March 20, 2020

Mark Schiefelbein, EHS
U.S. Minerals, Inc. – Anaconda Slag Processing Plant
P.O. Box 547
Anaconda, Montana 59711

Dear Mr. Schiefelbein:

Montana Air Quality Permit #4834-01 is deemed final as of March 19, 2020, by the Department of Environmental Quality (Department). This permit is for a slag processing facility. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Julie A. Merkel
Permitting Services Section Supervisor
Air Quality Bureau
(406) 444-3626

Ed Warner
Lead Engineer, Permitting Services Section
Air Quality Bureau
(406) 444-2467

JM:EW
Enclosure

Montana Department of Environmental Quality
Air, Energy & Mining Division

Montana Air Quality Permit #4834-01

U.S. Minerals, Inc. – Anaconda Slag Processing Plant
P.O. Box 547
Anaconda, Montana 59711

March 19, 2020

MONTANA AIR QUALITY PERMIT

Issued To: U.S. Minerals, Inc.
P.O. Box 547
Anaconda, MT 59711

MAQP: #4834-01
Application Complete: 01/08/2020
Preliminary Determination Issued: 02/12/2020
Department's Decision Issued: 03/03/2020
Permit Final: 03/19/2020

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to U.S. Minerals Inc. (USM) pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

USM operates a slag screening and drying facility for the production of roofing granules and abrasives located at 46.1210 latitude and -112.9089 longitude. The township, range, section description is Township 4 North, Range 11 West in Section 12 in Deer Lodge County, Montana. A summary of equipment used in developing the emission inventory is contained in Section I.A. of the Permit Analysis to MAQP #4834-01.

B. Current Permit Action

On December 6, 2019, the Department received an application from GHD Services Inc. (GHD) on behalf of USM to modify the MAQP. The modification consists of an update to the process flow and equipment list, the addition of a portable generator, and the inclusion of the applicability of Title 40 Code of Federal Regulations (40 CFR) Part 60, Subpart UUU – Standards of Performance for Calciners and Dryers in Mineral Industries.

On January 2, 2020, the Department received a letter of intent from GHD on behalf of USM to provide additional information to the application. On January 8, 2020, the Department received supplemental application information which described a different portable generator than what was included in the December 6, 2019, permit application.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. All visible emissions from any non-NSPS affected equipment shall not exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

2. Process enclosures for Material Handling and venting to the baghouse for the Material Sizing Process shall be used to maintain compliance with the opacity limitation in Section II.A.1 (ARM 17.8.752).

3. USM shall not cause or authorize to be discharged into the atmosphere from any street, road, or parking lot any visible fugitive emissions that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.308 and ARM 17.8.752).

4. USM shall treat all unpaved portions of the haul roads, access roads, parking lots, or the general plant area with water and/or chemical dust suppressant, as necessary, to maintain compliance with the reasonable precautions limitation in Section II.A.3 (ARM 17.8.749).

5. USM shall not operate any of the screens, conveyors, etc. at more than 60 tons per hour (TPH) each (ARM 17.8.749).

6. The total hours of the facility operation under this permit shall be limited to 6,000 hours of operation during any rolling 12-month time period, excluding the diesel-fired generator (s)? which may be operated without an annual hourly restriction (ARM 17.8.749).

7. USM shall not produce more than 360,000 tons of finished product during any rolling 12-month time period (ARM 17.8.749).

8. USM shall not use more than 1,752,000 gallons of #2 fuel oil to fire the rotary dryer during any rolling 12-month time period (ARM 17.8.749).

9. USM shall not operate more than the following diesel-fired engines driving an electrical generator (or directly driving screens, elevators, etc.) at any given time (ARM 17.8.749):

    a. One engine with a maximum rated design capacity not to exceed 685 hp that is certified to United States Environmental Protection Agency (USEPA) Tier 3 or better nonroad diesel engine emission standards.

    b. One engine with a maximum rated design capacity not to exceed 99 hp that is certified to USEPA Tier 3 or better nonroad diesel engine emission standards.

10. USM shall comply with all applicable standards and limitations, and the reporting, recordkeeping, testing, and notification requirements contained in 40 CFR 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* and 40 CFR 63, Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines,* for any applicable diesel engine (ARM 17.8.340; 40 CFR 60, Subpart IIII; ARM 17.8.342 and 40 CFR 63, Subpart ZZZZ).

11. USM shall comply with all applicable standards and limitations, and the reporting, recordkeeping, testing, and notification requirements contained in 40 CFR 60, Subpart UUU, *Standards of Performance for Calciners and Dryers in Mineral Industries,* for the rotary dryer (ARM 17.8.340 and 40 CFR 60, Subpart UUU).

12. USM shall utilize ultra-low sulfur diesel fuel as BACT for sulfur dioxide for the diesel-fired engines (ARM 17.8.752).

B. Testing Requirements

1. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

2. The Department may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. USM shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but not be limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used for calculating operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. USM shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emissions unit,*** change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to start-up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).

3. All records compiled in accordance with this permit must be maintained by USM as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request. These records may be stored at a location other than the plant site upon approval by the Department (ARM 17.8.749).

4. USM shall maintain on-site records showing daily hours of operation and daily production rates for the last 12 months. The records compiled in accordance with this permit shall be maintained by USM as a permanent business record for at least 5 years following the date of the measurement, must be available for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

5. USM shall document, by month, the tons of finished product produced. By the 25th of each month, USM shall calculate the tons of finished product produced. The monthly information will be used to demonstrate compliance with the rolling 12-month limitation in Section II.A.7. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

6. USM shall document, by month, the gallons of #2 fuel oil used to fire the rotary dryer. By the 25th of each month, USM shall calculate the gallons of #2 fuel oil used for the rotary dryer for the previous month. The monthly information will be used to demonstrate compliance with the rolling 12-month limitation in Section II.A.8. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

SECTION III: General Conditions

A. Inspection – USM shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (Continuous Emission Monitoring Systems (CEMS) or Continuous Emission Rate Monitoring Systems (CERMS)), or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if USM fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving USM of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided for in ARM 17.8.740, *et seq.* (ARM 17.8.756).

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 *et seq.*, MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection - As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by Department personnel at the location of the permitted source.

G. Permit Fee - Pursuant to Section 75-2-220, MCA, failure to pay of the annual operation fee by USM may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit - Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Montana Air Quality Permit (MAQP) Analysis
U.S. Minerals, Inc.
MAQP #4834-01

I. Introduction/Process Description

A. Permitted Equipment

MAQP #4834-01 allows the operation of a slag screening and drying facility for the production of roofing granules and abrasives. A limit was taken on total facility operating hours to keep the total oxides of nitrogen (NO_x) emissions below the modeling threshold. The main permitted equipment is listed below:

Emitting Unit Number	Equipment	Emissions Control Device
0.00	Raw Material Storage Pile	Uncontrolled
0.01	Material Transport	Uncontrolled
1.00	Feed Hopper Loading (FE Loader)	Uncontrolled
2.00	Grizzly Screen	Uncontrolled
3.00	Feed Hopper	Uncontrolled
4.00	Raw Material Feed Conveyor	Uncontrolled
5.00	Scalping Screen	Uncontrolled
6.00	Rotary Dryer	Baghouse
7.00	Screen Feed Conveyor	Covered
8.00	Split Conveyor	Baghouse
9.00	Coarse Product Screen #1	Baghouse
9.01	Coarse Product Screen #2	Baghouse
9.02	Medium Product Screen #1	Baghouse
9.03	Medium Product Screen #2	Baghouse
9.04	Fine Product Screen #1	Baghouse
9.05	Fine Product Screen #2	Baghouse
10.00	Coarse Outlet Conveyor	Covered
10.01	Medium Outlet Conveyor	Covered
10.02	Fine Outlet Conveyor	Covered
11.00	Coarse Silo Tank Conveyor	Covered
11.01	Medium Silo Tank Conveyor	Covered
11.02	Fine Silo Tank Conveyor	Covered
12.00	Reject Product Pit Conveyor	Covered
13.00	Reject Product Drop	Uncontrolled
14.00	Coarse Elevator	Covered
14.01	Medium Elevator	Covered
14.02	Fine Elevator	Covered
15.00	Tank T1	Covered
15.01	Tank T2	Enclosed
15.02	Tank T3	Enclosed
15.03	Tank T4	Enclosed
16.00	Final Product Conveyor	Covered
16.01	Fine Final Product Conveyor	Covered

