



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: G20-B030C
Plant ID No.: 039-00608
Applicant: American Asphalt of West Virginia, LLC
Facility Name: St. Albans Facility
Location: St. Albans, Kanawha County
NAICS Code: 324121
Application Type: Class II Administrative Update
Received Date: October 09, 2014
Engineer Assigned: Thornton E. Martin Jr.
Fee Amount: \$300.00
Date Received: October 10, 2014
Complete Date: November 13, 2014
Applicant Ad Date: October 13-20, 2014
Newspaper: *Charleston Gazette*
UTM's: Easting: 425.63061 km Northing: 4251.85327 km Zone: 17
Description: Applicant proposes the addition of a wrap-a-round component (to process oversized RAP material) to the current recycled asphalt pavement (RAP) system at the existing hot mix asphalt plant.

DESCRIPTION OF PROCESS

The wheel loader gathers and places the aggregate in cold bins, a conveyor belt distributes the aggregate to the dryer (BPRD-1), where it is heated to the desired temperature. The dry aggregate is then taken by elevator to the mixing tower. The liquid asphalt is heated by the asphalt heater (AH-1) in two tanks (T-1 and T-2). The dried aggregate and the heated liquid asphalt is then mixed in the mixing tower (BPRD-1). The baghouse pulls a draft through the duct work from the screenhead, hotbins, weigh hopper, and mixing tower to the cyclone (APCD #1). The particles that the cyclone settles goes into the knockout box. These heavier particles will be returned to the hot elevator and the fine particles will be sent to the baghouse (APCD #2). Air will periodically pulse through the bags knocking some of the particles into the bottom and are reintroduced back into the mix.

The current RAP System — a truck dumps the RAP to ground. A front end loader transfers the RAP to a stockpile (OS-6). A front end loader transfers the RAP from the stockpile to the screen feed hopper. The RAP then goes through the double deck screen and then to the weigh hopper, where it will go to the final process point in the pug mill.

The proposed RAP System — introduces two new conveyors (BC-1 and BC-2), a new crusher (CR-1) with built-in feed hopper and three new RAP stockpiles (OS-7, OS-8 and OS-9). The oversized RAP material that previously went to ground from the screen will now go onto conveyor (BC-1) which transfers the material to the crusher hopper. Crushed material falls onto belt conveyor (BC-2) which transfers back to the double deck screen. The screen still has the capability to drop to ground if needed.

See the following table for description, maximum throughput, control equipment, and maximum storage for all permitted equipment at the St. Albans facility:

Table 1: Equipment Summary

| Equipment ID No. | Description | Installation/Modification Date | Maximum Capacity | | Control Equipment |
|-----------------------|---|--------------------------------|-----------------------------|--------------------------------|-------------------|
| Equipment | | | | | |
| BPRD-1 | Rotary Dryer - Barber Greene #DC70 | 2010 | 300 tons/hour | 485,000 tons/yr | APCD-1 |
| APCD-1 | Cyclone – Barber Greene #CD 90 x 105 | 2010 | | | APCD-2 |
| APCD-2 | Baghouse - Barber Greene CFI 160 x 293 | 2010 | | | |
| AH-1 | Asphalt Heater – Highway Heat - 3,744 hrs/yr (can use #2 fuel oil or natural gas) | 2010 | 10,000 gal/yr (#2 fuel oil) | 2,257,000 scf/yr (natural gas) | |
| RAP | | | | | |
| SCR-1 | Double Deck Screen | 2013 | 60 tons/hr | 97,000 tons/yr | WS |
| BC-1 | Belt Conveyor | 2014 | 60 tons/hr | 97,000 tons/yr | |
| CR-1 | Crusher | 2014 | 60 tons/hr | 97,000 tons/yr | WS |
| BC-2 | Belt Conveyor | 2014 | 60 tons/hr | 97,000 tons/yr | |
| Open Stockpile | | | | | |
| OS-1 | Stockpile - 8's | 2010 | 12,000 tons | 16,050 tons/yr | |
| OS-2 | Stockpile - 57's | 2010 | 12,000 tons | 48,500 tons/yr | |
| OS-3 | Stockpile - sand | 2010 | 12,000 tons | 169,750 tons/yr | |
| OS-4 | Stockpile - Limestone Dust | 2010 | 12,000 tons | 48,500 tons/yr | |
| OS-5 | Stockpile 11's | 2010 | 12,000 tons | 58,200 tons/yr | |
| OS-6 | Stockpile - RAP | 2013 | 5,000 tons | 97,000 tons/yr | |
| OS-7 | Stockpile - Oversized RAP | 2014 | 500 tons | 15,000 tons/yr | |
| OS-8 | Stockpile - Screened RAP | 2014 | 750 tons | 30,000 tons/yr | |
| OS-9 | Stockpile - Crushed RAP | 2014 | 500 tons | 30,000 tons/yr | |
| Tanks | | | | | |
| T-1 | Storage Tank - Liquid Asphalt | 2010 | 15,000 gal | 15,400 gal/yr | |
| T-2 | Storage Tank - Liquid Asphalt | 2010 | 20,000 gal | 18,400 gal/yr | |

