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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](http://www.dep.wv.gov)

**ENGINEERING EVALUATION / FACT SHEET**

**BACKGROUND INFORMATION**

Application No.: G40-C003F  
Plant ID No.: 037-00015  
Applicant: Bardon, Inc.  
Facility Name: Millville Quarry  
Location: Jefferson County  
SIC Code: 1422 (Crushed and Broken Limestone)  
Application Type: Modification  
Received Date: June 30, 2016  
Engineer Assigned: Thornton E. Martin Jr.  
Fee Amount: \$1,500  
Date Received: July 05, 2016  
Complete Date: August 15, 2016  
Applicant Ad Date: July 14, 2016  
Newspaper: *Shepardstown Chronicle*  
UTM's: Easting: 259.027 km    Northing: 4,352.354 km    Zone: 17  
Description: Bardon, Inc. is applying for a revised registration to include replacement of the existing Hazemag 1322K tertiary crusher with a new Metso Model HP6 crusher which is identified as 331-CZ03. The hourly rate and the yearly rate of the new crusher will be the same as the existing crusher. Total facility production remains the same with a feed rate of 1,200 tons per hour and 6.0 million tons per year.

**PERMITTING HISTORY**

Millville Quarry, Inc. was initially registered under the General Permit G40-A003 in December 2000. An amendment to the registration was approved in September 2001 under G40-A003A. Then an initial flooding registration G40-A003B was approved on July 26, 2002. Afterward, the registration was modified to allow the installation of log washers in February 29, 2003 (G40-B003C). On February 22, 2005, G40-B003D was issued for facility streamlining and screen replacement. The current existing registration was issued as G40-C003E on November 24,

2015.

As of January 1, 2012, all interests owned by Millville Quarry, Inc. was sold to Bardon, Inc. A letter of transfer of ownership was mailed to WVDEP on October 26, 2015.

## FACILITY DESCRIPTION

The stone production facilities involve the operations of trucking from the quarry pits, stone sizing and crushing, and final product loadout. The facility is comprised of primary crushing and screening, main plant operations for sized aggregate production and Wash 1 and Wash 2 operations. Final sized products are loaded to truck and rail via endloaders.

For the potential to emit, the hourly emissions estimate is based on the entire facility concurrently operating except for the duplicate screens - full hourly rates are only shown through one screen in the screen pair. The yearly emissions are based on the total yearly throughput and worst-case transfers to avoid double counting of throughput.

## PRIMARY CRUSHING OPERATION

Quarried rock is loaded in the pits and trucked and dumped into the Dump Box (3600.311-HP01) at a maximum rate of 1,200 tph / 6,000,000 tpy. The Dump Box is followed with a grizzly screen (3600.311-RZ01) which scalps off the large rock and sends it directly to the Jaw Crusher (3600.311-JC01). The crushed rock and the pass through rock from the grizzly transfer to conveyor P1 (3600.311-BC01) then to P2 (3600.311-BC02) then to screen PS1 (3600.311-VS01). Screen pass through goes to reversing conveyor P3 (3600.311-BC03) then to either P4 (3600.311-BC04) or to P6 (3600.321-BC01). Material from P3 transfers to P4 (3600.311-BC04) to stacker P5 (3600.311-ST01) to stockpile SP1. Oversize from PS1 is diverted to the gabion stockpile SP2 or to the 7 Crusher (3600.321-CZ01). Material from 7 Crusher transfers to P6. From P6, the material can drop to the surge pile SP3 or transfer to P7 (3600.321-BC02) then to SP3 or P8 (3600.321-BC03) then to SP3 or P9 (3600.321-BC04) then to SP3.

