

PERMIT BOOK

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **052014-004**

Project Number: 2013-12-032
Installation Number: 179-0005

Parent Company: The Doe Run Company

Parent Company Address: 1801 Park 270 Drive, Suite 300, St. Louis, MO 63146

Installation Name: The Doe Run Company

Installation Address: 10827 Highway KK, Boss, MO 65440

Location Information: Reynolds County, S26, T34N, R2W

Application for Authority to Construct was made for:

The installation of an underground crusher and conveyor. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

MAY 12 2014

EFFECTIVE DATE

Wesley H. Moore

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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Permit No.	
Project No.	2013-12-032

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

The Doe Run Company: Brushy Creek Mine/Mil (179-0005)
Reynolds County, S26, T34N, R2W

1. Lead Emission Limitation
 - A. The Doe Run Company shall emit less than 0.01 tons of lead in any consecutive 12-month period from the underground crusher and conveyor (EP-101 and EP-102, respectively).
 - B. Attachment A or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 1.A
2. Lead Concentration Limitation
 - A. The Doe Run Company's Buick Mine/Mill shall not process rock with more than 2.0% lead content in the crusher (EP101).
 - B. To show compliance with Special Condition 2.A., The Doe Run Company shall retain copies of the geologists' face grade sheet indicating lead content from each shot of rock processed by the crusher. These sheets shall be kept onsite and be made available to Missouri Department of Natural Resources' personnel upon request.
3. Record Keeping and Reporting Requirements
 - A. The Doe Run Company shall maintain all records required by this permit for not less than five years and shall make them available to any Missouri Department of Natural Resources' personnel upon request. These records shall include MSDS for all materials used
 - B. The Doe Run Company shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2013-12-032
Installation ID Number: 179-0005
Permit Number:

The Doe Run Company
10827 Highway KK
Boss, MO 65440

Complete: December 24, 2013

Parent Company:
The Doe Run Company
1801 Park 270 Drive, Suite 300
St. Louis, MO 63146

Reynolds County, S26, T34N, R2W

REVIEW SUMMARY

- The Doe Run Company has applied for authority for the installation of an underground crusher and conveyor.
- HAP emissions are expected from the proposed equipment. The HAP of concern from this process is lead.
- None of the New Source Performance Standards (NSPS) apply to the proposed equipment. 40 CFR 60, Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants*, and 40 CFR 60, Subpart LL, *Standards of Performance for Metallic Mineral Processing Plants*, do not apply to the crusher because it is underground.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- No air pollution control equipment is being used in association with the new equipment.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of pollutant are below de minimis levels.
- This installation is located in Reynolds County, a nonattainment area for lead.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.

- Ambient air quality modeling was not performed since the conditioned potential emissions of lead are below the SMAL.
- Emissions testing is not required for the equipment.
- The facility currently has a Basic Operating Permit renewal application being processed by the Air Pollution Control Program (Project 2012-06-045). The facility is not required to submit any paperwork to include the equipment associated with this permit in the current Basic Operating Permit renewal application because the equipment of this permit will be added into the Basic Operating Permit renewal application.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

The Doe Run Company's Brushy Creek Mine/Mill is a metallic mineral processing plant consisting of an underground lead ore mine and a surface ore-concentrating mill. The installation is a minor source for construction permits and a basic source for operating permits. Currently, the facility has a Basic Operating Permit renewal application being processed by the Air Pollution Control Program (Project 2012-06-045).

No construction permits have been issued to The Doe Run Company from the Air Pollution Control Program for this site. Most construction at this site was performed before May 13, 1982 and is therefore considered "grandfathered" for construction permit purposes. The construction activities performed after May 13, 1982 have not triggered construction permitting.

PROJECT DESCRIPTION

The Doe Run Company has applied for authority for the installation of an underground crusher and conveyor. The Doe Run Company proposes to re-start a 24-inch Missouri-Rogers Jaw crusher in the underground mine. The maximum hourly design rate of the crusher is estimated to be 100 tons per hour. The crusher will be used to crush waste rock with ore content too low to be used for production, and the waste rock will be placed on the underground haul roads for maintenance.

Because this installation's plant-wide potential emissions are above the de minimis level for PM₁₀ (15.0 tons per year) and the potential emissions of lead for this project is above the SMAL for lead (0.01 tons per year), a construction permit is required.

The crusher will be powered through electrical power so no diesel engine will be used. No control device will be used to control emissions from the crusher. However, the placement of the crusher in the underground mine and the high moisture content in the mine is expected to provide some control of particulate emissions.