Emitting Unit Number	Equipment	Emissions Control Device
17.00	Supersack Conveyor #1	Covered
17.01	Supersack Conveyor #2	Covered
18.00	Blastox Dosing Hopper	Covered
19.00	Final Quality Screen	Covered
20.00	Supersack Hopper Loading Conveyor	Covered
21.00	Supersack Loading Hopper	Uncontrolled
22.00	Product Loading into Supersacks	Uncontrolled
23.00	Fine Elevator to Railcar	Covered
24.00	Fine Conveyor to Railcar	Covered
25.00	Railcar Conveyor	Enclosed
25.01	Railcar Loading Spout	Covered
26.00	Product Loading into Railcars	Uncontrolled
27.00	Reject Product Pile	Uncontrolled
28.00	Baghouse	Enclosed
29.00	Baghouse Fine	Uncontrolled
30.00	Generator (685 horsepower)	Tier 3 Certified
31.00	Product Transport	Uncontrolled
32.00	Portable Generator (99 horsepower)	Tier 3 Certified

B. Source Description

U.S. Minerals Inc. (USM) operates this slag screening and drying facility to screen a byproduct of copper smelting (slag)for use in various products including roofing granules and abrasives. The facility is located at 46.1210 latitude and -112.9089 longitude. The township, range, section description is Township 4 North, Range 11 West in Section 12 in Deer Lodge County, Montana.

Raw material located at the storage pile (Emission Point ID No. 0.00) is transported by a front-end loader (0.01) and loaded (1.00) into a grizzly screen to remove large rocks (2.00). Material falls through the feed hopper (3.00), the raw material feed conveyor (4.00) and the scalping screening (5.00) to be fed onto the rotary dryer (6.00). The Screen Feed Conveyor (7.00) carries material from the dryer to the material screening building.

The material is separated into two product lines by the Split Conveyor (8.00). Material falls onto the Coarse Product Screens #1 and #2, (9.00, 9.01), then to the Medium Product Screens #1 and #2 (9.02, 9.03), and then to the Fine Product Screens #1 and #2 (9.04, 9.05). Material is sifted and dropped onto its appropriate Outlet Conveyor: Coarse Outlet Conveyor (10.00), Medium Outlet Conveyor (10.01), and Fine Outlet Conveyor (10.02), then transferred to the respective silo tank conveyor (11.00, 11.01, and 11.02) into the Coarse Elevator (14.00), Medium Elevator (14.01), and Fine Elevator) (14.02). Finer material that passes through the screening process is dropped on the Reject Product Pit Conveyor (12.00) and thence to the Reject Product Drop (13.00) where it is stored in the Reject Pile (27.00).

Finished products are stored in their respective silos tanks: Tanks T1 and T2 store coarse product (15.00, 15.01), Tank T3 stores medium product (15.02) and Tank T4 stores fine product (15.03).

Coarse and medium products are shipped by supersack and railcars; fine product is only shipped by supersack. However, based on client needs, the facility has the ability to transfer fine product to railcar, as well. Coarse and medium products are loaded by releasing desired product from the silo tanks onto the Final Product Conveyor (16.00). The Final Product Conveyor has the availability to transfer product for either supersack packaging or railcar loading. For Supersack Loading (22.00), product falls into the Supersack Conveyors #1 and #2 (17.00 and 17.01), then to the Final Quality Screen (19.00) to the Supersack Hopper Loading Conveyor (20.00), then to the Supersack Loading Hopper (21.00). Product is stabilized with Blastox if needed (18.00), then loads for product transport (31.00).

For railcar transportation, product falls into the railcar conveyor (25.00) to the Railcar Loading Spout (25.01) and is loaded directly to the railcar (26.00). If needed, fine product can be transferred to the Fine Final Product Conveyor (16.01) by an elevator (23.00) and a conveyor (24.00) to be shipped by railcar, as well. Dust suppressant is used prior to the Railcar Loading Spout and bulk bag loading, as needed.

C. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	Department Response
No comments received			

D. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department of Environmental Quality (Department). Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 - General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon

written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotated (MCA).

   USM shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality, including, but not limited to:

1. ARM 17.8.204 Ambient Air Quality Monitoring
2. ARM 17.8.210 Ambient Air Quality Standard for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standard for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standard for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}

USM must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, USM shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause or authorize to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this section.

4. ARM 17.8.310 Particulate Matter, Industrial Processes. This rule requires that no person shall cause or authorize to be discharged into the atmosphere particulate matter in excess of the amount set forth in this section.

5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this section.

6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank truck or trailer is equipped with a vapor loss control device as described in (1) of this rule.

7. ARM 17.8.340 Standards of Performance for New Stationary Sources. This rule incorporates, by reference, 40 Code of Federal Regulations (CFR) Part 60, Standards of Performance for New Stationary Sources (NSPS). USM is considered an NSPS affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

   a. 40 CFR 60, Subpart A. – General Provisions apply to all equipment of facilities subject to an NSPS Subpart as listed below.

   b. 40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Owners and operators of stationary compression ignition internal combustion engines (CI ICE) that commence construction after July 11, 2005, where the stationary CI ICE are manufactured after April 1, 2006, and are not fire pump engines, are subject to this subpart. Based on the information submitted to the Department, the diesel engines to be used under MAQP #4834-01 are subject to this subpart. Engines that are added in the future may also be subject to this subpart.

   c. 40 CFR 60, Subpart UUU – Standards of Performance for Calciners and Dryers in Mineral Industries. The affected facility to which the provisions of this subpart apply is each calciner and dryer at a mineral processing plant that commences construction, modification, or reconstruction after April 23, 1986 (§60.730). The regulation defines a

mineral processing plant at §60.731 as "any facility that processes or produces any of the following minerals, their concentrates or any mixture of which the majority (>50 percent) is any of the following minerals or a combination of these minerals: … roofing granules…" USM operates a rotary dryer at a facility meeting the definition of a mineral processing plant; therefore, the dryer is subject to the requirements of this regulation. Emissions standards from this regulation which apply to the dryer exhaust are:

- §60.732(a) – Particulate matter emissions shall not exceed 0.057 grams per dry standard cubic meter (g/dscm) [0.025 grains per dry standard cubic foot (gr/dscf)], and
- §60.732(b) – Opacity emissions shall not exceed 10 percent.

An affected facility shall demonstrate initial compliance with the particulate matter and opacity emissions standards by conducting performance tests as described in §60.736.

An affected facility using a dry pollution control device on a roofing granules rotary dryer shall monitor emissions and operations for compliance with the applicable emissions standards on an ongoing basis by either of the following:

- §60.734(a) – Install, calibrate, and operate a continuous monitoring system to measure and record the opacity of emissions discharged into the atmosphere from the control device, or
- §60.734(b) – Have a certified visible emissions observer measure and record three 6-minute averages of the opacity of visible emissions to the atmosphere each day of operation in accordance with Method 9 of appendix A of 40 CFR Part 60.

8. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The source, as defined and applied in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as listed below:

   a. 40 CFR 63, Subpart A – General Provisions apply to all equipment of facilities subject to a National Emissions Standard for Hazardous Air Pollutants (NESHAP) Subpart as listed below:

   b. 40 CFR 63, Subpart ZZZZ – NESHAPs for Stationary Reciprocating Internal Combustion Engines (RICE). An owner or operator of a stationary reciprocating internal combustion engine (RICE) at a major or area source of HAP emissions is subject to this rule except if the stationary RICE is being tested at a stationary RICE test cell/stand. An area source of HAP emissions is a source that is not a major source. A RICE is considered stationary if it remains or will remain at the permitted location for more than 12 months, or a shorter period of

time for an engine located at a seasonal source. A seasonal source remains at a single location on a permanent basis (at least 2 years) and operates 3 months or more each year. Based on the information submitted by USM, the RICE equipment to be used under this permit may be subject to this subpart because they operate at an area source of HAP emissions and the engine may remain at the location for more than 12 consecutive months.

D. ARM 17.8, Subchapter 5 - Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. USM submitted the appropriate application fee for the current permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department; the air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that pro-rate the required fee amount.