## MAIN PLANT

Material from SP3 is reclaimed by conveyor M1 (3600.331-BC01), transferred to stacker M2 (3600.331-ST01) and then to the Main Surge Pile SP4. SP4 is reclaimed by M3 (3600.331-BC02), transferred to M4 (3600.331-BC03) and goes to screens MS1 (3600.331-VS01) and MS2 (3600.331-VS02). Oversize from MS1 and MS2 scalps off to M5 (3600.331-BC04) to M6 (3600.331-BC05) to Hopper Feed Bin 5 (3600.331-HP05). Pass through material from MS1 and MS2 transfer to M14 (3600.331-BC09), M7 (3600.331-BC10), and S1 (3600.352-BC03). M14 transfers to screens MS3 (3600.331-VS03) and MS4 (3600.331-VS04). M7 transfers to M8 (3600.331-BC11) to stacker M9 (3600.331-ST02) to stockpile SP7. S1 transfers to S2 (3600.352-BC04) to the Sand Screen (3600.352-VS01). The Sand Screen is proposed to be replaced with like equipment in 2015. Material from Hopper Feed Bin 5 transfers to the Hazemag Crusher (3600.331-HI1) to conveyor M10 (3600.331-BC06) to screens MS5 (3600.331-VS05) and MS6 (3600.331-VS06). A Metso Crusher (331-CZ03) will replace the Hazemag Crusher.

MS3 and MS4 send oversize to conveyor M11 (3600.331-BC07) to M13 (3600.331-BC08)

to Hopper Feed Bin 9 (3600.331-HP09). Pass-through materials transfer to M22 (3600.331-BC13), M15 (3600.351-BC01), and M19 (3600.351-BC04). M22 sends material to M24 (3600.331-BC15) to stacker M25 (3600.331-ST03) to stockpile SP14. M15 transfers to M16 (3600.351-BC02) to wash screen MS7 (3600.351-VS01). M19 transfers to M20 (3600.351-BC05) to wash screen MS8 (3600.331-VS02). Hopper Feed Bin 9 transfers to crushers HP500 (3600.331-CZ01) and HP300 (3600.331-CZ02). Material from HP500 and HP300 transfers to M14 and back to screens MS3 and MS4.

MS5 and MS6 send oversize to conveyor M12 (3600.331-BC12) to M13 to Hopper Feed Bin 9 to HP500 and HP300 to M14. Pass through materials go to a reversing conveyor M23 (3600.331-BC14), M15 (see above) and M19 (see above). M23 can send material to either M24 (See above) or to M27 (3600.352-BC01) to M28 (3600.352-BC02) to S2 (see above).

### WASH 1

Wash screen MS7 sends material to M17 (3600.351-BC03) and the 67s Screw (3600.351-SY01). M17 transfers to stacker M18 (3600.351-ST01) to stockpile SP13. The 67s Screw transfers to M26 (3600.351-BC07) to M24 (see above). Wash screen MS8 transfers to stacker M21 (3600.351-ST02) to stockpile SP9.

### WASH 2

The Sand Screen ( a wash screen) transfers oversize to S3 (3600.341-BC01) to the Barmac Crusher (3600.341-VI01) to S4 (3600.341-BC02) to S2 and back to the Sand Screen. Screen pass through transfers to S5 (3600.352-BC05), S6 (3600.352-BC06), or the Sand Screw (3600.352-SY01). S5 transfers to stockpile SP5A, S6 to stockpile SP5B and the Sand Screw to S7 (3600.352-BC07) to SP5.

Product stockpiles are reclaimed by endloader to truck for transport to remot stockpiling (SP6, 8, 10, 11, 12, 15, 16, 17 and 18) or off site, or reclaimed by endloader to railcar.

An updated equipment listing for the proposed configuration of the plant is listed in the following table:

Table 1: Proposed Equipment Listing

Equipment ID No.	Date of Manufacture	Description	Maximum Capacity		Control Equipment <sup>1</sup>
			TPH	TPY	
<b>Crushers</b>					
3600.311-JC01	2001	Jaw Crusher	600	3,000,000	FE
3600.321-CZ01	2001	7 Cone Crusher	700	4,000,000	FE
3600.331-CZ03	2016 <sup>3</sup>	Metso Crusher (replaced the Hazemag crusher dated 2005)	800	2,500,000	FE
3600.331-CZ01	2006 <sup>2</sup>	HP 500 Cone Crusher	1,000	2,000,000	FE
3600.331-CZ02	1999	HP 300 Cone Crusher	1,000		FE
3600.341-VI01	2007 <sup>2</sup>	Barmac Impact Crusher	400	750,000	FE
<b>Screens</b>					
3600.311-RZ01	2001	Grizzly Screen	1,200	6,000,000	MC
3600.311-VS01	2009 <sup>2</sup>	PS1 Double Deck Screen	1,200	6,000,000	PE-MC
3600.331-VS01	2004	MS1 Triple Deck Screen	1,000	6,000,000	PE-MC
3600.331-VS02	2004	MS2 Triple Deck Screen	1,000		PE-MC