EMISSIONS/CONTROLS EVALUATION

PM_{2.5}, PM₁₀ and PM emissions of this project were calculated using emission factors developed from an emission test conducted by TRC Environmental Corporation at the Westfork Mine, which is operated by ASARCO near Bunker, Missouri. This emission test was approved by the program's Enforcement Section on December 16, 1997. The test only provided an emission factor for PM emissions, so it was assumed conservatively that all PM is also PM_{2.5} and PM₁₀. Lead emissions were calculated by multiplying the PM emissions by the maximum lead content in the rock. The facility estimates that the highest lead content in the rock will be less than 2%. The geologists at the mine will grade each shot of rock. Because it is expected that the crushed waste rock of this project will be spread on the underground mine floor shortly after being crushed and will not remain stockpiled for an extended period of time or hauled long distances, stockpile and haul road emissions were not included in the potential emissions of the application.

Because plant-wide potential-to-emit calculations have not been calculated for this installation, these calculations were done during the review of this project. The sum of these calculations is shown in Table 1 as existing potential emissions.

Lead emissions from the plant's existing underground mining operations were calculated using information found in the "Revision to the Missouri State Implementation Plan - Attainment Demonstration for the 2008 Lead National Ambient Air Quality Standard – Buick/Vibumum Trend Lead Nonattainment Area" (adopted by the Missouri Air Conservation Commission on March 28, 2013), which is located in the Missouri State Implementation Plan. This document refers to a June 2009 sampling report of vent shaft number 6 of The Doe Run Company's Sweetwater Mine/Mill that estimates the lead emissions from the underground mine. This sampling report estimated that 0.000709 pounds of lead sulfide per ton of lead ore emitted from the underground mining operation. To be conservative, the sampling report estimated the lead emissions using the molecular weight of the most likely compound in the vented air, which is lead sulfide. According to The Doe Run Company, the underground mining operations of the Sweetwater Mine/Mill are very similar to the Brushy Creek Mine/Mill. Since this sampling report was accepted and incorporated in the Air Pollution Control Program's State Implementation Plan, it was used to calculate the existing underground emissions of the Brushy Creek Mine/Mill during the review of this project. This document requires the installation and operation of an enclosure/ventilation system at the Buick Mine/Mill facility. This enclosure controls emissions from the material storage areas, the interior lead concentrate conveyance system, lead filtering system and associated equipment, lead concentrate storage stockpile and the truck loading area including truck scale. Negative pressure (a minimum 0.02 mm Hg) shall be maintained in the enclosure at all times. Emissions are vented to a cartridge filter with polytetrafluoroethylene membrane elements. This document uses a 95% capture efficiency for these emission units. Similar emission sources at the Brushy Creek Mine/Mill, conveyor #6 (EP-23), conveyor #7 (EP-24) and conveyor (EP-37), are enclosed in the same fashion. The Permits Section agrees with this capture efficiency, and as a result, a 95% capture efficiency was assumed for these EP-23, EP-24 and EP-37.

Other particulate emissions were calculated using emission factors found in the United States EPA document AP-42 *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Fifth Edition (AP-42).

Emissions from above ground crushing, screening and handling were calculated using emission factors from AP-42 Section 11.19.2 “Crushed Stone Processing and Pulverized Mineral Processing,” August 2004. The controlled emission factors were used because the inherent moisture content of the crushed rock is at least 1.5 % by weight.

Emissions from above ground haul roads and vehicular activity areas were calculated using the predictive equation from AP-42 Section 13.2.2 “Unpaved Roads,” November 2006. Emissions from load-in and load-out of storage piles were calculated using the predictive equation from AP-42 Section 13.2.4. The moisture content of the aggregate is assumed to be at least 1.5% by weight. Emissions from wind erosion of storage piles were calculated using an equation found in the Air Pollution Control Program’s Emissions Inventory Questionnaire Form 2.8 “Storage Pile Worksheet.”

EPA’s TANKS Emissions Estimation Software, Version 4.09D, was used to estimate VOC emissions from underground and above ground fuel storage tanks. These tanks are used to store fuel and motor oil for front end loaders and machinery.

The following table provides an emissions summary for this project. The sum of this installation’s potential-to-emit calculations is shown below as existing potential emissions. Existing actual emissions were taken from the installation’s 2013 EIQ. Potential emissions of the application represent the potential of the underground crusher and conveyor, assuming continuous operation (8760 hours per year). The conditioned potential emission of the project is based on a limit of 0.01 tons per year of lead to avoid modeling requirements.

