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: 092018-008
Project Number: 2018-06-044
Installation ID: PORT-0782

Parent Company: Emery Sapp & Sons

Parent Company Address: 140 Walnut St #101, Kansas City, MO 64106

Installation Name: Emery Sapp & Sons - Sarcoxie

Installation Address: Intersection of I-44 and Lawrence 1010, Sarcoxie, MO 64862

Location Information: Lawrence County, S12 T27N R29W

Application for Authority to Construct was made for:
New 540 tph central mix portable concrete batch plant. This review was conducted in accordance with Section (6), 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.

Kendell B. Hale
Director or Designee
Department of Natural Resources

SEP 27 2018
Effective Date
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 Enforcement and Compliance Section of 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 Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant sources(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's 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 using the contact information below.

Contact Information:
Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176
(573) 751-4817

The regional office information can be found at the following website:
http://dnr.mo.gov/regions/
GENERAL SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

1. Equipment Identification Requirement
Emery Sapp & Sons - Sarcoxie shall maintain easily read permanent markings on each component of the plant. These markings shall be the equipment's serial number or a company assigned identification number that uniquely identifies the individual component.

2. Relocation of Portable Rock Crushing Plant
A. Emery Sapp & Sons - Sarcoxie shall not be operated at any location longer than 24 consecutive months except if the Site Specific Special Conditions of this portable plant, PORT-0782, contain a nonroad engine requirement limiting the portable plant at the site specific location to 12 consecutive months.

B. A complete “Portable Source Relocation Request” application must be submitted to the Air Pollution Control Program prior to any relocation of this portable rock crushing plant.
   1) If the portable rock crushing plant is moving to a site previously permitted, and if the circumstances at the site have not changed, then the application must be received by the Air Pollution Control Program at least seven days prior to the relocation.
   2) If the portable rock crushing plant is moving to a new site, or if circumstances at the site have changed (e.g. the site was only permitted for solitary operation and now another plant is located at the site), then the application must be received by the Air Pollution Control Program at least 21 days prior to the relocation. The application must include written notification of any concurrently operating plants.

3. Record Keeping Requirement
Emery Sapp & Sons - Sarcoxie 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.

4. Reporting Requirement
Emery Sapp & Sons - Sarcoxie shall report to the Air Pollution Control Program Compliance/Enforcement Section by mail at P.O. Box 176, Jefferson City, MO 65102 or by e-mail at AirComplianceReporting@dnr.mo.gov, no later than 10 days after any exceedances of the limitations imposed by this permit.
SITE SPECIFIC 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.”

PORT ID Number: PORT-0782
Site ID Number:
Site Name: Emery Sapp & Sons - Sarcoxie
Site Address: Intersection of I-44 and Lawrence 1010, Sarcoxie, MO 64862
Site County: Lawrence S12 T27N R29W

1. Best Management Practices Requirement
   Emery Sapp & Sons - Sarcoxie shall control fugitive emissions from all of the haul roads and vehicular activity areas at this site by performing BMPs as defined in Attachment AA.

2. Annual Emission Limit
   A. Emery Sapp & Sons - Sarcoxie shall emit less than 15.0 tons of PM10 in any 12-month period from the entire installation which consists of the equipment listed in Table 1. The SSM emissions as reported to the Air Pollution Control Program’s Compliance/Enforcement Section in accordance with the requirements of 10 CSR 10-6.050 Start-Up, Shutdown, and Malfunction Conditions shall be included in the limit.

   B. Emery Sapp & Sons - Sarcoxie shall demonstrate compliance with Special Condition 2.A using Attachment A or another equivalent form that has been approved by the Air Pollution Control Program, including an electronic form.

3. Control Device Requirement-Baghouse
   A. Emery Sapp & Sons - Sarcoxie shall control emissions from the emission points listed below using baghouses as specified in the permit application.
      1) Cement Silo
      2) Supplement Silo
      3) Central Mix Loadout (shroud vented to baghouse)

   B. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.
SITE SPECIFIC SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

C. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

D. Emery Sapp & Sons - Sarcoxie shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours when the associated equipment is in operation. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

E. Emery Sapp & Sons - Sarcoxie shall maintain a copy of the baghouse manufacturer's performance warranty on site.

F. Emery Sapp & Sons - Sarcoxie shall maintain an operating and maintenance log for the baghouses which shall include the following:
   1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

4. Nonroad Engine Requirement
Emery Sapp & Sons - Sarcoxie's engine shall not remain at one location within this site longer than 12 consecutive months in order for the engine (EU-10) to meet the definition of a nonroad engine as stated in 40 CFR 89.2. These engines shall be moved with its associated equipment at least once every 12 consecutive months at this site.

5. Record Keeping Requirement
Emery Sapp & Sons - Sarcoxie shall maintain all records required by this permit for not less than five years and make them available to any Missouri Department of Natural Resources' personnel upon request.

6. Reporting Requirement
Emery Sapp & Sons - Sarcoxie shall report to the Air Pollution Control Program, Compliance / Enforcement Section by mail to P.O. Box 176, Jefferson City, MO 65102 or by email at AirComplianceReporting@dnr.mo.gov, no later than 10 days after any exceedances of the limitations imposed by this permit.
PROJECT DESCRIPTION

On June 29, 2018 the Department of Natural Resources received Emery Sapp & Sons application for a new portable central mix concrete batch plant. The plant will be a RexCon Mobile 12 SE CM Self-Erecting Portable Concrete Batch Plant capable of producing a maximum of 270 yds$^3$/hr, or approximately 540 tph, of concrete.

