



**Environmental Health Department
Air Quality Program
Interoffice Memorandum**

Timothy M. Keller, Mayor

To:	Permit File
From:	Elizabeth Pomo
Subject:	**DRAFT** Permit Application #3443
Date:	June 1, 2022
Permit Description:	New construction permit for a hot mix asphalt plant.

Facility Name:	Black Rock Services HP-2 HMA	UTM Coordinates, East:	352000
Facility Address:	Northwest corner of Carmony Ln NE and Alexander Blvd NE	North:	3888500
Facility ID:	FA0008769	Record ID:	PR0011087

Proposal

The applicant is requesting a new construction permit to install a 400-ton-per-hour (tph) hot mix asphalt (HMA) plant with a maximum production of 1,450,000 tons per year. The HMA plant normal operating hours are from 6:00 AM to 5:00 PM (7:00 AM to 5:00 PM during December and 7:00 AM to 5:30 PM during January), five days per week, 45 weeks per year. The maximum operating hours will be 24 hours per day between March and September; from 5:00 AM to 10:00 PM in the months of February, October and November; and only daylight hours during the months of January (7:00 AM to 5:30 PM) and December (7:00 AM to 5:00 PM). The facility will consist of the following:

- 1) Five cold aggregate storage piles,
- 2) One Recycled Asphalt Pavement (RAP) storage pile;
- 3) Five cold aggregate feed bins;
- 4) One cold aggregate scalping screen;
- 5) Two RAP feed bins;
- 6) One RAP scalping screen;
- 7) One RAP crusher;
- 8) One mineral filler silo with baghouse;
- 9) One drum dryer/mixer with baghouse;
- 10) One asphalt drag conveyor;
- 11) Seven other conveyors;
- 12) Six asphalt storage silos;
- 13) Three asphalt cement storage tanks;
- 14) One asphalt cement oil heater; and
- 15) One EvoTherm® tank.

Permitting History

Permit Number	Issuance Date	Permit Type	Brief Description
3443	Not Applicable	New	New permit for a 400 tph hot mix asphalt plant

Regulatory Applicability

The following regulations apply to this facility.

New Mexico Administrative Code (NMAC) Regulations

Citation	Regulation
20.11.2	Permit Fees
20.11.2.18.C	Ton-per-year application review fees for stationary sources that require permits pursuant to 20.11.41 NMAC or other board regulation, and whose applicability is based on the source's pound per hour or ton per year emissions:
(5)	proposed sources with a proposed allowable emission rate equal to or greater than 75 tons per year and less than 100 tons per year: \$7,108.00
*	<i>The fees above have been adjusted for the Consumer Price Index on January 1, 2021.</i>
20.11.2.18.D	Federal program review fees due in addition to the stationary source permit application review fees:
	A person with a stationary source that is required by 20.11.41 to apply for a permit and pay a review fee pursuant to Subsection B or Subsection C of 20.11.2.18 NMAC shall also pay the federal program review fee for each applicable federal program standard or review listed in Paragraphs (1) through (5) of Subsection D of 20.11.2.18 NMAC:
(1)	for review of each 40 CFR 60 standard: \$1,185.00
20.11.2.21	Annual Emissions Fees and Rate for Stationary Sources
B.	Permitted source: Sources issued a permit pursuant to 20.11.41 NMAC, 20.11.42 NMAC, 20.11.60 NMAC, 20.11.61 NMAC or other board regulation, shall pay a minimum annual emission fee of \$376.00 or \$54.00 per ton, whichever is greater. The annual emission fee shall be calculated as required by Subsection C of 20.11.2.13 NMAC
F.	Beginning January 1, 2011, and every January 1 thereafter, an increase based on the consumer price index shall be added to the annual emission fee and rates required by 20.11.2.21 NMAC. The annual emission fees and rates pursuant to 20.11.2.21 NMAC shall be adjusted by an amount equal to the increase in the consumer price index for the immediately preceding year.
	<i>The Annual Emission Fees were adjusted for the Consumer Price Index on January 1, 2022.</i>

