipped with a system to minimize emissions ( baghouse BH1 controls emissions from the dryer D1); Subsection 5.2 – minimize PM emissions from haulroads and plant premises (water sprays will be utilized to control these emissions).

According to Table 45-7A, for a type 'a' source with a maximum process weight rate of 700,000 lb/hr, the maximum allowable emission rate is approximately 50 lb/hr of particulate matter. The proposed maximum point source emission rate at the facility is 25.31 lb/hr of particulate matter according to calculated emissions in permit application G20-B005A.

*45CSR10 To Prevent and Control Air Pollution from Emissions of Sulfur Oxides*

The purpose of this rule is to prevent and control air pollution from the emission of sulfur oxides. Per this rule, Section 2.9 defines an indirect heat exchanger as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. Section 2.8 defines a fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. According to section 4.1., sulfur dioxide concentrations must fall below 2,000 parts per million by volume.

*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 purpose of this rule is to set forth the procedures for stationary source reporting, and the criteria for obtaining a permit to construct and operate a new stationary source which is not a major stationary source, to modify a non-major stationary source, to make modifications which are not major modifications to an existing major stationary source and to relocate non-major stationary sources within the state of West Virginia.

The applicant is applying for a Modification to their G20-A general permit registration for the Morgantown facility. The proposed Modification is subject to the requirements of 45CSR13 in accordance with Sections 2.17.f.1. and 4.2.a.8. The facility is subject to the following sections of this rule: reporting requirements, requirements for modifications of stationary sources, demonstrating compliance with stationary sources, public review procedures, and permit application fees. The facility will demonstrate compliance by following all the applicable rules and regulations that apply to the facility. They will also follow the terms and conditions set forth in permit G20-B005A.

*45CSR16 Standards of Performance for New Stationary Sources*

This rule establishes and adopts standards of performance for new stationary sources promulgated by the United States Environmental Protection Agency pursuant to section 111(b) of the federal Clean Air Act, as amended (CAA). The facility is subject to 40cfr60 Subparts I and OOO.

## 40CFR60 Subpart I: Standards of Performance for Hot Mix Asphalt Facilities

The facility is subject to this Subpart because it meets the definition of “hot mix asphalt facility” as defined in 60.91(a) – hot mix asphalt facility means any facility used to manufacture hot mix asphalt by heating and drying aggregate and mixing with asphalt cements and consisting of any combination of the following: dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler, systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems.

## 40CFR60 Subpart OOO: Standards of Performance for Nonmetallic Minerals Processing Plant

In addition to nonmetallic minerals processing plants, provisions of this subpart also apply to crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart. The facility shall 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 (all control methods shown in equipment table) proposed within application G20-B005A are in operation.

## TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

### *Acetaldehyde:*

Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals. It is ubiquitous in the environment and may be formed in the body from the breakdown of ethanol. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen (Group B2) based on inadequate human cancer studies and animal studies that have shown nasal tumors in rats and laryngeal tumors in hamsters.

### *Benzene:*

Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A, human carcinogen.

### *Ethyl Benzene:*

Ethyl benzene is mainly used in the manufacturing of styrene. Acute (short-term) exposure to ethyl benzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects, such as dizziness. Chronic (long-term) exposure to ethyl benzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation exposure to ethyl benzene. Limited information is available on the

carcinogenic effects of ethyl benzene in humans. In a study by the National Toxicology Program (NTP), exposure to ethyl benzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. EPA has classified ethyl benzene as a Group D, not classifiable as to human carcinogenicity.

*Formaldehyde:*

Formaldehyde is used mainly to produce resins used in particle board products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

*Toluene:*

The acute toxicity of toluene is low. Toluene may cause eye, skin, and respiratory tract irritation. Short-term exposure to high concentrations of toluene (e.g., 600 ppm) may produce fatigue, dizziness, headaches, loss of coordination, nausea, and stupor; 10,000 ppm may cause death from respiratory failure. Ingestion of toluene may cause nausea and vomiting and central nervous system depression. Contact of liquid toluene with the eyes causes temporary irritation. Toluene is a skin irritant and may cause redness and pain when trapped beneath clothing or shoes; prolonged or repeated contact with toluene may result in dry and cracked skin. Because of its odor and irritant effects, toluene is regarded as having good warning properties. The chronic effects of exposure to toluene are much less severe than those of benzene. No carcinogenic effects were reported in animal studies. Equivocal results were obtained in studies to determine developmental effects in animals. Toluene was not observed to be mutagenic in standard studies.

*Xylene:*

Commercial or mixed xylene usually contains about 40-65% *m*-xylene and up to 20% each of *o*-xylene and *p*-xylene and ethyl benzene. Xylenes are released into the atmosphere as fugitive emissions from industrial sources, from auto exhaust, and through volatilization from their use as solvents. Acute (short-term) inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic (long-term) inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported. EPA has classified mixed xylenes as a Group D, not classifiable as to human carcinogenicity.

## AIR QUALITY IMPACT ANALYSIS

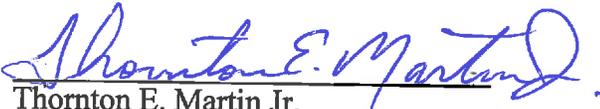
Air dispersion modeling was not performed due to the size and location of this facility and the limit of the proposed modification. This facility is located in Monongalia County, West Virginia, which is designated as attainment for PM<sub>2.5</sub> (particulate matter less than 2.5 microns in diameter). The facility is a minor source and not subject to 45CSR14.

## CHANGES TO PERMIT G20-A005

Addition of a second asphalt silo, 4 conveyors, 6 transfer points and 2 asphaltic cement tanks that were not included in the initial permit application dated 1999.

RECOMMENDATION TO DIRECTOR

The information contained in the permit application G20-B005A indicates that compliance with all applicable state rules and federal regulations should be achieved when all proposed control methods are in operation. Therefore, the granting of a Class II Administrative Update to a general permit to Greer Industries, Inc. d.b.a. Buckeye Asphalt Company for the modification of a hot mix asphalt facility located in Morgantown, Monongalia County, West Virginia, is hereby recommended.



Thornton E. Martin Jr.  
Permit Engineer

July 15, 2016

Date