Power for the installation will be provided from a CAT APS800 Genset (Manufactured 2005) rated at 1,210 bhp. The engine associated with the genset meets the definition of nonroad engine as defined in 40 CFR 89.2 (1)(i). Therefore, the emissions from the engines were not included in the project emissions.

Since the installation is being limited to 15.0 tons per year of PM$_{10}$, and because minor source PM emissions do not require operating permits, no operating permit is required for the installation.

The applicant is using one of the methods described in Attachment AA, “Best Management Practices,” to control emissions from haul roads and vehicular activity areas.

This installation is located in Lawrence County, an attainment area for all criteria pollutants.

This installation is not on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2].
No permits have been issued to Emery Sapp & Sons - Sarcoxie from the Air Pollution Control Program.

**TABLES**

**Table 1: Emission Point List**

<table>
<thead>
<tr>
<th>Emission Point</th>
<th>Description</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU-01</td>
<td>Aggregate Transfer</td>
<td>Baghouse</td>
</tr>
<tr>
<td>EU-02</td>
<td>Sand Transfer</td>
<td>Baghouse</td>
</tr>
<tr>
<td>EU-03</td>
<td>Cement Unloading to Silo</td>
<td>Baghouse</td>
</tr>
<tr>
<td>EU-04</td>
<td>Weigh Hopper</td>
<td>None</td>
</tr>
<tr>
<td>EU-05</td>
<td>Concrete Truck Loading</td>
<td>Shroud + Baghouse</td>
</tr>
<tr>
<td>EU-6a</td>
<td>Aggregate Storage Pile-Load in</td>
<td>None</td>
</tr>
<tr>
<td>EU-6b</td>
<td>Aggregate Storage Pile-Load out</td>
<td>None</td>
</tr>
<tr>
<td>EU-6c</td>
<td>Aggregate Storage Pile-Vehicular Activity</td>
<td>Documented Watering</td>
</tr>
<tr>
<td>EU-6d</td>
<td>Aggregate Storage Pile-Wind Erosion</td>
<td>None</td>
</tr>
<tr>
<td>EU-7a</td>
<td>Sand Storage Pile-Load in</td>
<td>None</td>
</tr>
<tr>
<td>EU-7b</td>
<td>Sand Storage Pile-Load out</td>
<td>None</td>
</tr>
<tr>
<td>EU-7c</td>
<td>Sand Storage Pile-Vehicular Activity</td>
<td>Documented Watering</td>
</tr>
<tr>
<td>EU-7d</td>
<td>Sand Storage Pile-Wind Erosion</td>
<td>None</td>
</tr>
<tr>
<td>EU-8</td>
<td>Material Haul Road</td>
<td>Documented Watering</td>
</tr>
<tr>
<td>EU-9</td>
<td>Finished Product Haul Road</td>
<td>Documented Watering</td>
</tr>
<tr>
<td>EU-10</td>
<td>CAT APS800 Genset (Manufactured 2005)</td>
<td>1,210 bhp (non-road engine)</td>
</tr>
</tbody>
</table>

The table below summarizes the emissions of this project. The potential emissions of the process equipment, which excluded emissions from haul roads and wind erosion, are not site specific and should not vary from site to site. Since this is a new plant, there are no existing actual emissions or EIQ records for the facility. The potential emissions of the application represent the emissions of all equipment and activities assuming continuous operation (8760 hours per year). The conditioned potential emissions include emissions from sources that will limit their production to ensure compliance with the annual emission limit.

**Table 2: Emissions Summary (tons per year)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>25.0</td>
<td>42.33</td>
<td>N/A</td>
<td>137.74</td>
<td>34.03</td>
</tr>
<tr>
<td>PM&lt;sub&gt;10&lt;/sub&gt;</td>
<td>15.0</td>
<td>21.38</td>
<td>N/A</td>
<td>60.72</td>
<td>&lt;15.00</td>
</tr>
<tr>
<td>PM&lt;sub&gt;2.5&lt;/sub&gt;</td>
<td>10.0</td>
<td>6.48</td>
<td>N/A</td>
<td>13.47</td>
<td>3.33</td>
</tr>
<tr>
<td>SO&lt;sub&gt;x&lt;/sub&gt;</td>
<td>40.0</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>NO&lt;sub&gt;x&lt;/sub&gt;</td>
<td>40.0</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>VOC</td>
<td>40.0</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
EMISSIONS CALCULATIONS

Emissions for the project were calculated as described below and 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 the concrete batch plant:
- Calculated using emission factors from AP-42 Section 11.12 “Concrete Batching,” June 2006.
- This section cites Equation (1) in Section 13.2.4 “Aggregate Handling and Storage Piles,” November 2006 for calculating the emissions from aggregate and sand transfer.
- The cement and supplement silos are controlled with baghouses, so the controlled emission factors were used.

Emissions from the aggregate weigh hopper:
- Calculated using AP-42 Section 13.2.4, Equation (1).
- Aggregate weigh hopper emissions are uncontrolled.
- Emissions from mixer loading are controlled by a shroud vented to a baghouse, so the controlled emission factor was used.

