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**west virginia department of environmental protection**

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Division of Air Quality  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
Phone: (304) 926-0475 • Fax: (304) 926-0479

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
www.dep.wv.gov

**GENERAL PERMIT REGISTRATION APPLICATION  
ENGINEERING EVALUATION / FACT SHEET**

BACKGROUND INFORMATION

Application No.: G40-C080  
Plant ID No.: 033-00263  
Applicant: Purdy Run Aggregates, LLC  
Facility Name: Shinnston Quarry  
Location: Shinnston, Harrison County, WV  
SIC Code: 1422 (Crushed and Broken Limestone Mining and Quarrying)  
Application Type: Construction  
Received Date: August 19, 2016  
Engineer Assigned: Thornton E. Martin Jr.  
Fee Amount: \$1,500  
Date Received: August 19, 2016  
Complete Date: November 02, 2016  
Applicant's Ad Date: September 12, 2016  
Newspaper: *The Exponent Telegram*  
UTM's: Easting: 566.91413 km Northing: 4361.40249 km Zone: 17  
Description: The Applicant proposes to construct and operate a three stage crushing/screening system in a remote area of Clay District of Harrison County, WV.

DESCRIPTION OF PROCESS

This is a three stage crushing and screening system set up as one process for maximum efficiency. Material will be fed by front-end loader to bin BS-01(PW) @ TP-01 (UD-PW); to jaw crusher CR-01 (FW) @ TP-02 (TC-FE); to belt BC-01 (NC) @ TP-03 (TC-PW). Belt BC-01 will feed the secondary cone crusher CR-02 (FW) @ TP-04 (TC-PW); to belt BC-02 (NC) @ TP-05 (TC-PW). Belt BC-02 will begin the third stage and will feed bin BS-02 (PW) @ TP-06 (TC-PW) which will discharge to a fully-enclosed screen SS-01 (FE @ TP-07 (TC-FE). Material from screen SS-01 will be processed and sent to stockpiles (OS-01 (SW-WS), OS-02 (SW-WS) or OS-03 (SW-WS) via a series of uncovered belt conveyors BC-03 (NC), BC-04 (NC) and BC-05 (NC) @ TP-08 (TC-FE) thru TP-16 (LO-MDH).

Individual diesel combustion engines power the jaw crusher, cone crusher and screen. A 2014 Volvo, Model D13, rated at 422 HP (315 kW) @ 1800 RPM will power the Jaw Crusher. The equipment ID for this unit is UJ440i. A 2014 Caterpillar C9.3 ACERT, rated at 350 HP (261 kW) @ 1800 RPM will power the Cone Crusher. The equipment ID for this unit is QS331. A 2014 Caterpillar, Model C4.4, rated at 100 HP

(75 kW) @ 1800 RPM will power the Double Deck Screen. The equipment ID for this unit is QA451. Two diesel storage tanks (T1 and T2) will be on-site for refueling the equipment. The tanks will hold 1,000 gallons each and have an annual throughput of 8,000 gallons/each/year.

The portable plant shall be constructed and operated in accordance with the following equipment and control device information taken from permit applications G40-C080:

Emission Unit ID	A M R <sup>1</sup>	Emission Unit Description	Year Installed	Design Capacity		Control Equipment <sup>2</sup>
				TPH	TPY	
CR-01	A	Jaw Crusher	2016	400	3,504,,000	FW
CR-02	A	Cone Crusher	2016	400	3,504,,000	FW
SS-01	A	Double Deck Screen	2016	400	3,504,,000	FE
BC-01	A	Belt Conveyor	2016	400	3,504,,000	N
BC-02	A	Belt Conveyor	2016	400	3,504,,000	N
BC-03	A	Belt Conveyor	2016	400	3,504,,000	N
BC-04	A	Belt Conveyor	2016	400	3,504,,000	N
BC-05	A	Belt Conveyor	2016	400	3,504,,000	N
BC-06	A	Belt Conveyor	2016	400	3,504,,000	N
BS-01	A	10 Ton Bin	2016	---	3,504,,000	PW
BS-02	A	10 Ton Bin	2016	---	3,504,,000	PW
OS-01	A	5,000 Ton Open Stockpile	2016	---	3,504,,000	SW-WS
OS-02	A	5,000 Ton Open Stockpile	2016	---	3,504,,000	SW-WS
OS-03	A	5,000 Ton Open Stockpile	2016	----	3,504,,000	SW-WS
T1	A	1,000 gal. Storage Tank	2016	8,000 gallons/year		N
T2	A	1,000 gal. Storage Tank	2016	8,000 gallons/year		N

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

<sup>2</sup> FE - Full Enclosure; FW - Full Enclosure w/Water Spray; PW - Partial Enclosure w/Water Spray; SW-WS - Water Spray; N - None.