Air Contaminant	NOx* TPY	CO* TPY	VOC* TPY	SO2* TPY	PM10* TPY	HAP* TPY	H2S* TPY
Totals	20	96	29	3	21	4	0
Total = 173 tpy							
<i>*Note: The total emissions on this table are for billable use only. These are NOT the allowable annual emissions for the facility</i>							

Citation	Regulation
20.11.5	Visible Air Contaminants
20.11.5.12	General Stationary Sources
	No person owning or operating any stationary source, not otherwise addressed in this Part, shall cause or allow visible air contaminant emissions that exceed an opacity of 20 percent, 6-minute time-averaged.
20.11.8	Ambient Air Quality Standards
20.11.8.6	To adopt local ambient air quality standards that are identical to the federal National Primary and Secondary Ambient Air Quality Standards codified at 40 CFR Part 50, and to adopt applicable state Ambient Air Quality Standards codified at 20.2.3 NMAC
20.11.40	Source Registration
20.11.40.2	This Part is applicable to any stationary source located in Bernalillo County.
20.11.40.6	By January 1, 1974, any person owning or operating any commercial or industrial stationary source, which emits more than two thousand pounds of any air contaminant per year or any amount of a hazardous air pollutant, must obtain a Registration Certificate for the source from the Director. Any person owning or operating any commercial or industrial stationary source constructed after September 1, 1973, and meeting the emission requirements of this section, must obtain a Registration Certificate for the source from the Director within one hundred and eighty days after the initial startup date of the source.
20.11.41	Construction Permits
20.11.41.2.B	Emission thresholds that require a construction permit before commencing construction, modification or operation of a stationary source subject to 20.11.41 NMAC:
(1)	If a person proposes to construct or operate a new stationary source that will emit one or more regulated air contaminants for which a federal, state or board ambient air quality standard exists and if the source will emit, when calculated at the contaminant's potential emission rate, 10 pounds per hour or more or 25 tons per year or more of any single regulated air contaminant, then the person shall apply for and obtain a construction permit as required by 20.11.41 NMAC before the person commences construction or operation of the source
20.11.41.2.C	Source classifications; source types:
(1)	any equipment or process that is subject or becomes subject to 20.11.63 NMAC, New Source Performance Standards for Stationary Sources, or 20.11.64 NMAC, Emission Standards for Hazardous Air Pollutants for Stationary Sources
20.11.49	Excess Emissions
20.11.49.13.A	Applicable to any source:

Citation	Regulation
(1)	whose operation results in an emission of a regulated air pollutant, including a fugitive emission, in excess of the quantity, rate, opacity or concentration specified by an air quality regulation or permit condition; or
(2)	subject to the requirements of 20.11.47 NMAC, Emissions Inventory Requirements, 20.11.41 NMAC, Construction Permits, 20.11.42 NMAC, Operating Permits, 20.11.61 NMAC, Prevention of Significant Deterioration, or 20.11.60 NMAC, Permitting In Nonattainment Areas.
20.11.63	New Source Performance Standards
20.11.63.11	Incorporation of federal standards
	Federal Standard at 40 CFR Part 60, Subpart I for Hot Mix Asphalt Plants. The hot mix asphalt plant facility was constructed after June 11, 1973.
20.11.90	Source Surveillance; Administration, Enforcement, Inspection
20.11.90.2	Scope
A.	20.11.90 is applicable to any source within the Bernalillo County.
20.11.90.13	Source Surveillance
A.	The owner or operator of any stationary source of an air contaminant shall, upon notification by the director, maintain records of the nature and amounts of emissions, to which an air quality control emission regulation applies, from the source and any other information as may be deemed necessary by the director to determine whether the source is in compliance with applicable regulations.
E.	The director shall establish a periodic visual surveillance system to detect and investigate apparent violations of visible emission limitations and such complaints relating to apparent violations of the regulations as may occur.
20.11.90.14	Administration and Enforcement
A.	Upon request of the director, the person responsible for the emission of air contaminants for which limits are established by the rules codified under Title 20, Environmental Protection, Chapter 11, Albuquerque - Bernalillo County Air Quality Control Board, of the New Mexico Administrative Code, shall provide such facilities, utilities, and openings exclusive of instrument and sensing devices, as may be necessary for the proper determination of the nature, extent, quantity and degree of such air contaminants. Such facilities may be either temporary or permanent at the discretion of the person responsible for their provisions; and shall be suitable for determination consistent with emission limits established in these rules.