Emissions from aggregate handling:
- The uncontrolled emission factors were used in lieu of testing for moisture.

Emissions from haul roads and vehicular activity areas:
- Calculated using the predictive equation from AP-42 Section 13.2.2 “Unpaved Roads,” November 2006.
- A 90% control efficiency for PM and PM$_{10}$ and a 74% control efficiency for PM$_{2.5}$ were applied to the emission calculations for the use of BMPs.

Emissions from storage piles:
- 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 0.7% by weight.

<table>
<thead>
<tr>
<th>CO</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG (CO$_{2e}$)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>GHG (mass)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Total HAPs</td>
<td>25.0</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

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

*a*Excludes site specific haul road and storage pile emissions

*b*Includes site specific haul road and storage pile emissions
• 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."

The engine emissions were not evaluated for this review as the diesel engine at this site is classified as a nonroad engine. 40 CFR 63 Subpart ZZZZ, "National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines" and 40 CFR 60 Subpart III, "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines" do not apply. However, if the plant were to remain in one location for longer than 12 consecutive months, it would not be in compliance with this permit because engine emissions were not evaluated. It may also not be in compliance with MACT ZZZZ or NSPS III. The nonroad engine is subject to further applicable requirements in 40 CFR 89 and 40 CFR 1039 which are outside the purview of this program.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, Construction Permits Required. Potential emissions of PM\textsubscript{10} are conditioned below the de minimis level. PM emissions are above de minimis levels, but below major source levels.

APPLICABLE REQUIREMENTS

Emery Sapp & Sons - Sarcoxie 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.

GENERAL REQUIREMENTS

• Submission of Emission Data, Emission Fees and Process Information, 10 CSR 10-6.110.

• Operating Permits, 10 CSR 10-6.065 does not apply because this is a portable plant with emissions of PM\textsubscript{10} conditioned below de minimis (sources of minor source PM emissions do not require an Operating Permit).

• 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

SPECIFIC REQUIREMENTS

• Restriction of Emission of Particulate Matter From Industrial Processes, 10 CSR 10-6.400 – EU-01, EU-02, EU-03, and EU-05 are equipped with baghouses and were evaluated with throughputs of 250.27, 191.63, 65.89, and 75.69 tph, respectively. Using the second equation listed in (2)(A)1. of the rule for process rates greater than 60,000 lbs/hr, the particulate limits were found to be 61.0 tph, 58.0 tph, 47.18 tph, and 48.52 tph. These emission rates were not exceeded and therefore the facility is in compliance with this rule. All other emission points will have only fugitive emissions and are therefore exempt from the requirements of this rule.

• None of the National Emission Standards for Hazardous Air Pollutants (NESHAPS) or National Emission Standards for Hazardous Air Pollutants for Source Categories (MACTS) apply to the proposed equipment.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, Construction Permits Required, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

• The Application for Authority to Construct form, dated June 19, 2018, received June 29, 2018, designating Emery Sapp & Sons as the owner and operator of the installation.
Attachment A: PM$_{10}$ 12-Month Rolling Total Emissions Tracking Sheet
Emery Sapp & Sons –PORT 0782
Project Number: 2018-06-044
Permit Number: 092018-008

This sheet covers the period from ______ to ______ (Copy as needed)
(Month, Day Year) (Month, Day Year)

<table>
<thead>
<tr>
<th>Month</th>
<th>Production (tons)</th>
<th>PM$_{10}$ Composite Emission Factor (lb/ton)</th>
<th>Monthly PM$_{10}$Emissions$^1$ (lbs)</th>
<th>Startup, Shutdown and Malfunction PM$_{10}$ Emissions$^2$ (lbs)</th>
<th>Monthly PM$_{10}$Emissions$^3$ (tons)</th>
<th>12-Month Rolling Total Emissions$^4$ (tons)</th>
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</thead>
<tbody>
<tr>
<td>Example</td>
<td>20,000</td>
<td>0.0257</td>
<td>514</td>
<td>0.0</td>
<td>0.26</td>
<td>14.46</td>
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<td>0.0257</td>
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</table>

$^1$Multiply the monthly production by the PM$_{10}$ composite emission factor.
$^2$As reported to the Air Pollution Control Program’s Compliance/Enforcement Section according to the provisions of 10 CSR 10-6.050 for the month.
$^3$Add the monthly PM$_{10}$ emissions plus the SSM emissions from the same time period and divide by 2000 and
$^4$Add the monthly emissions (tons) to the sum of the monthly emissions from the previous eleven months. A total of less than 15.0 tons of PM$_{10}$ per consecutive 12 months is necessary for compliance.
Attachment AA: Best Management Practices

Haul roads and vehicular activity areas shall be maintained in accordance with at least one of the following options when the plant is operating.

1. Pavement
   A. The operator shall pave the area with materials such as asphalt, concrete or other materials approved by the Air Pollution Control Program. The pavement will be applied in accordance with industry standards to achieve control of fugitive emissions while the plant is operating.
   B. Maintenance and repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
   C. The operator shall periodically wash or otherwise clean all of the paved portions of the haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating.