E. ARM 17.8, Subchapter 7 - Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify or use any facility with a potential to emit (PTE) of greater than 25 tons per year (TPY) of any pollutant. USM has a PTE greater than 25 TPY of total particulate matter (PM) and NO_x; therefore, an MAQP is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit Program.

4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. USM submitted the required permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. USM submitted an affidavit of publication of public notice for the November 24, 2019, issue of the *Montana Standard*, a newspaper of general circulation in the Town of Butte in Silver Bow County and Town of Anaconda in Deer Lodge County, as proof of compliance with the public notice requirements.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this Permit Analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving USM of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An MAQP shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An MAQP may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An MAQP may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. (1) This rule states that an MAQP may be transferred from one location to another if the Department receives a complete notice of intent to transfer location, the facility will operate in the new location for less than 1 year, the facility will comply with the FCAA and the Clean Air Act of Montana, and the facility complies with other applicable rules. (2) This rule states that an MAQP may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

This facility is not a major stationary source because it is not a listed source and the facility's PTE is less than 250 tons per year of any pollutant (excluding fugitive emissions).

G. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

a. PTE > 100 TPY of any pollutant;

b. PTE > 10 TPY of any one hazardous air pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or

c. PTE > 70 TPY of PM_{10} in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. (1) Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #4834-01 for USM, the following conclusions were made:

a. The facility's PTE from non-fugitive sources is less than 100 TPY for any pollutant.

b. The facility's PTE is less than 10 TPY for any one HAP and less than 25 TPY of all HAPs.

c. This source is not located in a serious PM_{10} nonattainment area.

d. This facility is potentially subject to area source provisions of a current National Emissions Standard for Hazardous Air Pollutants (NESHAP) (40 CFR 63, Subpart ZZZZ).

e. This facility is subject to current NSPS (40 CFR 60, Subparts IIII and UUU).

f. This source is not a Title IV affected source or a solid waste combustion unit.

g. This source is not an EPA designated Title V source.

Based on these facts, the Department has determined that USM will be a minor source of emissions as defined under Title V. While USM has accepted federally-enforceable limits on annual hours of operation which result in reduced potential emissions, the primary function of these limits is to reduce potential emissions to a level that eliminates the need for the facility to quantitatively demonstrate compliance with ambient air quality standards based on Department policy. By taking these federally-enforceable conditions into account when analyzing the PTE, USM is a true minor source with regards to Title V. However, if minor sources subject to NSPS are required to obtain a Title V Operating Permit, USM will be required to obtain a Title V Operating Permit.

III. BACT Determination

A BACT determination is required for each new or modified source. USM shall install on the new or modified source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized. The only new or modified emitting unit from this permitting action is a new small portable diesel generator.

Diesel-Fired Generator

Due to the limited amount of emissions produced by the proposed 99-hp diesel-fired engine and the lack of cost effective add-on controls, add-on controls would be cost prohibitive. Therefore, the Department determined that proper operation and maintenance with no add-on controls would constitute BACT for the diesel-fired engine.

In addition, this diesel-fired engine is required to comply with the United States Environmental Protection Agency (USEPA) Tier 3 or better nonroad diesel engine emission standards (40 CFR Part 1039). When operated as a stationary source, this engine is also subject to NSPS emission limitations for stationary compression ignition engines (40 CFR 60, Subpart IIII) and National Emissions Standards for Hazardous Air Pollutant Sources for Reciprocating Internal Combustion Engines (40 CFR 63, Subpart ZZZZ). Therefore, the Department has determined that compliance with applicable federal standards and proper operation and maintenance of the engine constitutes BACT for this engine. BACT for SO_2 emissions shall be satisfied by burning only ultra-low sulfur diesel (15 ppm) as referenced in 40 CFR 89. USEPA Tier 3 emission standards represent low particulate, PM_{10}, CO, and VOCs emission levels, and it is economically infeasible to require pollution controls on the diesel generator for these additional pollutants. The control options selected have controls and control costs similar to other recently permitted similar sources and are capable of achieving the appropriate emission standards.

IV. Emission Inventory

	TPY						
Emission Source	**PM**	**PM_{10}**	**$PM_{2.5}$**	**NO_x**	**CO**	**VOC**	**SO_2**
Raw Material Drop Storage Pile EU000	1.07	0.38	0.06				
Reject Product Drop Pile EU027	0.25	0.09	0.01				
Baghouse Drop Pile EU029	0.63	0.22	0.03				
Raw Material Drop to Grizzly/Feed Hopper EU002	1.07	0.38	0.06				
Conveyor Transfer Point Raw Mat Hopper to Scalping Screen EU004	0.54	0.20	0.06				
Scalping Screen EU005	4.73	1.64	0.11				
Diesel-fired drier burner EU004a	1.23	1.18	1.15	17.52	4.38	0.18	0.19
Diesel-fired drier material handling EU004b	2.70	2.70	2.70				
Conveyor Transfer Point Drier to Screen Feed EU007	0.05	0.02	0.01				
Conveyor Transfer Point Split Conveyor EU008	0.03	0.01	0.00				
Coarse Product Screens (x2) EU009.00 & EU009.01	0.23	0.08	0.01				
Medium Product Screens (x2) EU009.02 & EU009.03	0.16	0.05	0.00				
Fine Product Screens (x2) EU009.04 & EU009.05	0.01	0.00	0.00				
Conveyor Transfer Point Course Outlet Conveyor EU010.00	0.02	0.01	0.00				
Conveyor Transfer Point Medium Outlet Conveyor EU010.01	0.04	0.01	0.00				

	TPY						
Emission Source	**PM**	**PM_{10}**	**$PM_{2.5}$**	**NO_x**	**CO**	**VOC**	**SO_2**
Conveyor Transfer Point Fine Outlet Conveyor EU010.02	0.00	0.00	0.00				
Conveyor Transfer Point Reject Product Pit Conveyor EU012	0.00	0.00	0.00				
Conveyor Transfer Point Course Storage Tank Conveyor EU011.00	0.02	0.01	0.00				
Conveyor Transfer Point Medium Storage Tank Conveyor EU011.01	0.04	0.01	0.00				
Conveyor Transfer Point Fine Storage Tank Conveyor EU011.02	0.00	0.00	0.00				
Conveyor Transfer Point Course Storage Tank Elevator EU014.00	0.02	0.01	0.00				
Conveyor Transfer Point Medium Storage Tank Elevator EU014.01	0.04	0.01	0.00				
Conveyor Transfer Point Fine Storage Tank Elevator EU014.02	0.00	0.00	0.00				
Conveyor Transfer Point Final Product Conveyor EU016.00	0.05	0.02	0.01				
Conveyor Transfer Point Supersack Conveyor 1 EU017.00 (see footnote a)	0.05	0.02	0.01				
Conveyor Transfer Point Supersack Conveyor 2 EU017.01 (see footnote a)	0.05	0.02	0.01				
Transfer Point Blastox EU018 (see footnote a)	0.00	0.00	0.00				
Final Quality Screen EU019 (see footnote a)	0.45	0.16	0.01				
Conveyor Transfer Point Supersack Hopper Loading Conveyor EU020 (see footnote a)	0.05	0.02	0.01				
Transfer Point Supersack Loading Hopper EU021 (see footnote a)	0.54	0.20	0.06				
Supersack Loadout EU022 (see footnote a)	5.00	1.75	0.27				
Haul Roads (FEL) EU000.01	53.23	14.67	1.47				
Haul Roads (Transport Truck) EU031	27.40	7.55	0.76				
Diesel Engine EPA Tier 3 685 hp EU030	0.99	0.99	0.99	18.52	17.20	1.32	6.15
Diesel Engine EPA Tier 3 99 hp EU032	0.14	0.14	0.14	3.15	2.49	0.19	0.89
Total Emissions	**100.84**	**32.56**	**7.92**	**39.20**	**24.06**	**1.69**	**7.23**

Notes:
a All product loaded into supersacks represents the highest potential emissions scenario. Other emitting points not included in the table are shown in the calculations below.