Federal Applicability

Citation	Regulation	Does it apply to the Facility and/ or Equipment? Y/N (List units)
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards	Yes, entire facility
§50.4	National primary ambient air quality standards for sulfur oxides (sulfur dioxide)	

Citation	Regulation	Does it apply to the Facility and/ or Equipment? Y/N (List units)
§50.5	National secondary ambient air quality standards for sulfur oxides (sulfur dioxide)	
§50.6	National primary and secondary ambient air quality standards for PM10	
§50.7	National primary and secondary ambient air quality standards for PM2.5	
§50.8	National primary ambient air quality standards for carbon monoxide	
§50.9	National 1-hour primary and secondary ambient air quality standards for ozone	
§50.10	National 8-hour primary and secondary ambient air quality standards for ozone	
§50.11	National primary and secondary ambient air quality standards for oxides of nitrogen (with nitrogen dioxide as the indicator)	
§50.12	National primary and secondary ambient air quality standards for lead	
§50.13	National primary and secondary ambient air quality standards for PM2.5	
§50.15	National primary and secondary ambient air quality standards for ozone	
§50.16	National primary and secondary ambient air quality standards for lead	
§50.17	National primary ambient air quality standards for sulfur oxides (sulfur dioxide)	
§50.18	National primary ambient air quality standards for PM2.5	
§50.19	National primary and secondary ambient air quality standards for ozone	
40 CFR 60	Standards of Performance for New Stationary Sources	Yes Units #15 - #20
Subpart A	General Provisions	
§60.1	Applicability	
(a)	Except as provided in subparts B and C, the provisions of this part apply to the owner or operator of any stationary source which contains an affected facility, the construction or modification of which is commenced after the date of publication in this part of any standard (or, if earlier, the date of publication of any proposed standard) applicable to that facility	
§60.8	Performance tests	
(a)	... within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than	Yes

Citation	Regulation	Does it apply to the Facility and/ or Equipment? Y/N (List units)
	180 days after initial startup of such facility, or at such other times specified by this part, and at such other times as may be required by the Administrator under section 114 of the Act, the owner or operator of such facility shall conduct performance test(s) and furnish the Administrator a written report of the results of such performance test(s).	Unit #16 Drum Dryer/Mixer Unit #16b Mixer Baghouse
§60.11	Compliance with standards and maintenance requirements	
(d)	At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.	All units that do not have manufacturer's specifications
(e)	(1) For the purpose of demonstrating initial compliance, opacity observations shall be conducted concurrently with the initial performance test required in §60.8 unless one of the following conditions apply. If no performance test under § 60.8 is required, then opacity observations shall be conducted within 60 days after achieving the maximum production rate at which the affected facility will be operated but no later than 180 days after initial startup of the facility. If visibility or other conditions prevent the opacity observations from being conducted concurrently with the initial performance test required under § 60.8, the source owner or operator shall reschedule the opacity observations as soon after the initial performance test as possible, but not later than 30 days thereafter, and shall advise the Administrator of the rescheduled date. In these cases, the 30-day prior notification to the Administrator required in § 60.7(a)(6) shall be waived. The rescheduled opacity observations shall be conducted (to the extent possible) under the same operating conditions that existed during the initial performance test conducted under § 60.8. The visible emissions observer shall determine whether visibility or other conditions prevent the opacity observations from being made concurrently with the initial performance test in accordance with procedures contained in Method 9 of appendix B of this part. Opacity readings of portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of	Yes Units #15-#20