2. Application of Chemical Dust Suppressants
   A. The operator shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to unpaved areas.
   B. The quantities of the chemical dust suppressant shall be applied and maintained in accordance with the manufacturer’s recommendation (if available) and in sufficient quantities to achieve control of fugitive emissions from these areas while the plant is operating.
   C. The operator shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. The operator shall keep these records with the plant for not less than five (5) years and make these records available to Department of Natural Resources’ personnel upon request.

3. Application of Water-Documented Daily
   A. The operator shall apply water to unpaved areas. Water shall be applied at a rate of 100 gallons per day per 1,000 square feet of unpaved or untreated surface area while the plant is operating.
   B. Precipitation may be substituted for watering if the precipitation is greater than one quarter of one inch and is sufficient to control fugitive emissions.
   C. Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.
   D. The operator shall record the date, volume of water application and total surface area of active haul roads or the amount of precipitation that day. The operators shall also record the rational for not watering (e.g. freezing conditions or not operating).
   E. The operator shall keep these records with the plant for not less than five (5) years, and the operator shall make these records available to Department of Natural Resources’ personnel upon request.
APPENDIX A

Abbreviations and Acronyms

% .......... percent
°F .......... degrees Fahrenheit
acfm .......... actual cubic feet per minute
BACT .......... Best Available Control Technology
BMPs .......... Best Management Practices
Btu .......... British thermal unit
CAM .......... Compliance Assurance Monitoring
CAS .......... Chemical Abstracts Service
CEMS .......... Continuous Emission Monitor System
CFR .......... Code of Federal Regulations
CO .......... carbon monoxide
CO2 .......... carbon dioxide
CO2e .......... carbon dioxide equivalent
COMS .......... Continuous Opacity Monitoring System
CSR .......... Code of State Regulations
dscf .......... dry standard cubic feet
EIQ .......... Emission Inventory Questionnaire
EP .......... Emission Point
EPA .......... Environmental Protection Agency
EU .......... Emission Unit
fps .......... feet per second
ft .......... feet
GACT .......... Generally Available Control Technology
GHG .......... Greenhouse Gas
gpm .......... gallons per minute
gr .......... grains
GWP .......... Global Warming Potential
HAP .......... Hazardous Air Pollutant
hr .......... hour
hp .......... horsepower
lb .......... pound
lbs/hr .......... pounds per hour
MACT .......... Maximum Achievable Control Technology
µg/m3 .......... micrograms per cubic meter
m/s .......... meters per second
Mgal .......... 1,000 gallons
MW .......... megawatt
MHDR .......... maximum hourly design rate

MMBtu .......... Million British thermal units
MMCF .......... million cubic feet
MSDS .......... Material Safety Data Sheet
NAAQS .......... National Ambient Air Quality Standards
NESHAPs .......... National Emissions Standards for Hazardous Air Pollutants
NOx .......... nitrogen oxides
NSPS .......... New Source Performance Standards
NSR .......... New Source Review
PM .......... particulate matter
PM2.5 .......... particulate matter less than 2.5 microns in aerodynamic diameter
PM10 .......... particulate matter less than 10 microns in aerodynamic diameter
ppm .......... parts per million
PSD .......... Prevention of Significant Deterioration
PTE .......... potential to emit
RACT .......... Reasonable Available Control Technology
RAL .......... Risk Assessment Level
SCC .......... Source Classification Code
scfm .......... standard cubic feet per minute
SDS .......... Safety Data Sheet
SIC .......... Standard Industrial Classification
SIP .......... State Implementation Plan
SMAL .......... Screening Model Action Levels
SOx .......... sulfur oxides
SO2 .......... sulfur dioxide
SSM .......... startup, shutdown, & malfunction
tph .......... tons per hour
tpy .......... tons per year
VMT .......... vehicle miles traveled
VOC .......... Volatile Organic Compound
NOTICE: This spreadsheet is for your use only and should be used with caution. MoDNR does not guarantee the accuracy of the information it contains. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current, accurate and complete information available. MoDNR is not responsible for errors or omissions in this spreadsheet. Submittal of the information contained in this spreadsheet (workbook) does not relieve the responsible official of the certification statement signed on the first page of the application.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Potential Emissions of Process Equipment (tons/yr)</th>
<th>Potential Emissions including fugitives (tons/yr)</th>
<th>Allowable Emissions for 2164 hours per year (tons/yr)</th>
<th>DeMinimis Thresholds</th>
<th>Plant-wide Composite Emission Factor (lb/ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>42.33</td>
<td>137.74</td>
<td>34.03</td>
<td>25</td>
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<td>PM10</td>
<td>21.38</td>
<td>60.72</td>
<td>15.00</td>
<td>15</td>
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<td>PM2.5</td>
<td>6.48</td>
<td>13.47</td>
<td>3.33</td>
<td>10</td>
<td>0.0057</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>40</td>
<td>0.0000</td>
</tr>
<tr>
<td>NO2</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>40</td>
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<td>VOC</td>
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<td>0.00</td>
<td>40</td>
<td>0.0000</td>
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<tr>
<td>CO</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100</td>
<td>0.0000</td>
</tr>
<tr>
<td>CH2O</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2</td>
<td>0.0000</td>
</tr>
<tr>
<td>C11H10</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>-</td>
<td>0.0000</td>
</tr>
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<td>Pb</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.0000</td>
</tr>
<tr>
<td>HAPs</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>10</td>
<td>0.0000</td>
</tr>
<tr>
<td>CO2</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100</td>
<td>0.0000</td>
</tr>
<tr>
<td>N2O</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100</td>
<td>0.0000</td>
</tr>
<tr>
<td>CH4</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100</td>
<td>0.0000</td>
</tr>
<tr>
<td>GHGmass</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100</td>
<td>0.0000</td>
</tr>
<tr>
<td>CO2eq</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>100,000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Maximum hourly design rate (tons/hr) 540