Raw Material Drop Storage Pile EU000

Maximum Process Rate = 60 ton/hr (Maximum plant process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Piles = 1 piles

Filterable PM Emissions:
Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00597 lb/ton
Where: k = particle size multiplier = 1 (All PM; no multiplier applied, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)

M = material moisture content = 3% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00597 lb/ton) * (ton/2000 lb) * (1 piles) = 1.07 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00597 lb/ton) * (ton/2000 lb) * (1 piles) * (1 - 0/100) = 1.07 ton/yr

Filterable PM_{10} Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00209 lb/ton
Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 3% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00209 lb/ton) * (ton/2000 lb) * (1 piles) = 0.38 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00209 lb/ton) * (ton/2000 lb) * (1 piles) * (1 - 0/100) = 0.38 ton/yr

Filterable $PM_{2.5}$ Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00032 lb/ton
Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 3% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00032 lb/ton) * (ton/2000 lb) * (1 piles) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00032 lb/ton) * (ton/2000 lb) * (1 piles) * (1 - 0/100) = 0.06 ton/yr

Reject Product Drop Pile EU027

Maximum Process Rate = 3 ton/hr (Application 5% is rejected)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Piles = 1 piles

Filterable PM Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.02779 lb/ton
Where: k = particle size multiplier = 1 (All PM; no multiplier applied, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application already dried)
Control Efficiency = 0% (Water or chemical spray)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.02779 lb/ton) * (ton/2000 lb) * (1 piles) = 0.25 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.02779 lb/ton) * (ton/2000 lb) * (1 piles) * (1 - 0/100) = 0.25 ton/yr

Filterable PM_{10} Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00973 lb/ton
Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application already dried)
Control Efficiency = 0% (Water or chemical spray)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00973 lb/ton) * (ton/2000 lb) * (1 piles) = 0.09 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00973 lb/ton) * (ton/2000 lb) * (1 piles) * (1 - 0/100) = 0.09 ton/yr

Filterable $PM_{2.5}$ Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00147 lb/ton
Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application already dried)
Control Efficiency = 0% (Water or chemical spray)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00147 lb/ton) * (ton/2000 lb) * (1 piles) = 0.01 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00147 lb/ton) * (ton/2000 lb) * (1 piles) * (1 - 0/100) = 0.01 ton/yr

Baghouse Drop Pile EU029

Maximum Process Rate = 8 ton/hr (Application)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Piles = 1 piles

Filterable PM Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.02779 lb/ton
Where: k = particle size multiplier = 1 (All PM; no multiplier applied, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application already dried)
Control Efficiency = 0% (Water or chemical spray)
Calculation: (8 ton/hr) * (6000 hrs/yr) * (0.02779 lb/ton) * (ton/2000 lb) * (1 piles) = 0.63 ton/yr
Calculation: (8 ton/hr) * (6000 hrs/yr) * (0.02779 lb/ton) * (ton/2000 lb) * (1 piles) * (1 - 0/100) = 0.63 ton/yr

Filterable PM_{10} Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00973 lb/ton
Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application already dried)
Control Efficiency = 0% (Water or chemical spray)
Calculation: (8 ton/hr) * (6000 hrs/yr) * (0.00973 lb/ton) * (ton/2000 lb) * (1 piles) = 0.22 ton/yr
Calculation: (8 ton/hr) * (6000 hrs/yr) * (0.00973 lb/ton) * (ton/2000 lb) * (1 piles) * (1 - 0/100) = 0.22 ton/yr

Filterable $PM_{2.5}$ Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00147 lb/ton
Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application already dried)
Control Efficiency = 0% (Water or chemical spray)
Calculation: (8 ton/hr) * (6000 hrs/yr) * (0.00147 lb/ton) * (ton/2000 lb) * (1 piles) = 0.03 ton/yr
Calculation: (8 ton/hr) * (6000 hrs/yr) * (0.00147 lb/ton) * (ton/2000 lb) * (1 piles) * (1 - 0/100) = 0.03 ton/yr

Raw Material Drop to Grizzly/Feed Hopper EU002

Maximum Process Rate = 60 ton/hr (Maximum plant process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Drops = 1 drop

Filterable PM Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00597 lb/ton
Where: k = particle size multiplier = 1 (All PM; no multiplier applied, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 3% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00597 lb/ton) * (ton/2000 lb) * (1 drop) = 1.07 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00597 lb/ton) * (ton/2000 lb) * (1 drop) * (1 - 0/100) = 1.07 ton/yr

Filterable PM_{10} Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00209 lb/ton
Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 3% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00209 lb/ton) * (ton/2000 lb) * (1 drop) = 0.38 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00209 lb/ton) * (ton/2000 lb) * (1 drop) * (1 - 0/100) = 0.38 ton/yr

Filterable $PM_{2.5}$ Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00032 lb/ton
Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 3% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00032 lb/ton) * (ton/2000 lb) * (1 drop) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00032 lb/ton) * (ton/2000 lb) * (1 drop) * (1 - 0/100) = 0.06 ton/yr

Railcar Loadout EU026

Maximum Process Rate = 60 ton/hr (Maximum plant process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Drops = 1 drop

Filterable PM Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.02779 lb/ton
Where: k = particle size multiplier = 1 (All PM; no multiplier applied, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.02779 lb/ton) * (ton/2000 lb) * (1 drop) = 5.00 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.02779 lb/ton) * (ton/2000 lb) * (1 drop) * (1 - 0/100) = 5.00 ton/yr

Filterable PM_{10} Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00973 lb/ton
Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application)

Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00973 lb/ton) * (ton/2000 lb) * (1 drop) = 1.75 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00973 lb/ton) * (ton/2000 lb) * (1 drop) * (1 - 0/100) = 1.75 ton/yr

Filterable $PM_{2.5}$ Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00147 lb/ton
Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00147 lb/ton) * (ton/2000 lb) * (1 drop) = 0.27 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00147 lb/ton) * (ton/2000 lb) * (1 drop) * (1 - 0/100) = 0.27 ton/yr

Supersack Loadout EU022

Maximum Process Rate = 60 ton/hr (Maximum plant process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Drops = 1 drop

Filterable PM Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.02779 lb/ton
Where: k = particle size multiplier = 1 (All PM; no multiplier applied, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.02779 lb/ton) * (ton/2000 lb) * (1 drop) = 5.00 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.02779 lb/ton) * (ton/2000 lb) * (1 drop) * (1 - 0/100) = 5.00 ton/yr

Filterable PM_{10} Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00973 lb/ton
Where: k = particle size multiplier = 0.35 (Value for PM < 10 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00973 lb/ton) * (ton/2000 lb) * (1 drop) = 1.75 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00973 lb/ton) * (ton/2000 lb) * (1 drop) * (1 - 0/100) = 1.75 ton/yr

Filterable $PM_{2.5}$ Emissions:

Predictive equation for emission factor provided per AP 42, Sec. 13.2.4.3, 11/06.
Emission Factor = k (0.0032) * (U/5)^1.3 * (M / 2)^-1.4 = 0.00147 lb/ton
Where: k = particle size multiplier = 0.053 (Value for PM < 2.5 microns per AP 42, Sec. 13.2.4.3, 11/06)
U = mean wind speed = 12.5 mph (Application)
M = material moisture content = 1% (Application)
Control Efficiency = 0% (Control accounted for in assumed moisture %)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00147 lb/ton) * (ton/2000 lb) * (1 drop) = 0.27 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00147 lb/ton) * (ton/2000 lb) * (1 drop) * (1 - 0/100) = 0.27 ton/yr

Conveyor Transfer Point Raw Mat Hopper to Scalping Screen EU004

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 0%
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 0/100) = 0.54 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 0%
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 0/100) = 0.20 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 0% (built into emission factor)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 0/100) = 0.06 ton/yr

Conveyor Transfer Point Drier to Screen Feed EU007

Maximum Process Rate = 60 ton/hr (Maximum plant process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.05 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Conveyor Transfer Point Split Conveyor EU008

Maximum Process Rate = 60 ton/hr (Maximum plant process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 95/100) = 0.03 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 95/100) = 0.01 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 95/100) = 0.00 ton/yr

Conveyor Transfer Point Course Outlet Conveyor EU010.00

Maximum Process Rate = 18 ton/hr (Application 30% final product is course)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.16 ton/yr
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.02 ton/yr
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Medium Outlet Conveyor EU010.01

Maximum Process Rate = 39 ton/hr (Application 65% final product is medium)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.35 ton/yr
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.04 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.13 ton/yr
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.04 ton/yr
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Fine Outlet Conveyor EU010.02

Maximum Process Rate = 3 ton/hr (Application 5% final product is fine)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.03 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.01 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.00 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Reject Product Pit Conveyor EU012