### ADDITIONAL EMISSION SOURCES

Source ID No.	Description	Engine							Control Equipment
		Manufacturer	Model	Mfg. Date	HP Rating	Fuel	Tier	EPA Certificate of Conformity*	
<b>Three Stage Crushing and Screening System</b>									
UJ440i	Pump Drive / Elect. Source	Volvo	D13	2014	422	Diesel	Tier 4	N/A	A/F ratio
QS331	Pump Drive / Elect. Source	Caterpillar	C9.3 ACERT	2014	350	Diesel	Tier 4	N/A	A/F ratio
QA451	Pump Drive / Elect. Source	Caterpillar	C4.4	2014	100	Diesel	Tier 4	N/A	A/F ratio

\* N/A - Not Available

## SITE INSPECTION

A site inspection was deemed unnecessary at this time. Using Google Maps, the coordinates show the location of the quarry and that the facility, affected facility or emission unit will not be within three hundred (300) feet of any occupied dwelling, business, public building, school, church, community, institutional building or public park. Upon permit issuance, the facility will be added to the appropriate source list for inspections.

Directions from Charleston: Follow I-79 North toward Clarksburg, take exit 125 for WV131 toward Saltwell Road - Shinnston. Turn left onto WV131 Bennedum Drive, continue straight, continue onto Middleton Road, turn left onto Horners Run Road, turn right onto Saltwell Road to Adamsville, continue onto Jarius Run - facility located at 986 Jarius Run Road.

## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Potential sources of fugitive particulate emissions for this facility include emissions, which are not captured by pollution control equipment and emissions from open stockpiles and vehicular traffic on unpaved haulroads and work areas. These haulroads and work areas will be controlled by water truck. The water truck will be operated three times daily and more as needed in dry periods.

An additive to prevent freezing will be utilized in the winter months when freezing conditions are present. New coarse gravel base material will be added to unpaved haulroads as needed.

A portable water tank will be on site to provide water sprays for bins and crushers for fugitive emissions.

Fugitive emission calculations for continuous and batch drop operations, transfer points, crushing and screening, storage piles, and paved and unpaved haul roads are based on AP-42 "Compilation of Air Pollution Emission Factors." Control efficiencies were applied based on the Reference Document for General Permit G40-C. The estimated emission calculations were performed by the applicants' consultant using the General Permit G40-C Excel emission calculation spreadsheet and were checked for accuracy and completeness by the writer.

Purdy Run Aggregates, LLC's proposed operation of a portable three stage crushing/screening plant will result in a potential to discharge controlled emissions (not including engine emissions) of 264.23 TPY of particulate matter (PM), of which 58.87 TPY will be particulate matter less than 10 microns in diameter (PM<sub>10</sub>).

Emissions from the three diesel engines were published in the same Class I Legal Advertisement, separately from the crushing/screening (PM) emissions.

The proposed operation of this equipment will result in the following estimated potential to discharge controlled emissions:

<i>Emissions Summary - Purdy Run Aggregates, LLC. G40-C080</i>	Controlled PM Emissions		Controlled PM <sub>10</sub> Emissions	
	lb/hr	TPY	lb/hr	TPY
<b>Fugitive Emissions</b>				
Stockpile Emissions	0.04	0.19	0.02	0.09
Unpaved Haulroad Emissions	57.51	251.88	12.10	52.99
Paved Haulroad Emissions	0.00	0.00	0.00	0.00
<b>Fugitive Emissions Total</b>	<i>57.55</i>	<i>252.07</i>	<i>12.12</i>	<i>53.08</i>
<b>Point Source Emissions</b>				
Equipment Emissions	2.75	12.04	1.31	5.73
Transfer Point Emissions	0.03	0.12	0.01	0.06
<b>Point Source Emissions Total</b>	<i>2.79</i>	<i>12.16</i>	<i>1.32</i>	<i>5.79</i>
<b>FACILITY EMISSIONS TOTAL</b>	<b>60.33</b>	<b>264.23</b>	<b>13.44</b>	<b>58.87</b>

Calculations are based on 400 tons per hour and 1,040 hours of operation.

The EPA Certificate of Conformity for each engine was not submitted with the Application. The calculations submitted by the Applicant for criteria pollutant emissions utilized emission factors from AP-42, 5<sup>th</sup> Edition, Table 3.3-1 and from AP-42, 5<sup>th</sup> Edition, Table 3.3-2 for HAP emissions. Using this method to estimate emissions result in values that do not comply with Tier 4 standards for NO<sub>x</sub>, VOC and PM. The emissions from the engines are greatly exaggerated in the Applicants' Class Legal Advertisement, so it is not necessary to re-publish the notice.