<table>
<thead>
<tr>
<th>Tons of product per day</th>
<th>12,960.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tons of product per year</td>
<td>1,168,520.5</td>
</tr>
</tbody>
</table>
SEP 27 2018

Mr. Shawn Woodsmall
Environmental Manager
Emery Sapp & Sons - Sarcoxie
140 Walnut St #101
Kansas City, MO 64106

RE: New Source Review Permit - Project Number: 2018-06-044

Dear Mr. Woodsmall:

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 and your new source review permit application is necessary for continued compliance. In addition, please note that Emery Sapp & Sons - Sarcoxie cannot operate with any other plants that have ambient impact limits based on the Air Pollution Control Program’s nomographs. Please refer to the permits of any plant that you are operating with to see if their respective permits contain an ambient impact limit. 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.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: http://dnr.mo.gov/regions/. The online CAV request can be found at http://dnr.mo.gov/cav/compliance.htm.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty 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 administrative hearing commission,
whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.

If you have any questions regarding this, please do not hesitate to contact Hans Robinson at the department’s 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:hrj

Enclosures

c: Southwest Regional Office
   PAMS File: 2018-06-044

Permit Number: 092018-008
### Plant Information

<table>
<thead>
<tr>
<th>Material</th>
<th>Composition of Concrete (by weight)</th>
<th>Design Composition (by weight)</th>
<th>Moisture Content of Material (by weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crushed limestone</td>
<td>40.35%</td>
<td>40.35%</td>
<td>0.7</td>
</tr>
<tr>
<td>Sand</td>
<td>35.40%</td>
<td>35.40%</td>
<td>3.0</td>
</tr>
<tr>
<td>Cement</td>
<td>12.00%</td>
<td>12.20%</td>
<td>0.12</td>
</tr>
<tr>
<td>Supplement to Cement</td>
<td>4.30%</td>
<td>4.15%</td>
<td>4.15%</td>
</tr>
</tbody>
</table>

### Material Information

<table>
<thead>
<tr>
<th>Storage Pile Information</th>
<th>Pile #1</th>
<th>Pile #2</th>
<th>Pile #3</th>
<th>Pile #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Area of Storage Pile (Acre)</td>
<td>1.5</td>
<td>0.5</td>
<td>2.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Type of Material Stored</td>
<td>Crushed limestone</td>
<td>Sand</td>
<td>Sand</td>
<td>Sand</td>
</tr>
<tr>
<td>Moisture Content %</td>
<td>0.7</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>NH Content %</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Method of Load In to Storage Pile</td>
<td>Loader</td>
<td>Loader</td>
<td>Loader</td>
<td>Loader</td>
</tr>
<tr>
<td>Distance Loader Toward (feet)</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Loaded Loader Weight (tons)</td>
<td>29.50</td>
<td>29.50</td>
<td>29.50</td>
<td>29.50</td>
</tr>
<tr>
<td>Rate (tons/hour)</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>max. VMT per hour</td>
<td>0.5771</td>
<td>0.5771</td>
<td>0.5771</td>
<td>0.5771</td>
</tr>
<tr>
<td>Surface Treatment</td>
<td>Unpaved</td>
<td>Unpaved</td>
<td>Unpaved</td>
<td>Unpaved</td>
</tr>
<tr>
<td>Vehicular Access Control</td>
<td>Documented Watering/Chemical Application</td>
<td>Documented Watering/Chemical Application</td>
<td>Documented Watering/Chemical Application</td>
<td>Documented Watering/Chemical Application</td>
</tr>
</tbody>
</table>
**Data Entry**

**Concrete_v2 4 xlsm**

Enter the length of each roadway in feet. The plan layout diagram (drawn to scale) should document and support the value entered. Note: Twice this distance is used, one trip in and one out.

<table>
<thead>
<tr>
<th>Length of Roadway (ft)</th>
<th>500</th>
</tr>
</thead>
</table>

Unloaded Truck Weight (tons) 12.5

Load Weight (tons) 15

Rate Hauled (tons/haul) 540

VMT per hour 1.8462

Surface Treatment Unpaved

**Engine Set Information**

<table>
<thead>
<tr>
<th>7A</th>
<th>7B</th>
<th>7C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Fuel</td>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>--</td>
<td>--</td>
<td>---</td>
</tr>
<tr>
<td>Diesel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Horsepower (hp)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Efficiency Rating (EER)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated H.P. per hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Model (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is this a generator set engine?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mode (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Sulfur Content (% weight sulfur)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Combustion Source**

<table>
<thead>
<tr>
<th>Combustion ID - Description</th>
<th>Combustion #1</th>
<th>Combustion #2</th>
<th>Combustion #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Rate</td>
<td>million Btu/hour</td>
<td>million Btu/hour</td>
<td>million Btu/hour</td>
</tr>
<tr>
<td>Sulfur Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In regards to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP-42 Chapter 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fuel Sulfur Content (% weight sulfur, for oil, gas or sulfur/100 cu ft gas vapor for Butane and Propane, not used for Natural gas)**