Citation	Regulation	Does it apply to the Facility and/ or Equipment? Y/N (List units)
	determining compliance with opacity standards. The owner or operator of an affected facility shall make available, upon request by the Administrator, such records as may be necessary to determine the conditions under which the visual observations were made and shall provide evidence indicating proof of current visible observer emission certification. Except as provided in paragraph (e)(5) of this section, the results of continuous monitoring by transmissometer which indicate that the opacity at the time visual observations were made was not in excess of the standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the source shall meet the burden of proving that the instrument used meets (at the time of the alleged violation) Performance Specification 1 in appendix B of this part, has been properly maintained and (at the time of the alleged violation) that the resulting data have not been altered in any way.	
Subpart I	Standards of Performance for Hot Mix Asphalt Facilities	Yes Units #15 - #20
§60.90	Applicability and designation of affected facility.	
(a)	The affected facility to which the provisions of this subpart apply is each hot mix asphalt facility. For the purpose of this subpart, a hot mix asphalt facility is comprised only of any combination of the following: dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler, systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems.	
(b)	Any facility under paragraph (a) of this section that commences construction or modification after June 11, 1973, is subject to the requirements of this subpart.	
§60.92	Standard for particulate matter.	
(a)	On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall discharge or cause the discharge into the atmosphere from any affected facility any gases which: (1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf). (2) Exhibit 20 percent opacity, or greater.	
	Test methods and procedures	

Citation	Regulation	Does it apply to the Facility and/ or Equipment? Y/N (List units)
§60.93		
(a)	In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b).	
(b)	The owner or operator shall determine compliance with the particulate matter standards in §60.92 as follows: (1) Method 5 shall be used to determine the particulate matter concentration. The sampling time and sample volume for each run shall be at least 60 minutes and 0.90 dscm (31.8 dscf). (2) Method 9 and the procedures in §60.11 shall be used to determine opacity.	

Actions Taken

4/23/2021	Received first application submittal
5/25/2021	First application submittal deemed incomplete
6/21/2021	Received second application submittal
7/28/2021	Second application submittal deemed incomplete
10/27/2021	Received third resubmittal
11/29/2021	Application deemed complete
12/8/2021	30-day public comment period started
12/10/2021	Received comments from Mr. Dan Regan with District 4 Coalition
12/15/2021	Program addressed Mr. Regan's comments
12/29/2021	Received written interest in application from Mr. Regan
1/7/2022	30-day public comment period ended
1/13/2022	Received additional written interest from Mr. Regan
1/24/2022	90-day deadline extension granted by Acting Director Mark DiMenna
3/8/2022	Received additional information about screw conveyor
4/8/2022	Received additional information about asphalt heater
5/11/2022	Received additional information about silo heater
5/12/2022	Air dispersion modeling review completed
5/31/2022	Notice on the availability of technical analysis
6/30/2022	30-day technical analysis comment period ends
PENDING FUTURE ITEMS/ACTIONS	

Specific Conditions for this Facility

FACILITY WIDE SPECIFIC CONDITIONS

A fence or other type of barrier shall be installed and maintained restricting access to the property prior to the beginning of operation;

Haul roads shall be paved and shall be one lane traffic. Trucks can travel in one direction on a roadway at any given time.

Hours of Operation

Hot Mix Asphalt (HMA) Plant, (except Unit #20 because it can operate continuously)

- During December: Seven (7) days a week, during daylight hours from 7:00 AM – 5:00 PM, ten (10) hours per day
 - During January: Seven (7) days a week, during daylight hours from 7:00 AM – 5:30 PM or a total of ten (10) hours per day during these times at maximum throughput
 - During February, October, and November: Seven (7) days a week from 5:00 AM – 10:00 PM or a total of ten (10) hours per day during these times at maximum throughput
 - During March and September: Seven (7) days a week, 24 hours per day, or a total of twelve (12) hours per day at maximum throughput
 - From April through August: Seven (7) days a week, 24 hours per day, or a total of fifteen (15) hours per day at maximum throughput
-

The following units and activities may operate/be performed continuously:

- Unit #20 Asphalt Heater
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Operating Scenarios

The Facility is subject to seasonal operating restrictions based on air dispersion modeling of the Facility at this location to demonstrate compliance with the National Ambient Air Quality Standards and New Mexico Ambient Air Quality Standards for NO₂, CO, SO₂, PM_{2.5}, PM₁₀, H₂S, and Pb.