The permitted emissions from Purdy Run Aggregates, LLC's diesel fired engines shall be based on Tier 4 Emissions Standards (taken from EPA's Emission Standards Reference Guide for Nonroad Compression-Ignition Engines, EPA-420-B-16-022, March 2016). The Tier 4 Exhaust Emission Standards for the engines are as follows:

Rated Power	(g/kW-hr)			
	VOC	NO <sub>x</sub>	PM	CO
75<=kW<130	0.19	0.40	0.02	5.0
225<=kW<450	0.19	0.40	0.02	3.5

Using the Standard and total annual operating hours of 1,040, the maximum allowable emissions for each engine will be permitted as follows:

Source	QA451 (75 kW, SS-01)		QS331 (261 kW, CR-02)		UJ440i (315 kW, CR-01)		Total	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
CO	0.827	0.429	2.014	1.047	2.430	1.264	5.271	2.741
NO <sub>x</sub>	0.066	0.034	0.230	0.119	0.277	0.144	0.574	0.299
VOC	0.031	0.016	0.109	0.056	0.132	0.068	0.272	0.142
PM	0.003	0.002	0.012	0.006	0.014	0.007	0.029	0.015

## REGULATORY APPLICABILITY

The construction of the three-stage aggregate processing facility is subject to the following state and federal 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 G40-C080 are in operation.

According to Table 45-7B, for a type ‘a’ source with a maximum process weight rate of 800,000 lb/hour, the maximum allowable emission rate is 50 lb/hour of particulate matter. The maximum emission rate is 2.82 lb/hour of particulate matter according to estimated emissions in fact sheet G40-C080.

*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 proposed construction of the portable aggregate processing plant is subject to the requirements of 45CSR13. The construction results in a potential to discharge of greater than 6 lb/hr and 10 TPY of a regulated air pollutant and therefore requires a permit to construct. The applicant submitted an application fee of \$1500 and published a Class I legal advertisement in *The Exponent Telegram* on September 12, 2016.

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

The proposed change remains subject to 40 CFR 60 Subpart OOO because it will occur after April 22, 2008 and the plant processes more than 25 tons of rock per hour. The proposed construction will include three (3) open stockpiles, two (2) bins, one (1) screen, two (2) crushers and six (6) belt conveyors, 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 G40-C080 are in operation.

*45CSR30 Requirements for Operating Permits*

In accordance with 45CSR30 Major Source Determination, the aggregate processing plant will continue to be a non-major source which is subject to NSPS Subpart OOO. The facilities potential to emit will be 5.80 TPY of a regulated air pollutant (PM<sub>10</sub>), not including fugitive emissions, which is less than the 45CSR30 threshold of 100 TPY. Therefore, the facility will continue to be subject to 45CSR30 and classified as a Title V deferred non-major source.

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

Purdy Run Aggregates, LLC is subject to this subpart because the engines were manufactured after April 1, 2006. The engine emissions for UJ440i, QS331 and QA451 are EPA Tier 4 certified.

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

Purdy Run Aggregates, LLC is subject to 40CFR63 Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, because UJ440i, QS331 and QA451 are considered a new area source of HAPs since it will be installed on or after June 12, 2006, however, the only requirements that apply are those required under 45CFR60 Subpart III.

The proposed three-stage crushing/screening system for aggregate processing at Purdy Run Aggregates, LLC is not subject to the following state and federal rules:

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

In accordance with 45CSR14 Major Source Determination, the proposed additions and aggregate processing facilities are not listed in Table 1. The facilities will have a combined potential to emit 12.17 TPY of a regulated air pollutant (PM), not including fugitive emissions, which is less than the 45CSR14 threshold of 250 TPY. This facility is not listed in Table 2, and so fugitive emissions are not included when determining source applicability. Therefore, the proposed construction is not subject to the requirements set forth within 45CSR14.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Various VOC/non-criteria regulated pollutants are emitted from the incomplete combustion of diesel fuel. These emissions, however, are generally small and do not adversely impact the quality of the surrounding ambient air.

AIR QUALITY IMPACT ANALYSIS

Air dispersion modeling was not performed due to the size and proposed location of this facility. This facility will be located in Harrison County, WV. Harrison County is currently in attainment for PM

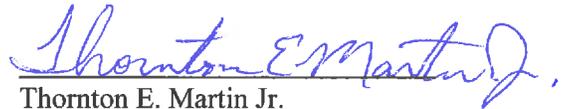
(particulate matter), PM<sub>10</sub> (particulate matter less than 10 microns in diameter) and PM<sub>2.5</sub> (particulate matter less than 2.5 microns in diameter).

#### MONITORING OF OPERATIONS

For the purposes of determining compliance with maximum throughput limits, the applicant shall maintain certified daily records and monthly records of the amount of coal processed. Also, the applicant shall maintain certified maintenance records. Such records shall be retained on site by the permittee for at least five (5) years and shall be made available to the Director of the Division of Air Quality or his or her duly authorized representative upon request.

#### RECOMMENDATION TO DIRECTOR

The information contained in this permit application indicates that compliance with all applicable regulations should be achieved when all of the 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 permit to Purdy Run Aggregates, LLC. for the operation of a portable limestone processing unit at one of three plant locations is hereby recommended.



Thornton E. Martin Jr.  
Permit Engineer

November 02, 2016

Date