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>% weight sulfur</th>
<th>% weight sulfur</th>
<th>% weight sulfur</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

- Twice this distance is used, one trip in and one out.
- The plan layout diagram (drawn to scale) should document and support the value entered.
- VMT per hour 1.8462
- Surface Treatment Unpaved
- Engine Set Information
- Combustion Source
- Fuel Sulfur Content (% weight sulfur, for oil, gas or sulfur/100 cu ft gas vapor for Butane and Propane, not used for Natural gas).
Data Entry
Concrete_v2 4 xlsm

Cell C4
Comment: Plant Capacity:
One cubic yard of concrete weighs approximately two tons

Cell A29
Comment: Material:
Also known as aggregate, rock. Vanous limestone products is NOT a valid choice here

Cell C40
Comment: Storage Pile ID No:
The storage pile no. is not used on the emission factor pages, but rather labeled "Storage Pile"

Cell C43
Comment: Storage Pile Materials - Moisture Content Information

<table>
<thead>
<tr>
<th>Material Stored</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crushed Limestone</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Various Limestone Products</td>
<td>0.46 to 0.6</td>
<td>0.5</td>
</tr>
<tr>
<td>Sand</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Clay/Dirt Mix</td>
<td>1.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Clay</td>
<td>10.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

* Additional documentation (i.e. test data, ASTM-C-136 method) should be provided if using a different value for the moisture contents in place of the default (mean) value.

Cell C44
Comment: Storage Pile Materials - Silt Content Information

<table>
<thead>
<tr>
<th>Material Stored</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crushed Limestone</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Various Limestone Products</td>
<td>0.8 to 1.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Sand</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Clay/Dirt Mix</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Clay</td>
<td>1.4</td>
<td>1.4</td>
</tr>
</tbody>
</table>

* Additional documentation (i.e. test data, ASTM-C-136 method) should be provided if using a different value for the silt contents in place of the default (mean) value.

Cell C48
Comment: Unloaded Loader Weight
This data will be used by Paved & Unpaved worksheets to calculate storage pile traffic emissions

Cell C50
Comment: Rate-
For Pile #1, the default is the primary crusher size

Cell C51
Comment: max VMT per hour
MHDR = 2 * D * R / (U - L) where
MHDR = maximum hourly design rate (VMT/hr)
D = one way length of haul road (miles)
R = rate of material hauled (tons/hr)
U = unloaded truck weight (tons)
L = loaded truck weight (tons)

Cell C58
Comment: Haul Road ID No:
Enter a value or number to uniquely identify the emission unit point at this installation. The value entered for the Haul Road ID No must be consistent with those in your Emission Inventory Questionnaire (EQ) and your Operating Permit/Application.

Cell C59
Comment: Unloaded Truck Weight (Tons):
Enter the unloaded weight of the haul trucks. Note: If using haul trucks of varying unloaded weights, then a "fleet" weighted average value should be used and documentation of the analysis should be included with your submittal.
Example: 75% of rock is hauled in a 50 ton truck and 25% is hauled in a 30 ton truck. The "fleet" average unloaded weight would be calculated as follows:

fleet Avg. Wt = (0.75 x 50 tons) + (0.25 x 30 tons)
= [37.5 tons] + [7.5 tons]
= 45 tons
Data Entry
Concrete_v2.4

Comment: Average Loaded Truck Weight [Tons]: Enter the average loaded weight of the haul trucks. Note: If using haul trucks of varying loaded weights, then a "fleet" weighted average value should be used and documentation of the analysis should included with your submittal.

Example: 75% of rock is hauled in a 50 ton truck and 25% is hauled in a 30 ton truck. The "fleet" average unloaded weight would be calculated as follows:

\[
\text{"Fleet" Avg. WA} = 0.75 \times 50 + 0.25 \times 30
\]

= 45 tons

Cell: C59

Comment: Rate Hauled

= \[(37.5 \text{ tons}) + (7.5 \text{ tons})\]

= 45 tons

For Road #1, the default is the primary crusher size.

Cell: C61

Comment: Generator-set engine

means an engine used primarily to operate an electrical generator or alternator to produce electric power for other applications.

Cell: C71

Comment: Generator-set engine

means an engine used primarily to operate an electrical generator or alternator to produce electric power for other applications.

Cell: C73

Comment: Fuel Sulfur Content

From Randolph, Bob

Sent: Monday, December 22, 2014 12:05 PM

To: Little, David

Cc: Heckenkamp, Susan

Subject: FW no permit required concurrence

The Air Quality Planning Section agrees with the "no permit required" determination per the requirements of 10 CSR 10-6.061.

Additional Comment:

Please note that as part of the development of the 1-hour SO2 NAAQS State Implementation Plan, Missouri may in the next few years potentially a state regulatory requirement that all diesel powered engines and boilers throughout Missouri (or near large SO2 sources) shall be required to use diesel fuel compliant with federal Ultra Low Sulfur Diesel (ULSD) requirements (15 ppm Sulfur content). Though the Air Program has been informed by diesel purchasers and users that ULSD is their only option when purchasing diesel fuel in Missouri and throughout the Midwest, the USEPA does not consider the federal requirements to be binding. As a result, Missouri may be required by USEPA to include such a binding ULSD requirement in a future state ruling making and as part of another permanent and enforceable mechanism(s). Thank you.