Annual Throughput based on a 12-month rolling total

HMA Plant:

- A total of 1,450,000 tons per year
 - 4,000 tons per day during the months of December and January
 - 4,000 tons per day during the months of February, October, and November
 - 4,800 tons per day during the months of March and September
 - 6,000 tons per day during the months of April through August
-

Hourly Throughput

HMA Plant:

- 400 tons per hour (tph) production rate

Aggregate:

- 230 tph production rate when RAP is added to the mix, or
- 370 tph production rate when RAP is not added to the mix.

Recycled Asphalt Plant (RAP):

- Up to 140 tons per hour (tph) production rate
-

Monitoring for HMA Plant, Aggregate, and RAP:

Hourly and annual emissions were based on the hourly and annual consumption of Aggregate and RAP, and the hourly and annual production rate of Asphalt. To demonstrate compliance with the hourly and annual emissions from the HMA Plant, the permittee shall do the following:

- Monitor the hours of operation of the HMA Plant on a daily basis, to include start and stop times.
- Monitor the hourly, daily, and monthly production of the HMA Plant.
- Monitor the hourly, daily, and monthly consumption of Aggregate and/or RAP.
- Monitor the hourly and daily production of asphalt. The daily production cannot exceed the daily amounts listed above. The hourly production cannot exceed the production rate listed above.
- Monitor the annual production of asphalt (in tons). The annual production shall be based on a 12-month rolling total.
- Monitor the day(s) the HMA Plant does not use RAP.

Recordkeeping for HMA Plant, Aggregate, and RAP:

To demonstrate compliance with the hourly and annual emissions from the HMA Plant, the permittee shall do the following:

- Maintain records of the hourly, daily, monthly and annual throughputs of aggregate and RAP materials and compare them to the allowed throughput. Daily records shall indicate if the plant operated with RAP or not. The annual throughputs shall be based on a 12-month rolling total.
- Maintain records of the daily, monthly, and annual production throughput (in tons) for the HMA Plant. Daily records shall indicate if the plant operated with RAP or not. Monthly throughput records shall be maintained to calculate yearly throughputs based on a 12-month rolling total.
- Maintain records of the number of hours of operation for the HMA Plant from December 1st through the last day of January. These records shall also include the start and stop times for each day of plant operation. Hours of operation records shall be maintained in order to perform a monthly calculation of the 12-month rolling total of operating hours for comparison to the 12-month rolling total limit.

EQUIPMENT SPECIFIC CONDITIONS

Units #1 & #7 Cold Aggregate and RAP Storage Piles	Material storage piles shall be watered twice a day to prevent any fugitive dust emissions visible for a total of 15 minutes or more during any consecutive one-hour period from leaving the property
	The five aggregate storage piles must be located in the northern part of the facility but south of the AG haul road. The westernmost aggregate storage pile must be located at least 100 feet from the western Black Rock fence.
	The one RAP storage pile must be located in the eastern part of the facility at least 45 feet from the northern boundary and at least 100 feet from the closest part of the curved eastern boundary.
	<i>Monitoring and Recordkeeping Conditions</i>
	Monitor the weekly clearance between the westernmost aggregate storage pile and the facility’s western fence to be set back at least 100 feet.
	Monitor the weekly clearance between the RAP storage pile and the site’s northern boundary to be set back at least 45 feet.