Maximum Process Rate = 3 ton/hr (Application up to 5% of product could be reject)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.03 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.01 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.00 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Course Storage Tank Conveyor EU011.00

Maximum Process Rate = 18 ton/hr (Application 30% final product is course)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.16 ton/yr
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.02 ton/yr
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Medium Storage Tank Conveyor EU011.01

Maximum Process Rate = 39 ton/hr (Application 65% final product is medium)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.35 ton/yr
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.04 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.13 ton/yr
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.04 ton/yr
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Fine Storage Tank Conveyor EU011.02

Maximum Process Rate = 3 ton/hr (Application 5% final product is fine)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.03 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.01 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.00 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Course Storage Tank Elevator EU014.00

Maximum Process Rate = 18 ton/hr (Application 30% final product is course)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.16 ton/yr
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.02 ton/yr
Calculation: (18 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Medium Storage Tank Elevator EU014.01

Maximum Process Rate = 39 ton/hr (Application 65% final product is medium)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.35 ton/yr
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.04 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.13 ton/yr
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.04 ton/yr
Calculation: (39 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Fine Storage Tank Elevator EU014.02

Maximum Process Rate = 3 ton/hr (Application 5% final product is fine)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.03 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.01 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.00 ton/yr
Calculation: (3 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Conveyor Transfer Point Final Product Conveyor EU016.00

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.05 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

RAILCAR OPTION

Conveyor Transfer Point Railcar Conveyor EU025.00

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.05 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Conveyor Transfer Point Railcar Spout EU025.01

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.05 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

SUPERSACK OPTION

Conveyor Transfer Point Supersack Conveyor 1 EU017.00

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.05 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Conveyor Transfer Point Supersack Conveyor 2 EU017.01

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.05 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Conveyor Transfer Point Supersack Hopper Loading Conveyor EU020

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.05 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.02 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.01 ton/yr

Transfer Point Supersack Loading Hopper EU021

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 0% (uncontrolled)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.54 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 0/100) = 0.54 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 0% (uncontrolled)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.20 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 0/100) = 0.20 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 0% (uncontrolled)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.06 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 0/100) = 0.06 ton/yr

Transfer Point Blastox EU018

Maximum Process Rate = 1 ton/hr (Application up to 1% of Max process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Transfers = 1 transfer (Drop on to conveyor)

Filterable PM Emissions:
Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (1 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.01 ton/yr
Calculation: (1 ton/hr) * (6000 hrs/yr) * (0.003 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (1 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.00 ton/yr
Calculation: (1 ton/hr) * (6000 hrs/yr) * (0.0011 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.00031 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (1 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) = 0.00 ton/yr
Calculation: (1 ton/hr) * (6000 hrs/yr) * (0.00031 lb/ton) * (ton/2000 lb) * (1 transfer) * (1 - 90/100) = 0.00 ton/yr

Scalping Screen EU005

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Screens = 1 screen(s)

Total PM Emissions:
Emission Factor = 0.025 lb/ton (0.025 uncontrolled, 0.0022 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 0%
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (1 screen(s)) = 4.50 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (1 screen(s)) * (1 - 0/100) = 4.50 ton/yr

Total PM_{10} Emissions:
Emission Factor = 0.0087 lb/ton (0.0087 uncontrolled, 0.00074 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 0%
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (1 screen(s)) = 1.57 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (1 screen(s)) * (1 - 0/100) = 1.57 ton/yr

Total $PM_{2.5}$ Emissions:
Emission Factor = 0.00059 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 0%
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (1 screen(s)) = 0.11 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (1 screen(s)) * (1 - 0/100) = 0.11 ton/yr

Coarse Product Screens (x2) EU009.00 & EU009.01

Maximum Process Rate = 30 ton/hr (Half of Max upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Screens = 2 screen(s) (2 identical product lines)

Total PM Emissions:
Emission Factor = 0.025 lb/ton (0.025 uncontrolled, 0.0022 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (30 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (2 screen(s)) = 4.50 ton/yr
Calculation: (30 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (2 screen(s)) * (1 - 95/100) = 0.23 ton/yr

Total PM_{10} Emissions:
Emission Factor = 0.0087 lb/ton (0.0087 uncontrolled, 0.00074 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (30 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (2 screen(s)) = 1.57 ton/yr
Calculation: (30 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (2 screen(s)) * (1 - 95/100) = 0.08 ton/yr

Total $PM_{2.5}$ Emissions:
Emission Factor = 0.00059 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (30 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (2 screen(s)) = 0.11 ton/yr
Calculation: (30 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (2 screen(s)) * (1 - 95/100) = 0.01 ton/yr

Medium Product Screens (x2) EU009.02 & EU009.03

Maximum Process Rate = 21 ton/hr (Application, 30% screen out by Coarse Product Screens)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Screens = 2 screen(s) (2 identical product lines)

Total PM Emissions:
Emission Factor = 0.025 lb/ton (0.025 uncontrolled, 0.0022 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (21 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (2 screen(s)) = 3.15 ton/yr
Calculation: (21 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (2 screen(s)) * (1 - 95/100) = 0.16 ton/yr

Total PM_{10} Emissions:
Emission Factor = 0.0087 lb/ton (0.0087 uncontrolled, 0.00074 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (21 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (2 screen(s)) = 1.10 ton/yr
Calculation: (21 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (2 screen(s)) * (1 - 95/100) = 0.05 ton/yr

Total $PM_{2.5}$ Emissions:
Emission Factor = 0.00059 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (21 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (2 screen(s)) = 0.07 ton/yr
Calculation: (21 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (2 screen(s)) * (1 - 95/100) = 0.00 ton/yr

Fine Product Screens (x2) EU009.04 & EU009.05

Maximum Process Rate = 2 ton/hr (Application, Medium screened material accounts for 65% of total)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Screens = 2 screen(s) (2 identical product lines)

Total PM Emissions:
Emission Factor = 0.025 lb/ton (0.025 uncontrolled, 0.0022 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (2 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (2 screen(s)) = 0.23 ton/yr
Calculation: (2 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (2 screen(s)) * (1 - 95/100) = 0.01 ton/yr

Total PM_{10} Emissions:
Emission Factor = 0.0087 lb/ton (0.0087 uncontrolled, 0.00074 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (2 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (2 screen(s)) = 0.08 ton/yr
Calculation: (2 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (2 screen(s)) * (1 - 95/100) = 0.00 ton/yr

Total $PM_{2.5}$ Emissions:
Emission Factor = 0.00059 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 95% (baghouse)
Calculation: (2 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (2 screen(s)) = 0.01 ton/yr
Calculation: (2 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (2 screen(s)) * (1 - 95/100) = 0.00 ton/yr

Final Quality Screen EU019

Maximum Process Rate = 60 ton/hr (Potentially max product rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Screens = 1 screen(s)

Total PM Emissions:
Emission Factor = 0.025 lb/ton (0.025 uncontrolled, 0.0022 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (1 screen(s)) = 4.50 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.025 lb/ton) * (ton/2000 lb) * (1 screen(s)) * (1 - 90/100) = 0.45 ton/yr

Total PM_{10} Emissions:
Emission Factor = 0.0087 lb/ton (0.0087 uncontrolled, 0.00074 controlled, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (1 screen(s)) = 1.57 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.0087 lb/ton) * (ton/2000 lb) * (1 screen(s)) * (1 - 90/100) = 0.16 ton/yr

Total $PM_{2.5}$ Emissions:
Emission Factor = 0.00059 lb/ton (based on controlled PM2.5/PM10 ratio, AP 42, Table 11.19.2-2, 8/04)
Control Efficiency = 90% (covered)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (1 screen(s)) = 0.11 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.00059 lb/ton) * (ton/2000 lb) * (1 screen(s)) * (1 - 90/100) = 0.01 ton/yr

Diesel-fired drier burner EU004a

Maximum Process Rate = 0.29200 10^3 gal/hr (Application information)
Maximum Hours of Operation = 6,000 hrs/yr (max allowable)
Maximum gal/yr of Diesel = 1,752,000 gal/yr (max allowable)

Filterable PM Emissions:
Emission Factor = 2 lb/10^3 gal (AP 42, Table 1.3-1, Distillate oil-fired < 100 MMBtu/hr, 5/10)
Control Efficiency = 95% (Baghouse control)
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (2 lb/10^3 gal) * (ton/2000 lb) = 1.75200 ton/yr
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (2 lb/10^3 gal) * (ton/2000 lb) * (1 - 95/100) = 0.08760 ton/yr