From: Wilbur, Emily

Sent: Monday, December 15, 2014 1:52 PM

To: Randolph, Bob

Subject: FW no permit required concurrence

From: Little, David

Sent: Monday, December 15, 2014 1:49 PM

To: Bybee, Darcy, O’Neil, Nathan, Stevens, Jeffrey, Stansfield, Michael, Wilbur, Emily

Cc: Heckenkamp, Susan

Subject: FW no permit required concurrence

The Permit Section is requesting concurrence on a permit determination. A draft no permit required letter is attached. The Permit Section is sending this email to request each section to review the draft letter and provide input and approvals.

Please respond to this email by December 22.

Thank you,

David Little, PE
Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 178, Jefferson City, MO 65102
david.little@dnr.mo.gov 573-751-4817

Cell: E76

Comment: Desc.

Enter your own description of combustion source 1.

Cell: D50

Comment: Fuel Type

You should fill in a choice for both Chap 11 & Part 98 and these choices must coincide.

Cell: D55

Comment: Default Fuel Sulfur Content

= 15 grains/100 cubic feet [default for Propane]

= 0.0015 %8 [default for Fuel Oil]
Data Entry

Concrete v2.4.xlsm

Cell F92
Comment: Default Fuel Sulfur Content:
- 15 grams/100 cubic feet (default for Propane)
- 0.0015 %S (default for Fuel Oil)

Cell H82
Comment: Default Fuel Sulfur Content:
- 15 grams/100 cubic feet (default for Propane)
- 0.0015 %S (default for Fuel Oil)
<table>
<thead>
<tr>
<th>Emission Unit Number</th>
<th>Description</th>
<th>SCC</th>
<th>MHDR</th>
<th>Control Device Number</th>
<th>Control Type</th>
<th>Capture Efficiency (%)</th>
<th>Control Efficiency (%)</th>
<th>Pollutant</th>
<th>Emission Factor</th>
<th>Units (pounds per)</th>
<th>Emission Rate (Btu/hr)</th>
<th>Potential Emissions (tons/yr)</th>
<th>Allowable Emissions (tons/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aggregate transfer</td>
<td>3-05-011-04</td>
<td>250.27</td>
<td>tons per hour</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>0.0054</td>
<td>6.35E+06</td>
<td>27.79</td>
<td>0.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Sand transfer</td>
<td>3-05-011-05</td>
<td>191.83</td>
<td>tons per hour</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>0.0053</td>
<td>6.33E+01</td>
<td>7.77</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Cement unloading to silo</td>
<td>3-05-011-07</td>
<td>65.89</td>
<td>tons per hour</td>
<td>N/A</td>
<td>N/A</td>
<td>Fabric filter</td>
<td>100%</td>
<td>6.53E-02</td>
<td>0.50</td>
<td>0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Supplement unloading (pneumatic)</td>
<td>3-05-011-17</td>
<td>9.80</td>
<td>tons per hour</td>
<td>N/A</td>
<td>N/A</td>
<td>Fabric filter</td>
<td>100%</td>
<td>6.53E-02</td>
<td>0.50</td>
<td>0.06</td>
<td></td>
<td></td>
</tr>
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<td>5</td>
<td>Weigh hopper loading</td>
<td>3-05-011-08</td>
<td>441.90</td>
<td>tons per hour</td>
<td>N/A</td>
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<td>6</td>
<td>Mixer loading (central mix)</td>
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<td>7A</td>
<td>Generator</td>
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<td>gallons per hour</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>0.0052</td>
<td>4.12E+03</td>
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<td>PM</td>
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<td>4.12E+03</td>
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<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>0.0052</td>
<td>4.12E+03</td>
<td>1.81</td>
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### Emission Calculations

**Concrete_v2.4.xlsx**

<table>
<thead>
<tr>
<th>Unit ID</th>
<th>Description of Unit</th>
<th>Equipment Description</th>
<th>Heat Rate</th>
<th>Unit per hour</th>
<th>Emission Factor</th>
<th>Unit</th>
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<tr>
<td></td>
<td></td>
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<tr>
<td>Combustion #1</td>
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<td></td>
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<tr>
<td>Unit ID</td>
<td>Description of Unit</td>
<td>Equipment Description</td>
<td>Heat Rate</td>
<td>Unit per hour</td>
<td>Emission Factor</td>
<td>Unit</td>
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<tr>
<td>Combustion #2</td>
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<td>Combustion #3</td>
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</table>

### Load in

- **Combustion #1**
  - 250.27 tons per hour
  - N/A
  - PM
  - 0.0024 ton
  - 4.5E-03
  - 2.14E-01

- **Combustion #2**
  - 250.27 tons per hour
  - N/A
  - PM
  - 0.0024 ton
  - 4.5E-03
  - 2.14E-01

- **Combustion #3**
  - 0.88 VMT per hour
  - N/A
  - PM
  - 0.0018 ton
  - 4.5E-03
  - 2.14E-01

### Wind Erosion

- 1.50 acres
  - N/A
  - PM
  - 0.0029 ton
  - 4.5E-03
  - 2.14E-01

### Load out

- **Combustion #1**
  - 250.27 tons per hour
  - N/A
  - PM
  - 0.0018 ton
  - 4.5E-03
  - 2.14E-01