Equipment ID No.	Date of Manufacture	Description	Maximum Capacity		Control Equipment <sup>1</sup>
			TPH	TPY	
3600.331-VS03	2004	MS3 Triple Deck Screen	1,000	4,500,000	PE-MC
3600.331-VS04	2011 <sup>2</sup>	MS4 Triple Deck Screen	1,000		PE-MC
3600.331-VS05	2005	MS5 Triple Deck Screen	800	2,500,000	PE-MC
3600.331-VS06	2005	MS6 Triple Deck Screen	800		PE-MC
3600.351-VS01	2013 <sup>2</sup>	MS7 Triple Deck Screen	400	1,500,000	Wet
3600.351-VS02	2011 <sup>2</sup>	MS8 Triple Deck Screen	600	3,500,000	Wet
3600.352-VS01	2015 <sup>3</sup>	Triple Deck Sand Screen	500	750,000	Wet
<b>Conveyors</b>					
3600.311-BC01	2001	P1 Belt Conveyor	1,200	6,000,000	N
3600.311-BC02	2001	P2 Belt Conveyor	1,200	6,000,000	WS
3600.311-BC03	2001	P3 Belt Conveyor	500	2,000,000	N
3600.311-BC04	2001	P4 Belt Conveyor	300	2,000,000	N
3600.311-ST01	2001	P5 Stacking Conveyor	300	2,000,000	N
3600.321-BC01	2001	P6 Belt Conveyor	1,200	6,000,000	WS
3600.321-BC02	2001	P7 Belt Conveyor	1,200	6,000,000	N
3600.321-BC03	2001	P8 Belt Conveyor	1,200	6,000,000	N
3600.321-BC04	2001	P9 Belt Conveyor	1,200	6,000,000	N
3600.331-BC01	2001	M1 Belt Conveyor	1,200	6,000,000	PE
3600.331-ST01	2001	M2 Stacking Conveyor	1,200	6,000,000	N
3600.331-BC02	1984	M3 Belt Conveyor	1,000	6,000,000	PE
3600.331-BC03	1984	M4 Belt Conveyor	1,000	6,000,000	N
3600.331-BC04	1984	M5 Belt Conveyor	800	2,500,000	N
3600.331-BC05	2005	M6 Belt Conveyor	800	2,500,000	N
3600.331-BC06	2005	M10 Belt Conveyor	800	2,500,000	WS
3600.331-BC12	2005	M12 Belt Conveyor	300	2,000,000	N
3600.331-BC08	1984	M13 Belt Conveyor	600	2,000,000	N
3600.331-BC09	1984	M14 Belt Conveyor	1,000	4,500,000	WS
3600.331-BC10	1984	M7 Belt Conveyor	400	250,000	N
3600.331-BC11	1984	M8 Belt Conveyor	400	250,000	N
3600.331-ST02	1984	M9 Stacking Conveyor	400	250,000	WS
3600.331-BC07	1984	M11 Belt Conveyor	300	2,000,000	N
3600.331-BC13	1984	M22 Belt Conveyor	200	1,752,000	N
3600.331-BC14	1984	M23 Belt Conveyor	200	1,752,000	N
3600.331-BC15	2006 <sup>2</sup>	M24 Belt Conveyor	400	3,500,000	N
3600.331-ST03	2005	M25 Stacking Conveyor	400	3,500,000	N
3600.351-BC01	2005	M15 Belt Conveyor	600	3,500,000	N
3600.351-BC02	2005	M16 Belt Conveyor	600	3,500,000	N
3600.351-BC03	2005	M17 Belt Conveyor	600	3,500,000	N
3600.351-ST01	2014 <sup>2</sup>	M18 Stacking Conveyor	600	3,500,000	N
3600.351-SY01	2013 <sup>2</sup>	67S Screw	50	438,000	Wet
3600.351-BC07	2013 <sup>2</sup>	M26 Belt Conveyor	50	438,000	N
3600.351-BC04	2005	M19 Belt Conveyor	400	1,500,000	N
3600.351-BC05	2005	M20 Belt Conveyor	400	1,500,000	N
3600.351-ST02	2005	M21 Stacking Conveyor	400	1,500,000	N
3600.352-BC01	1998	M27 Belt Conveyor	200	750,000	N
3600.352-BC02	1998	M28 Belt Conveyor	200	750,000	N
3600.352-BC03	1998	S1 Belt Conveyor	300	750,000	N
3600.352-BC04	1998	S2 Belt Conveyor	500	750,000	N
3600.352-BC05	1998	S5 Belt Conveyor	400	750,000	N
3600.352-BC06	1998	S6 Belt Conveyor	200	750,000	N
3600.352-SY01	1998	Sand Screw	400	750,000	Wet
3600.352-BC07	1998	S7 Belt Conveyor	400	750,000	N
3600.341-BC01	1998	S3 Belt Conveyor	400	750,000	N
3600.341-BC02	1998	S4 Belt Conveyor	400	750,000	N