Table 1: Emissions Summary (tons per year)

Pollutant	<i>De Minimis Level/ SMAL</i>	Existing Potential Emissions ^a	Existing Actual Emissions (2013 EIQ)	Potential Emissions of the Application	Project Conditioned Potential
PM	25.0	59.09	N/D	1.97 x 10 ⁻⁰⁴	1.0 x 10 ⁻⁰⁴
PM ₁₀	15.0	28.63	17.13	1.97 x 10 ⁻⁰⁵	1.0 x 10 ⁻⁰⁵
PM _{2.5}	10.0	4.33	2.56	1.97 x 10 ⁻⁰⁶	1.0 x 10 ⁻⁰⁶
SOx	40.0	0.01	N/D	N/A	N/A
NOx	40.0	6.25	N/D	N/A	N/A
VOC	40.0	3.27	2.12	N/A	N/A
CO	100.0	3.61	N/D	N/A	N/A
Lead	0.6/0.01 ^b	2.90	0.34	0.0197	< 0.01 ^c
HAPs	10.0/25.0	2.90	0.03	0.0197	0.01 ^c

N/A = Not Applicable; N/D = Not Determined

^a Calculated during the review of this project.

^b The Screening Model Action Level (SMAL) of lead is 0.01 tons per year.

^c This permit only requires the tracking of lead emissions of this project.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below de minimis levels. Lead emissions are limited to below the SMAL.

APPLICABLE REQUIREMENTS

The Doe Run Company shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Daronn A. Williams
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated (undated), received December 24, 2013, designating The Doe Run Company as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- “Revision to the Missouri State Implementation Plan - Attainment Demonstration for the 2008 Lead National Ambient Air Quality Standard – Buick/Vibumum Trend Lead Nonattainment Area” (adopted by the Missouri Air Conservation Commission on March 28, 2013)
- EPA’s TANKS Emissions Estimation Software, Version 4.09D

APPENDIX A

Abbreviations and Acronyms

%	percent	Mgal	1,000 gallons
°F	degrees Fahrenheit	MW	megawatt
acfm	actual cubic feet per minute	MHDR	maximum hourly design rate
BACT	Best Available Control Technology	MMBtu	Million British thermal units
BMPs	Best Management Practices	MMCF	million cubic feet
Btu	British thermal unit	MSDS	Material Safety Data Sheet
CAM	Compliance Assurance Monitoring	NAAQS	National Ambient Air Quality Standards
CAS	Chemical Abstracts Service	NESHAPs	National Emissions Standards for Hazardous Air Pollutants
CEMS	Continuous Emission Monitor System	NO_x	nitrogen oxides
CFR	Code of Federal Regulations	NSPS	New Source Performance Standards
CO	carbon monoxide	NSR	New Source Review
CO₂	carbon dioxide	PM	particulate matter
CO_{2e}	carbon dioxide equivalent	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
COMS	Continuous Opacity Monitoring System	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
CSR	Code of State Regulations	ppm	parts per million
dscf	dry standard cubic feet	PSD	Prevention of Significant Deterioration
EQ	Emission Inventory Questionnaire	PTE	potential to emit
EP	Emission Point	RACT	Reasonable Available Control Technology
EPA	Environmental Protection Agency	RAL	Risk Assessment Level
EU	Emission Unit	SCC	Source Classification Code
fps	feet per second	scfm	standard cubic feet per minute
ft	feet	SIC	Standard Industrial Classification
GACT	Generally Available Control Technology	SIP	State Implementation Plan
GHG	Greenhouse Gas	SMAL	Screening Model Action Levels
gpm	gallons per minute	SO_x	sulfur oxides
gr	grains	SO₂	sulfur dioxide
GWP	Global Warming Potential	tph	tons per hour
HAP	Hazardous Air Pollutant	tpy	tons per year
hr	hour	VMT	vehicle miles traveled
hp	horsepower	VOC	Volatile Organic Compound
lb	pound		
lbs/hr	pounds per hour		
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		
m/s	meters per second		

Ms. Genevieve Bodnar
Senior Environmental Engineer
The Doe Run Company
P.O. Box 500
Viburnum, MO 65566

RE: New Source Review Permit - Project Number: 2013-12-032

Dear Ms. Bodnar:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Daronn A. Williams, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:dwl

Enclosures

c: Southeast Regional Office
PAMS File: 2013-12-032

Permit Number:

Celebrating 40 years of taking care of Missouri's natural resources.
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