Filterable PM_{10} Emissions:
Emission Factor = 1 lb/10^3 gal (AP 42, Table 1.3-6, 5/10)
Control Efficiency = 95% (Baghouse control)
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (1 lb/10^3 gal) * (ton/2000 lb) = 0.87600 ton/yr
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (1 lb/10^3 gal) * (ton/2000 lb) * (1 - 95/100) = 0.04380 ton/yr

Filterable $PM_{2.5}$ Emissions:
Emission Factor = 0.25 lb/10^3 gal (AP 42, Table 1.3-6, 5/10)
Control Efficiency = 95% (Baghouse control)
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (0.25 lb/10^3 gal) * (ton/2000 lb) = 0.21900 ton/yr
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (0.25 lb/10^3 gal) * (ton/2000 lb) * (1 - 95/100) = 0.01095 ton/yr

Condensable $PM_{2.5}$ Emissions:
Emission Factor = 1.3 lb/10^3 gal (AP 42, Table 1.3-2, No. 2 fuel oil, 5/10)
Control Efficiency = 0%
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (1.3 lb/10^3 gal) * (ton/2000 lb) = 1.13880 ton/yr
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (1.3 lb/10^3 gal) * (ton/2000 lb) * (1 - 0/100) = 1.13880 ton/yr

CO Emissions:
Emission Factor = 5 lb/10^3 gal (AP 42, Table 1.3-2, No. 2 fuel oil, 5/10)
Control Efficiency = 0%
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (5 lb/10^3 gal) * (ton/2000 lb) = 4.38000 ton/yr
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (5 lb/10^3 gal) * (ton/2000 lb) * (1 - 0/100) = 4.38000 ton/yr

NO_x Emissions:
Emission Factor = 20 lb/10^3 gal (AP 42, Table 1.3-1, Distillate oil-fired < 100 MMBtu/hr, 5/10)
Control Efficiency = 0%
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (20 lb/10^3 gal) * (ton/2000 lb) = 17.52000 ton/yr
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (20 lb/10^3 gal) * (ton/2000 lb) * (1 - 0/100) = 17.52000 ton/yr

SO_2 Emissions:
Emission Factor = 0.213 lb/10^3 gal (AP 42, Table 1.3-1, Distillate oil-fired < 100 MMBtu/hr, 0.0015% S,5/10)
Control Efficiency = 0%
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (0.213 lb/10^3 gal) * (ton/2000 lb) = 0.18659 ton/yr
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (0.213 lb/10^3 gal) * (ton/2000 lb) * (1 - 0/100) = 0.18659 ton/yr

VOC Emissions:
Emission Factor = 0.2 lb/10^3 gal (AP 42, Table 1.3-3, NMTOC, Industrial Boiler Distillate Oil, 5/10)
Control Efficiency = 0%
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (0.2 lb/10^3 gal) * (ton/2000 lb) = 0.17520 ton/yr
Calculation: (0.29200 lb/10^3 gal) * (6000 %) * (0.2 lb/10^3 gal) * (ton/2000 lb) * (1 - 0/100) = 0.17520 ton/yr

Diesel-fired drier material handling EU004b

Maximum Process Rate = 60 ton/hr (Maximum upstream process rate)
Maximum Hours of Operation = 6,000 hrs/yr
Number of Screens = 1 Drier(s)

Total PM Emissions:
Emission Factor = 0.015 lb/ton (0.015 baghouse controlled, AP 42, Table 11.31-1, 1/95)
Control Efficiency = 0% (built into emission factor)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.015 lb/ton) * (ton/2000 lb) * (1 Drier(s)) = 2.70 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.015 lb/ton) * (ton/2000 lb) * (1 Drier(s)) * (1 - 0/100) = 2.70 ton/yr

Total PM_{10} Emissions:
Emission Factor = 0.015 lb/ton (Assume PM=PM10=PM2.5)
Control Efficiency = 0% (built into emission factor)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.015 lb/ton) * (ton/2000 lb) * (1 Drier(s)) = 2.70 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.015 lb/ton) * (ton/2000 lb) * (1 Drier(s)) * (1 - 0/100) = 2.70 ton/yr

Total $PM_{2.5}$ Emissions:
Emission Factor = 0.015 lb/ton (Assume PM=PM10=PM2.5)
Control Efficiency = 0% (built into emission factor)
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.015 lb/ton) * (ton/2000 lb) * (1 Drier(s)) = 2.70 ton/yr
Calculation: (60 ton/hr) * (6000 hrs/yr) * (0.015 lb/ton) * (ton/2000 lb) * (1 Drier(s)) * (1 - 0/100) = 2.70 ton/yr

Diesel Engine EPA Tier 3 685 hp EU030
Operational Capacity of Engine = 685 hp
Hours of Operation = 8,760.00 hours

PM Emissions:
PM Emissions = 0.99 ton/yr (Assume PM = PM10)

PM-10 Emissions:
Emission Factor = 0.000330695121144646 lbs/hp-hr (EPA Tier 3 emission standards)
Calculation: (8,760 hours) * (685 hp) * (0.000330695121144646 lbs/hp-hr) * (ton/2000 lb) = 0.99 ton/yr

NOx Emissions:
Emission Factor = 0.00617297559470006 lbs/hp-hr (EPA Tier 3 emission standards, NOx only (EPA NR-009d))
Calculation: (8,760 hours) * (685 hp) * (0.00617297559470006 lbs/hp-hr) * (ton/2000 lb) = 18.52 ton/yr

CO Emissions:
Emission Factor = 0.0057320487665072 lbs/hp-hr (EPA Tier 3 emission standards)
Calculation: (8,760 hours) * (685 hp) * (0.0057320487665072 lbs/hp-hr) * (ton/2000 lb) = 17.20 ton/yr

VOC Emissions:
Emission Factor = 0.000440926828192861 lbs/hp-hr (EPA Tier 3 emission standards, HC only (EPA NR-009d))

Calculation: (8,760 hours) * (685 bhp) * (0.000440926828192861 lbs/hp-hr) * (ton/2000 lb) = 1.32 ton/yr
Assume HC = VOC

SOx Emissions:
Emission Factor = 0.00205 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)
Calculation: (8,760 hours) * (685 hp) * (0.00205 lbs/hp-hr) * (ton/2000 lb) = 6.151 ton/yr

Diesel Engine EPA Tier 3 99 hp EU032
Operational Capacity of Engine = 99 hp
Hours of Operation = 8,760.00 hours

PM Emissions:
PM Emissions = 0.14 ton/yr (Assume PM = PM10)

PM-10 Emissions:
Emission Factor = 0.000330695121144646 lbs/hp-hr (EPA Tier 3 emission standards)
Calculation: (8,760 hours) * (99 hp) * (0.000330695121144646 lbs/hp-hr) * (ton/2000 lb) = 0.14 ton/yr

NOx Emissions:
Emission Factor = 0.00727529266518221 lbs/hp-hr (EPA Tier 3 emission standards, NOx only (EPA NR-009d))
Calculation: (8,760 hours) * (99 hp) * (0.00727529266518221 lbs/hp-hr) * (ton/2000 lb) = 3.15 ton/yr

CO Emissions:
Emission Factor = 0.0057320487665072 lbs/hp-hr (EPA Tier 3 emission standards)
Calculation: (8,760 hours) * (99 hp) * (0.0057320487665072 lbs/hp-hr) * (ton/2000 lb) = 2.49 ton/yr

VOC Emissions:
Emission Factor = 0.000440926828192861 lbs/hp-hr (EPA Tier 3 emission standards, HC only (EPA NR-009d))
Calculation: (8,760 hours) * (99 bhp) * (0.000440926828192861 lbs/hp-hr) * (ton/2000 lb) = 0.19 ton/yr Assume HC = VOC

SOx Emissions:
Emission Factor = 0.00205 lbs/hp-hr (AP-42, Sec. 3.3, Table 3.3-1, 10/96)
Calculation: (8,760 hours) * (99 hp) * (0.00205 lbs/hp-hr) * (ton/2000 lb) = 0.889 ton/yr

Haul Roads (FEL) EU000.01
Vehicle Miles Traveled (VMT) per Day = 20 VMT/day (Estimate)
VMT per hour = (20 VMT/day) * (day/8 hrs) = 2.50 VMT/hr
Hours of Operation = 6,000 hrs/yr

PM Emissions:
Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.
Emission Factor = k * (s / 12)^a * (W / 3)^b = 10.57 lb/VMT
Where: k = constant = 4.9 lbs/VMT (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06)
s = surface silt content = 7.1 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)
W = mean vehicle weight = 37.5 tons (1994 average loaded/unloaded or a 40 ton truck)
a = constant = 0.7 (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06)
b = constant = 0.45 (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06)
Control Efficiency = 67.1232876712329% (120 days/yr with >0.01" precip, natural mitigation)
Calculation: (6000 hrs/yr) * (2.50 VMT/hr) * (10.57 lb/VMT) * (ton/2000 lb) = 79.31 tons/yr (Uncontrolled Emissions)

Calculation: (6000 hrs/yr) * (2.50 VMT/hr) * (10.57 lb/VMT) * (ton/2000 lb) * (67.1232876712329/100) = 53.23 tons/yr (natural mitigation)

PM_{10} Emissions:

Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.