SITE INSPECTION

Fred Teel of the Compliance and Enforcement section performed a targeted, full on-site inspection on September 22, 2014. The facility was found to be in compliance.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emission calculations for this facility were performed by the Division of Air Quality’s Small Business Assistance Program (SBAP) using DAQ’s emissions calculations spreadsheets. With the additions to the existing RAP system, emissions will increase. The total increase from the stockpiles, equipment and transfer points are provided in Table 4. A conservative emission increase of 2 TPY for PM and 1 TPY of PM₁₀ was published in the applicants’ Class I legal advertisement. All other emissions will remain the same.

Current facility emissions (G20-B030B) are summarized in the following tables 2a and 2b:

Table 2a: Current Criteria Pollutant Emissions Summary (G20-B030B)

| Source G20-B030B | PM | | PM ₁₀ | | VOC | | SO ₂ | | NO _x | | CO | |
|-------------------------------|--------------|--------------|------------------|--------------|-------------|-------------|-----------------|--------------|-----------------|--------------|---------------|--------------|
| | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr |
| Haulroads | 21.66 | 17.49 | 4.57 | 3.69 | | | | | | | | |
| Stockpiles | 0.14 | 0.65 | 0.07 | 0.30 | | | | | | | | |
| <i>Fugitives Total</i> | <i>21.80</i> | <i>18.14</i> | <i>4.64</i> | <i>3.99</i> | | | | | | | | |
| Equipment | 3.67 | 2.97 | 1.56 | 1.26 | | | | | | | | |
| Dryer | 12.60 | 10.19 | 8.10 | 6.55 | 2.46 | 1.99 | 26.40 | 21.34 | 36.00 | 29.10 | 120.00 | 97.00 |
| Asphalt Heater | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.29 | 0.36 | 0.08 | 0.12 | 0.03 | 0.10 |
| <i>Point Source Total</i> | <i>16.28</i> | <i>13.17</i> | <i>9.67</i> | <i>7.82</i> | <i>2.47</i> | <i>2.01</i> | <i>26.69</i> | <i>21.70</i> | <i>36.08</i> | <i>29.22</i> | <i>120.03</i> | <i>97.10</i> |
| FACILITY TOTAL | 38.08 | 31.31 | 14.31 | 11.81 | 2.47 | 2.01 | 26.69 | 21.70 | 36.08 | 29.22 | 120.03 | 97.10 |

Table 2b: Current Hazardous/Toxic Pollutant Emissions Summary (G20-B030B)

| Source G20-B030B | Acetaldehyde | | Benzene | | Ethylbenzene | | Toluene | | Xylene | | Formaldehyde | |
|---------------------|--------------|--------|---------|--------|--------------|--------|---------|--------|--------|--------|--------------|--------|
| | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr |
| Dryer | 0.10 | 0.08 | 0.09 | 0.07 | 0.66 | 0.54 | 0.30 | 0.25 | 0.81 | 0.66 | 0.23 | 0.18 |

Proposed facility emissions are summarized in the following tables 3a and 3b:

Table 3a: Proposed Criteria Pollutant Emissions Summary (G20-B030C)

| Source G20-B030C | PM | | PM ₁₀ | | VOC | | SO ₂ | | NOx | | CO | |
|-------------------------------|--------------|--------------|------------------|--------------|-------------|-------------|-----------------|--------------|--------------|--------------|---------------|--------------|
| | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr |
| Haulroads | 21.66 | 17.49 | 4.57 | 3.69 | | | | | | | | |
| Stockpiles | 0.17 | 0.80 | 0.09 | 0.37 | | | | | | | | |
| <i>Fugitives Total</i> | <i>21.83</i> | <i>18.29</i> | <i>4.66</i> | <i>4.06</i> | | | | | | | | |
| Equipment | 4.85 | 3.62 | 2.07 | 1.53 | | | | | | | | |
| Dryer | 12.60 | 10.19 | 8.10 | 6.55 | 2.46 | 1.99 | 26.40 | 21.34 | 36.00 | 29.10 | 120.00 | 97.00 |
| Asphalt Heater | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.29 | 0.36 | 0.08 | 0.12 | 0.03 | 0.10 |
| <i>Point Source Total</i> | <i>17.46</i> | <i>13.82</i> | <i>10.18</i> | <i>8.09</i> | <i>2.47</i> | <i>2.01</i> | <i>26.69</i> | <i>21.70</i> | <i>36.08</i> | <i>29.22</i> | <i>120.03</i> | <i>97.10</i> |
| FACILITY TOTAL | 39.29 | 32.11 | 14.84 | 12.15 | 2.47 | 2.01 | 26.69 | 21.70 | 36.08 | 29.22 | 120.03 | 97.10 |

Table 3b: Proposed Hazardous/Toxic Pollutant Emissions Summary (G20-B030C)

| Source G20-B030C | Acetaldehyde | | Benzene | | Ethylbenzene | | Toluene | | Xylene | | Formaldehyde | |
|---------------------|--------------|--------|---------|--------|--------------|--------|---------|--------|--------|--------|--------------|--------|
| | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr | lb/hr | ton/yr |
| Dryer | 0.10 | 0.08 | 0.09 | 0.07 | 0.66 | 0.54 | 0.30 | 0.25 | 0.81 | 0.66 | 0.23 | 0.18 |

Table 4: Estimated increase in emissions:

| Emission Source | Controlled PM Emissions | | Controlled PM ₁₀ Emissions | |
|---------------------------------|----------------------------|-------------|--|-------------|
| | lb/hour | TPY | lb/hour | TPY |
| Fugitive Emissions | | | | |
| Stockpile Emissions | 0.03 | 0.15 | 0.02 | 0.07 |
| Point Source Emissions | | | | |
| Equipment/Transfer Emissions | 1.18 | 0.66 | 0.51 | 0.27 |
| FACILITY EMISSIONS TOTAL | 1.21 | 0.81 | 0.53 | 0.34 |

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 baghouses 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 APCD-1 and APCD-2 controls emissions from the rotary dryer BPRD-1); 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 600,000 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 17.46 lb/hr of particulate matter according to calculated emissions in permit application G20-B030C.

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 Class II Administrative Update to their G20-B general permit registration for the St. Albans facility. The proposed modification is subject to the requirements of 45CSR13 because it will result in an increased potential to discharge of less than six (6) pounds per hour and ten (10) tons per year of a regulated air pollutant (PM and PM10) and will involve the construction of equipment subject to NSPS Subparts I and OOO.

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-B030C. The applicant published a Class I legal advertisement in the *Charleston Gazette* on October 13, 2014 and submitted an application fee of \$300.00.

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-B030C 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

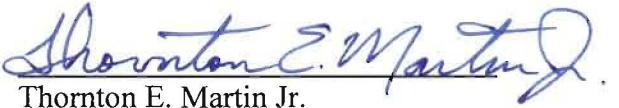
Air dispersion modeling was not performed due to the size and location of this facility and the limit of the proposed modification. This facility is located in Kanawha County, West Virginia, which is designated as a non-attainment for PM_{2.5} (particulate matter less than 2.5 microns in diameter). The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

CHANGES TO PERMIT G20-B030A

Emissions will increase due to the modified RAP system configuration (stockpiles, crusher, and transfers). These increases can be seen in Table 4. Total proposed emissions for the facility can be seen in Tables 3a and 3b.

RECOMMENDATION TO DIRECTOR

The information contained in the permit application G20-B030B 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 American Asphalt of West Virginia, Inc. for the modification of a hot mix asphalt facility located in St. Albans, Kanawha County, West Virginia, is hereby recommended.



Thornton E. Martin Jr.
Permit Engineer

November 13, 2014

Date