- **Combustion #2**
  - 250.27 tons per hour
  - N/A
  - PM
  - 0.0018 ton
  - 4.5E-03
  - 2.14E-01

- **Combustion #3**
  - 0.88 VMT per hour
  - N/A
  - PM
  - 0.0018 ton
  - 4.5E-03
  - 2.14E-01

### Vehicle Activity

- 1.50 acres
  - N/A
  - PM
  - 0.0002 ton
  - 4.5E-03
  - 2.14E-01

- **Combustion #1**
  - 250.27 tons per hour
  - N/A
  - PM
  - 0.0033 ton
  - 4.5E-03
  - 2.14E-01

- **Combustion #2**
  - 250.27 tons per hour
  - N/A
  - PM
  - 0.0033 ton
  - 4.5E-03
  - 2.14E-01

- **Combustion #3**
  - 0.88 VMT per hour
  - N/A
  - PM
  - 0.0033 ton
  - 4.5E-03
  - 2.14E-01
<table>
<thead>
<tr>
<th>Phase</th>
<th>Wind Erosion</th>
<th>Load in</th>
<th>Vehicular Activity</th>
<th>Load out</th>
<th>Vehicular Activity</th>
<th>Wind Erosion</th>
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<tbody>
<tr>
<td></td>
<td>0.50 acres</td>
<td>tons per hour</td>
<td>VMT per hour</td>
<td>tons per hour</td>
<td>VMT per hour</td>
<td>acres</td>
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<td>Pile #3</td>
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<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<td>Pile #4</td>
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<td>N/A</td>
<td>N/A</td>
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<td>Road #1</td>
<td>5.84 VMT per hour</td>
<td>Unpaved, Documented Watering/Chemical Application</td>
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<td>N/A</td>
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<th>N/A</th>
<th>90%</th>
<th>PM$_{10}$</th>
<th>0.5683 VMT</th>
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<td>N/A</td>
<td>N/A</td>
<td>PM$_{10}$</td>
<td>0.19</td>
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<td>N/A</td>
<td>PM$_{10}$</td>
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<table>
<thead>
<tr>
<th></th>
<th>1.64E-01</th>
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<table>
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<tr>
<th></th>
<th>3.0721 VMT</th>
<th>0.3072 VMT</th>
<th>8.67E-01</th>
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</table>

Note: PM stands for Particulate Matter, VMT stands for Vehicle Miles Traveled.
### Haul Road/Haul Truck/Material Hauled Information

<table>
<thead>
<tr>
<th>Haul Road ID No.:</th>
<th>Road #1</th>
<th>Road #2</th>
<th>Road #3</th>
<th>Road #4</th>
<th>Road #5</th>
<th>Road #6</th>
<th>Vehicular Area</th>
<th>Pile #1</th>
<th>Pile #2</th>
<th>Pile #3</th>
<th>Pile #4</th>
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<tbody>
<tr>
<td>W (tons)</td>
<td>21.25</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>8.3</td>
<td>105</td>
<td>105</td>
<td>105</td>
<td>105</td>
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<td>s (%)</td>
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<td></td>
<td></td>
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<td>3.0721</td>
<td>3.0721</td>
<td>3.0721</td>
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<tr>
<td>P (days)</td>
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<td>105</td>
<td>105</td>
<td>105</td>
<td>105</td>
<td>105</td>
<td>3.1668</td>
<td>7.4141</td>
<td>7.4141</td>
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</table>

#### Haul Roads - Max Hourly VMT Rate and PM10 Emission Factor Calculations

<table>
<thead>
<tr>
<th>Haul Road ID No.:</th>
<th>Road #1</th>
<th>Road #2</th>
<th>Road #3</th>
<th>Road #4</th>
<th>Road #5</th>
<th>Road #6</th>
<th>Vehicular Area</th>
<th>Pile #1</th>
<th>Pile #2</th>
<th>Pile #3</th>
<th>Pile #4</th>
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<tbody>
<tr>
<td>E(PM30) (lbs/VMT):</td>
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<td>11.1365</td>
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<td>E(PM10) (lbs/VMT):</td>
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<td>3.1668</td>
<td>3.1668</td>
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<tr>
<td>E(PM2.5) (lbs/VMT):</td>
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<td>0.3167</td>
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<td>Eext(PM30) (lbs/VMT):</td>
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<td>7.9329</td>
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<td>Eext(PM10) (lbs/VMT):</td>
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<td>Eext(PM2.5) (lbs/VMT):</td>
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<td>0.2256</td>
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</tbody>
</table>

E = k (s/12)^a * (W/3)^b where:
- E = size-specific emission factor (lb/VMT)
- s = surface material silt content (%)
- W = mean vehicle weight (tons)

**Constants for Equation**

<table>
<thead>
<tr>
<th>Particle Size</th>
<th>k(lb/VMT)</th>
<th>a</th>
<th>b</th>
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<tbody>
<tr>
<td>PM30</td>
<td>4.9</td>
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<tr>
<td>PM2.5</td>
<td>0.15</td>
<td>0.9</td>
<td>0.45</td>
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</tbody>
</table>

Eext = E[(365-P)/365] where E is defined above and:
- Eext = annual size-specific emission factor extrapolated for natural mitigation (lb/VMT)
- P = number of days in a year with at least 0.01 inch of precipitation