Emission Factor = k * (s / 12)^a * (W / 3)^b = 2.91 lb/VMT

Where: k = constant = 1.5 lbs/VMT (Value for PM10, AP 42, Table 13.2.2-2, 11/06)

s = surface silt content = 7.1 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)

W = mean vehicle weight = 37.5 tons (1994 average loaded/unloaded or a 40 ton truck)

a = constant = 0.9 (Value for PM10, AP 42, Table 13.2.2-2, 11/06)

b = constant = 0.45 (Value for PM10, AP 42, Table 13.2.2-2, 11/06)

Control Efficiency = 67.1232876712329% (120 days/yr with >0.01" precip, natural mitigation)

Calculation: (6000 hrs/yr) * (2.50 VMT/hr) * (2.91 lb/VMT) * (ton/2000 lb) = 21.86 tons/yr (Uncontrolled Emissions)

Calculation: (6000 hrs/yr) * (2.50 VMT/hr) * (2.91 lb/VMT) * (ton/2000 lb) * (67.1232876712329/100) = 14.67 tons/yr (natural mitigation)

$PM_{2.5}$ Emissions:

Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.

Emission Factor = k * (s / 12)^a * (W / 3)^b = 0.29 lb/VMT

Where: k = constant = 0.15 lbs/VMT (Value for PM2.5, AP 42, Table 13.2.2-2, 11/06)

s = surface silt content = 7.1 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)

W = mean vehicle weight = 37.5 tons (1994 average loaded/unloaded or a 40 ton truck)

a = constant = 0.9 (Value for PM2.5, AP 42, Table 13.2.2-2, 11/06)

b = constant = 0.45 (Value for PM2.5, AP 42, Table 13.2.2-2, 11/06)

Control Efficiency = 67.1232876712329% (120 days/yr with >0.01" precip, natural mitigation)

Calculation: (6000 hrs/yr) * (2.50 VMT/hr) * (0.29 lb/VMT) * (ton/2000 lb) = 2.19 tons/yr (Uncontrolled Emissions)

Calculation: (6000 hrs/yr) * (2.50 VMT/hr) * (0.29 lb/VMT) * (ton/2000 lb) * (67.1232876712329/100) = 1.47 tons/yr (natural mitigation)

Haul Roads (Trainsport Truck) EU031

Vehicle Miles Traveled (VMT) per Day = 10 VMT/day (Estimate)

VMT per hour = (10 VMT/day) * (day/8 hrs) = 1.25 VMT/hr

Hours of Operation = 6,000 hrs/yr

PM Emissions:

Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.

Emission Factor = k * (s / 12)^a * (W / 3)^b = 10.89 lb/VMT

Where: k = constant = 4.9 lbs/VMT (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06)

s = surface silt content = 7.1 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)

W = mean vehicle weight = 40 tons (1994 average loaded/unloaded or a 40 ton truck)

a = constant = 0.7 (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06)

b = constant = 0.45 (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06)

Control Efficiency = 67.1232876712329% (120 days/yr with >0.01" precip, natural mitigation)

Calculation: (6000 hrs/yr) * (1.25 VMT/hr) * (10.89 lb/VMT) * (ton/2000 lb) = 40.82 tons/yr (Uncontrolled Emissions)

Calculation: (6000 hrs/yr) * (1.25 VMT/hr) * (10.89 lb/VMT) * (ton/2000 lb) * (67.1232876712329/100) = 27.40 tons/yr (natural mitigation)

PM_{10} Emissions:

Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.

Emission Factor = k * (s / 12)^a * (W / 3)^b = 3.00 lb/VMT

Where: k = constant = 1.5 lbs/VMT (Value for PM10, AP 42, Table 13.2.2-2, 11/06)

s = surface silt content = 7.1 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)

W = mean vehicle weight = 40 tons (1994 average loaded/unloaded or a 40 ton truck)

a = constant = 0.9 (Value for PM10, AP 42, Table 13.2.2-2, 11/06)

b = constant = 0.45 (Value for PM10, AP 42, Table 13.2.2-2, 11/06)

Control Efficiency = 67.1232876712329% (120 days/yr with >0.01" precip, natural mitigation)

Calculation: (6000 hrs/yr) * (1.25 VMT/hr) * (3.00 lb/VMT) * (ton/2000 lb) = 11.25 tons/yr (Uncontrolled Emissions)

Calculation: (6000 hrs/yr) * (1.25 VMT/hr) * (3.00 lb/VMT) * (ton/2000 lb) * (67.1232876712329/100) = 7.55 tons/yr (natural mitigation)

$PM_{2.5}$ Emissions:

Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.

Emission Factor = k * (s / 12)^a * (W / 3)^b = 0.30 lb/VMT

Where: k = constant = 0.15 lbs/VMT (Value for PM2.5, AP 42, Table 13.2.2-2, 11/06)

s = surface silt content = 7.1 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)

W = mean vehicle weight = 40 tons (1994 average loaded/unloaded or a 40 ton truck)

a = constant = 0.9 (Value for PM2.5, AP 42, Table 13.2.2-2, 11/06)

b = constant = 0.45 (Value for PM2.5, AP 42, Table 13.2.2-2, 11/06)

Control Efficiency = 67.1232876712329% (120 days/yr with >0.01" precip, natural mitigation)

Calculation: (6000 hrs/yr) * (1.25 VMT/hr) * (0.30 lb/VMT) * (ton/2000 lb) = 1.13 tons/yr (Uncontrolled Emissions)

Calculation: (6000 hrs/yr) * (1.25 VMT/hr) * (0.30 lb/VMT) * (ton/2000 lb) * (67.1232876712329/100) = 0.76 tons/yr (natural mitigation)

V. Existing Air Quality

USM's is located at 47.8712 latitude and -104.0605 longitude. The township, range, section description is Township 4 North, Range 11 West in Section 12 in Deer Lodge County, Montana. This location is considered attainment/unclassified for all the National Ambient Air Quality Standards (NAAQS).

VI. Air Quality Impacts

This permit action updates the process flow and equipment list associated with an existing facility, as well as adjusts the associated maximum potential emissions inventory based on the updated equipment. The only new or modified equipment associated with this action is a small diesel-fired electric generator engine. The Department has determined that any associated ambient air impacts associated with the addition of this engine would be minor.

VII. Ambient Air Impact Analysis

The Department determined that the impact from this permitting action will be minor. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VIII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

IX. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

Analysis Prepared By: Ed Warner
Date: January 22, 2020

DEPARTMENT OF ENVIRONMENTAL QUALITY
Air, Energy & Mining Division
Air Quality Bureau
P.O. Box 200901, Helena, MT 59620
(406) 444-3490

ENVIRONMENTAL ASSESSMENT (EA)

Issued To: *U.S. Minerals, Inc.*
P.O. Box 547
Anaconda, Montana 59711

Montana Air Quality Permit Number: 4834-01

EA Draft: 2/12/2020
EA Final: 3/03/2020
Permit Final: 3/19/2020

1. *Legal Description of Site*: U.S. Minerals Inc. (USM) operates this slag screening and drying facility to screen a byproduct of copper smelting (slag) for use in various products including roofing granules and abrasives. The facility is located at 46.1210 latitude and -112.9089 longitude. The township, range, section description is Township 4 North, Range 11 West in Section 12 in Deer Lodge County, Montana.