	Monitor the weekly clearance between the RAP storage pile and the site's curved eastern boundary to be set back at least 100 feet.
	Monitor the daily application of water to material storage piles to control fugitive dust emissions from leaving the property.
	Maintain weekly records of the westernmost aggregate storage pile setback measurements from the site's western fence.
	Maintain weekly records of the RAP storage pile setback measurements from the site's northern and curved eastern boundaries.
	Maintain records of the daily application of water to raw material storage piles including records of the date, time and quantity of water applied to each emission unit. If application of water is not required, the daily record shall indicate why water application was not necessary (i.e. recent rainfall, snowfall, etc.).
Units #2 & #8 Cold Aggregate Feed Bins (5) and RAP Feed Bins (2)	No equipment-specific conditions for the five cold aggregate feed bins and the two RAP feed bins.
	<i>Monitoring and Recordkeeping Conditions</i>
	No equipment-specific conditions for the five cold aggregate feed bins and the two RAP feed bins.
Units #3 & #9 Cold Aggregate Feed Conveyor & RAP Feed Conveyor	Units #3 and #9 must be equipped with water sprays at the unloading drop points from the aggregate feed bins (Unit #2) and RAP feed bins (Unit #8) onto the respective conveyors. This condition has been placed in the permit based on air dispersion modeling of the Facility at this location to demonstrate compliance with the National Ambient Air Quality Standards and the New Mexico Ambient Air Quality Standards for PM2.5 and PM10.
	<i>Monitoring and Recordkeeping Conditions</i>
	Conduct daily inspections to ensure the water sprays on Units #3 and #9 are working properly. The HMA plant shall be shut down if the water sprays are not working properly. The HMA plant shall not re-start operations until repairs have been completed such that the water sprays are working as originally intended by the manufacturer.
	Maintain records of the daily inspections of the operation of water sprays for Units #3 and #9 and maintain records of the steps taken to repair the units when leaks are identified.
Units #4, #5, #6 #10, #11, #13 and #14 Cold Aggregate Scalping Screen, Scalping Screen Conveyor, Slinger Conveyor, RAP Scalping Screen, RAP Recycle Conveyor, and	Units #4, #5, #6, #10, #11, #13 and #14 must be equipped with enclosures or water sprays.
	<i>Monitoring and Recordkeeping Conditions</i>
	If Units #4, #5, #6, #10, #11, #13 and #14 are equipped with enclosures, conduct daily inspections to ensure the enclosures are kept in good condition to avoid any leaks. The HMA plant shall be shut down if leaks are identified. The HMA plant shall not re-start operations until repairs have been completed such that the enclosures are working as originally intended by the manufacturer.
	If Units #4, #5, #6, #10, #11, #13 and #14 are equipped with water sprays, conduct daily inspections to ensure the water sprays are working properly. The HMA plant shall be shut down if the water sprays are not working properly. The HMA plant shall not re-start operations until repairs have been completed such that the water sprays are working as originally intended by the manufacturer.

two (2) RAP Transfer Conveyors	Maintain records of the daily inspections of the enclosures for Units #4, #5, #6, #10, #11, #13 and #14 and maintain records of the steps taken to repair the units when leaks are identified.
	Maintain records of the daily inspections of the operation of water sprays for Units #4, #5, #6, #10, #11, #13 and #14 and maintain records of the steps taken to repair the units when leaks are identified.
Transfer Point from Unit #12 to #9 RAP Crusher to RAP Feed Conveyor	The transfer point from Unit #12 RAP Crusher to Unit #9 RAP Feed Conveyor must be equipped with an additional water sprayer.
	<i>Monitoring and Recordkeeping Conditions</i>
	Conduct daily inspections to ensure the water spray at the transfer point from Unit #12 RAP Crusher to Unit #9 RAP Feed Conveyor is working properly. The HMA plant shall be shut down if the water spray is not working properly. The HMA plant shall not re-start operations until repairs have been completed such that the water sprays are working as originally intended by the manufacturer.
	Maintain daily records of the daily inspections of the operation of the water spray for the transfer point from Unit #12 to Unit #9, and maintain records of the steps taken to repair the unit when leaks are identified.
Unit #13 & #14 RAP Transfer Conveyors	Refer to conditions for Units #4, #5, #6, #10, #11, #13 and #14.
	<i>Monitoring and Recordkeeping Conditions</i>
	Refer to conditions for Units #4, #5, #6, #10, #11, #13 and #14.
Unit #15 & #16 Mineral Filler Silo and Drum Dryer/Mixer	Per 40 CFR NSPS Subpart I, §60.92(a)(1) and (2):
	The permittee shall not discharge or cause the discharge into the atmosphere from any affected facility any gases which:
	(1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf)
	(2) Exhibit 20 percent opacity, or greater
	Per 40 CFR NSPS Subpart I, §60.93(a), (b)(1) and (2):
	(a): In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b).
	(b): The owner or operator shall determine compliance with the particulate matter standards in §60.92 as follows:
	(1): Method 5 shall be used to determine the particulate matter concentration. The sampling time and sample volume for each run shall be at least 60 minutes and 0.90 dscm (31.8 dscf).