Equipment ID No.	Date of Manufacture	Description	Maximum Capacity		Control Equipment <sup>1</sup>
			TPH	TPY	
<b>Storage</b>					
3600.311-HP01	---	Dump Box	---	6,000,000	PE
3600.331-HP05	---	Hopper Feed Bin 5	---	2,500,000	PE
3600.331-HP09	---	Hopper Feed Bin 9	---	1,750,000	PE
SP1	---	CR6 Material	---	2,000,000	N
SP2	---	Gabion Stone	---	---	N
SP3	---	Surge Pile	---	6,000,000	N
SP4	---	Main Surge Pile	---	6,000,000	N
SP5	---	Washed #8/#9/Sand	---	750,000	N
SP5A	---	Washed #8	---		N
SP6	---	Various Materials	---	5,000,000	N
SP7	---	Dry Ballast	---	250,000	N
SP8	---	Various Materials	---	20,000	N
SP9	---	Washed #8/#7	---	1,500,000	N
SP10	---	Various Materials	---	300,000	N
SP11	---	Various Materials	---	20,000	N
SP12	---	Various Materials	---	200,000	N
SP13	---	67 / 57	---	3,500,000	N
SP14	---	Dry #10	---		N
SP15	---	Various Materials	---	60,000	N
SP16	---	Various Materials	---	30,000	N
SP17	---	Various Materials	---	30,000	N
SP18	---	Various Materials	---	30,000	N

- <sup>1</sup> FE - Full Enclosure; PE - Partial Enclosure; MC - Moisture Content; WS - Water Spray; N - No Controls; (---) - Not Applicable  
<sup>2</sup> After-the-Fact Equipment Replacement  
<sup>3</sup> Proposed Equipment Replacement

## DESCRIPTION OF FUGITIVE EMISSIONS

Fugitive emissions from the facility include particulate emissions from haulroads, stockpiles and work areas. Water is applied to the haulroads as needed via a water truck. Water is also applied to the work areas around the stockpiles and plant by the water truck to control particulate emissions.

## SITE INSPECTION

Joseph Kreger of the Compliance and Enforcement section for the Eastern Panhandle Regional Office performed a targeted, un-announced full on-site inspection on July 22, 2015. The facility received a status code of 30 - Full Compliance. Based on the size and scope of the proposed modification, the writer deemed that a site visit was not necessary at this time.

Directions: From Charlestown, take US-340 heading towards Harpers Ferry and make a right onto Blair Road. Go about 2 miles on winding road, if you get to the railroad tracks, you've gone too far. Turn right into Millville Quarry just before the railroad tracks.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

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 Applicant's consultant and were checked for accuracy and completeness by the writer.

The proposed modification will result in no change in the potential to emit (PTE) from controlled PM (particulate matter) point source emissions. The modified potential to discharge controlled emissions are estimated to be 410.19 tons per year (TPY) of PM of which 239.52 TPY are fugitive. Particulate matter less than 10 microns in diameter (PM<sub>10</sub>) are estimated to be 154.44 TPY of which 73.17 TPY are fugitive and PM<sub>2.5</sub> to be 19.81 TPY of which 7.62 TPY are fugitive. Refer to the following table for a complete summary of the proposed facility's emissions:

Table 2: Emissions Summary

<i>Emissions Summary - Bardon, Inc. Millville Quarry G40-C003F</i>	Controlled PM Emissions		Controlled PM <sub>10</sub> Emissions		Controlled PM <sub>2.5</sub> Emissions	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
<b>Fugitive Emissions</b>						
Stockpile Emissions	2.98	13.07	1.42	6.22	0.21	0.93
Unpaved Haulroad Emissions	144.74	226.45	42.80	66.95	4.30	6.69
Paved Haulroad Emissions	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fugitive Emissions Total</b>	<i>147.72</i>	<i>239.52</i>	<i>44.22</i>	<i>73.17</i>	<i>4.51</i>	<i>7.62</i>
<b>Point Source Emissions</b>						
Equipment Emissions	23.37	51.57	11.12	24.56	1.67	3.68
Transfer Point Emissions	92.44	119.10	44.02	56.71	6.60	8.51
<b>Point Source Emissions Total</b>	<i>115.81</i>	<i>170.67</i>	<i>55.14</i>	<i>81.27</i>	<i>8.27</i>	<i>12.19</i>
<b>FACILITY EMISSIONS TOTAL</b>	<b>263.53</b>	<b>410.19</b>	<b>99.36</b>	<b>154.44</b>	<b>12.78</b>	<b>19.81</b>

REGULATORY APPLICABILITY

The proposed modification of an 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-C003F are in operation.

According to Table 45-7B, for a type 'a' source with a maximum process weight rate of 1,200,000 lb/hour, the maximum allowable emission rate is 50 lb/hour of particulate matter. The maximum source emission rate is 23.37 lb/hour of particulate matter according to estimated emissions in fact sheet G40-C003F.

*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 modification for the current configuration of aggregate processing and replacement screen is subject to the requirements of 45CSR13, Subsection 11. The applicant has submitted the proper application fee of \$1,500 and published a Class I legal advertisement in the *Shepardstown Chronicle* on July 14, 2016.

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

The proposed modification is subject to 40 CFR 60 Subpart OOO because it will occur after April 22, 2008 and the plant processes more than 25 tons of aggregate per hour. The proposed modification will include two (2) crushers, five (5) screens and four (4) conveyors, which are defined as affected facilities in 40 CFR 60 Subpart OOO. Therefore, the proposed modification 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-C003F are in operation.

*45CSR30 Requirements for Operating Permits*

In accordance with 45CSR30 Major Source Determination, the aggregate processing plant will be a non-major source which is subject to NSPS Subpart OOO. The facility's potential to emit will be 81.27 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 be subject to 45CSR30 and classified as a Title V deferred non-major source.

The proposed modification of Bardon, Inc.'s aggregate processing facility 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 aggregate processing facility is not listed in Table 1. The facility will have a potential to emit 170.67 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 modification is not subject to the requirements set forth within 45CSR14.

### TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

A toxicity analysis was not performed because the pollutants being emitted from this facility are primarily PM (particulate matter) and PM<sub>10</sub> (particulate matter less than 10 microns in diameter).

### 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 Jefferson County, WV, which 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).

### GENERAL PERMIT ELIGIBILITY

The proposed modification of this facility meets the applicability criteria (Section 2.3), siting criteria (Section 3.1) and limitations and standards (Section 5.1) as specified in General Permit G40-C.

### MONITORING OF OPERATIONS

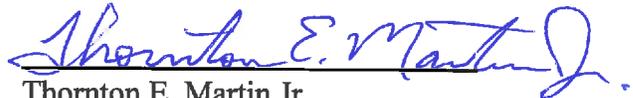
G40-C registrants will be required to perform the following monitoring and recordkeeping:

1. Monitor and record daily and monthly records of the amount of nonmetallic minerals processed.
2. Monitor and record calendar monthly and calendar annual quantity of fuel consumed and hours of operation for all engines and combustion sources.
3. Monitor and record calendar annual quantity of organic liquid throughput in all registered storage tanks.
4. Conduct visual observations of all points listed in the registration that are subject to opacity limits.
5. Conduct annual preventative maintenance/inspection, and all routine maintenance service

- and repairs as required, to facilitate proper control device performance, for the control devices listed in the registration.
6. Perform are applicable required monitoring, recordkeeping, reporting and testing that is required under 40CFR60 Subparts OOO, IIII, and JJJJ.
  7. These records shall be maintained on-site for a minimum of five (5) years from the date of record creation 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 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. No comments were received. Therefore, the granting of a General Permit to Modify to Bardon, Inc. for the operation of their aggregate processing plant to be located near Millville, Jefferson County, WV is hereby recommended.



Thornton E. Martin Jr.  
Permit Engineer

August 16, 2016

Date