2. *Description of Project*: USM submitted an application to update their Montana Air Quality Permit (MAQP) for their slag screening and drying operation in Anaconda, Montana. This permit action updates the process flow and equipment list associated with an existing facility, as well as adjusts the associated maximum potential emissions inventory based on the updated equipment. The only new or modified equipment associated with this action is a small diesel-fired electric generator engine.

3. *Objectives of Project*: The object of the project would be to update the MAQP to more accurately reflect actual plant operations and equipment in use. In addition, the MAQP would authorize the use of an additional diesel-fired generator engine. The issuance of MAQP #4834-01 would allow USM to operate the additional diesel-fired generator engine.

4. *Alternatives Considered*: In addition to the proposed action, the Department considered the "no-action" alternative. The "no-action" alternative would deny issuance of the MAQP to the proposed facility. However, the Department does not consider the "no-action" alternative to be appropriate because USM has complied with all applicable rules and regulations for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration.

5. *A Listing of Mitigation, Stipulations, and Other Controls*: A listing of the enforceable permit conditions and a permit analysis, including a Best Available Control Technology (BACT) analysis, is included in this permit action.

6. *Regulatory Effects on Private Property*: The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined the permit conditions would be reasonably necessary to ensure compliance with applicable

requirements and to demonstrate compliance with those requirements and would not unduly restrict private property rights.

7. SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the Department.

A. *Terrestrial and Aquatic Life and Habitats*

The operation of the portable diesel generator would have no impacts upon terrestrial and aquatic life and habitats. Although the diesel generator engine is a source of air pollutant emissions, the size and nature of the operation, dispersion characteristics of pollutants, and conditions placed in MAQP #4834-01 would result in no impacts as the site is former industrial and is within a Superfund cleanup site. Therefore, the operation of the equipment would present no impacts as no terrestrial and aquatic life are present in the area of potential operation.

B. Water Quality, Quantity, and Distribution

Although there would be an increase in air emissions in the area where the diesel generator engine would operate, there would only be minor impacts on water quality, quantity, and distribution because of the nature, size, operational requirements, and conditions placed in MAQP #4834-01. Further, as described in Section 7.F. of this EA, the Department determined that any impacts from deposition of pollutants would be minor.

C. Geology and Soil Quality, Stability, and Moisture

As a result of the operation of the diesel generator engine, there would be no impacts to the geology and soil quality, stability, and moisture. As explained in Section 7.F. of this EA, the facility's size, operational requirements, nature of the operation being located on the existing copper slag pile, and conditions placed in MAQP #4834-01 would minimize the impacts from deposition.

D. Vegetation Cover, Quantity, and Quality

The operation of the diesel generator engine would result in no impacts to the vegetative cover, quantity, and quality, because the proposed operation would be located on the existing copper slag pile and the area is a former industrial site and located within a Superfund cleanup site. As explained in Section 7.F. of this EA, the Department determined that, due to the nature of the operation, conditions placed in MAQP #4834-01, and dispersion characteristics of the emissions, any impacts from deposition would not be expected.

E. Aesthetics

The diesel generator engine would be visible and would create noise in the areas where it would operate. The generator would be small sized by industrial standards and would be used to power permitted equipment operated by USM. The proposed project site is within a previous industrial area and is located within a Superfund clean-up site and therefore, any aesthetic impact would be minor.

F. Air Quality

Air quality impacts from the operation of the diesel generator engine would be minor because its emissions would be relatively small. Dispersion and deposition of pollutants would occur from the operation of the diesel generator engine; however, the Department determined that any air quality impacts from the pollutants would be minor due to dispersion characteristics (from factors such as wind speed and wind direction) and conditions placed in MAQP #4834-01.

G. Unique Endangered, Fragile, or Limited Environmental Resources

In an effort to identify species of special concern that may be present in the proposed areas of operation, the Department contacted the Montana Natural Heritage Program (MNHP) for a review of species of special concern during the review of the original MAQP application for USM. Two species of concern were identified within the area where the screening and drying facility is proposed. These include Westslope Cutthroat Trout and Bull Trout. Issuance of this permit would increase emissions to the atmosphere. However, as explained in Section 7.F. of this EA, because of the nature and size of the diesel generator engine, any impacts to unique endangered, fragile, or limited environmental resources from the deposition of pollutants would not be expected given the location of the facility on the existing copper slag pile.

H. Sage Grouse Executive Order

The Department recognizes that the site location is not within a Greater Sage Grouse General Habitat Area as defined by Executive Order No. 12-2015.

I. Demands on Environmental Resource of Water, Air, and Energy

The generator would consume energy from diesel fuel, a non-renewable resource. Generally, the operations are intermittent and would result in small demands on environmental resources. Therefore, any impacts on the demands of the environmental resources of water, air, and energy would be minor.

J. Historical and Archaeological Sites

According to correspondence with the Montana State Historic Preservation Office (SHPO) during the review of the original MAQP application for USM, there have been previously recorded sites in the vicinity of the site location. However, given the site is on the existing copper slag pile, no impact to historical or archaeological sites would occur. Therefore, it is unlikely that the project would affect any historic or archaeological site and no resulting impacts are expected.

K. Cumulative and Secondary Impacts

The operation of the diesel generator engine would cause no effects to the physical and biological environment because the site is former industrial land and is within the site of a Superfund clean-up site. There are no cumulative or secondary impacts anticipated due to the operation of the diesel generator engine.

8. SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The operation of the diesel generator engine would not likely alter or disrupt any local lifestyles or communities (social structures and mores) in the area of operation because it is within a currently operating facility.

B. Cultural Uniqueness and Diversity

The operation of the diesel generator engine would have no impact on the cultural uniqueness and diversity because the equipment operations would be located at the existing site which is a former industrial area and within a Superfund cleanup site.

C. Local and State Tax Base and Tax Revenue

The proposed operation of the diesel generator engine would have a minor effect on local and state tax base and tax revenue. The diesel generator engine would require diesel fuel and generate a small level of taxes from the purchase of that resource.

D. Agricultural or Industrial Production

No impact on agricultural or industrial production would occur as the proposed site for the diesel generator engine would be located in a former industrial area and is within a Superfund cleanup site.

E. Human Health

MAQP #4834-01 would incorporate conditions to ensure that the diesel generator engine would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health. As described in Section 7.F. of this EA, the Department determined that any impacts from deposition of pollutants would be minor due to dispersion characteristics and conditions placed in MAQP #4834-01.

F. Access to and Quality of Recreational and Wilderness Activities

This diesel generator engine would be located on previously disturbed property, and in a previously used industrial area as well as within a Superfund cleanup site, and therefore does not impact access to recreational and wilderness activities.

G. Quantity and Distribution of Employment

The diesel generator engine is not expected to affect the quantity and distribution of employment in any given area. No changes to employment are associated with the diesel generator engine.

H. Distribution of Population

The diesel generator engine is not expected to disrupt the normal population distribution of the area. No additional employees are required as a result of the current project.

I. Demands of Government Services

Government services would be required for acquiring the appropriate permits and ensuring compliance with the permits that are issued; however, the government services required would be minor.

J. Industrial and Commercial Activity

The operation of the diesel generator engine would represent only a minor increase in the industrial activity in any given area. No additional industrial or commercial activities are identified from the operation of the diesel generator engine but secondary activities could result from products produced by the facility. Therefore, industrial and commercial activity resulting from the current permit action is unknown.

K. Locally Adopted Environmental Plans and Goals

The Department is unaware of any locally adopted environmental plans or goals at any given site that the diesel generator engine may be operated at under MAQP #4834-01.

L. Cumulative and Secondary Impacts

Overall, the cumulative and secondary social and economic impacts from this project would be minor because the diesel generator engine is small by industrial standards. The incorporation of the diesel generator engine into the MAQP requires some minor government services. In addition, any social and economic impacts that are created would be minor because of the relatively small size and nature of the operation.

Recommendation: No Environmental Impact Statement (EIS) is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: Because this diesel generator engine is relatively small in size and must comply with MAQP conditions, any impacts created would be minor impacts.

Other groups or agencies contacted or which may have overlapping jurisdiction: *Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program*

Individuals or groups contributing to this EA: *Department of Environmental Quality – Air Quality Bureau.*

EA Prepared by: Ed Warner
Date: January 23, 2020