	(2): Method 9 and the procedures in §60.11 shall be used to determine opacity.
Unit #15 & #16 Mineral Filler Silo and Drum Dryer/Mixer	<i>Differential Pressure Permit Conditions for Units #15 & #16</i>
	Each baghouse for the Mineral Filler Silo (Unit #15) and/or the Drum Dryer/Mixer (Unit #16) shall have a differential pressure gauge that measures pressures between the inlet and outlet of the baghouses.
	The Mineral Filler Silo (Unit #15) and/or the Drum Dryer/Mixer (Unit #16) shall be shut down in the event of a malfunction of the corresponding baghouse that causes the differential pressure to go outside of the operating range as determined through compliance testing or manufacturer specifications, and repairs shall be made to the affected equipment. The Mineral Filler Silo and/or Drum Dryer/Mixer shall not restart until the capture and control equipment for Units #15 and #16 are fully functional.
Unit #15 Mineral Filler Silo	<i>Monitoring Conditions for Unit #15 Differential Pressure</i>
	Monitor the Unit as described below while the HMA Plant is operating. Monitoring shall be conducted to confirm proper operation of the Silo Baghouse:
	Monitor the Silo Baghouse differential pressure once each calendar week during delivery truck loading to silo. If a delivery is not performed in the calendar week, then monitor the pressure differential during the next delivery truck loading to silo. This is to show that airflow is being maintained in compliance with the manufacturer's specifications;
	Monitor the Silo Baghouse differential pressure for the duration of the silo loading;
	Filling of the Silo shall cease immediately if the pressure drop is not within the manufacturer's specified normal operating range or the range correlating with opacity tests demonstrating compliance with the 40 CFR 60, NSPS Subpart I opacity limits. Loading shall not recommence until the cause of the deviation is determined and rectified;
	Method 9 Opacity tests shall be conducted according to the requirements of 40 CFR 60, Subpart I and Appendix A;
	At least once each calendar week, the Permittee shall conduct an EPA Method 9 Opacity test on the Silo Baghouse for the duration of the silo batch loading to verify that the Silo Baghouse is not damaged, that the silo stack is still secured to and emissions are routed to the Silo Baghouse, and that compliance with 40 CFR, NSPS Subpart I opacity limits is demonstrated;
	Monitor once per calendar week the inspection of the interior and exterior of the fabric/cartridge filters in the Silo Baghouse for evidence of leaking, damaged and/or missing filters and take appropriate corrective actions to restore filters to proper operation before resuming normal operations; and
	Inspect and replace filter bags according to the manufacturer's documentation or more frequently as indicated by the weekly Silo Baghouse inspections.
Unit #15 Mineral Filler Silo	<i>Recordkeeping Conditions for Unit #15 Differential Pressure</i>

	Keep records of the date and start/stop times of each silo loading and of the EPA Method 9 opacity observations required weekly. The Silo Baghouse differential pressure shall be recorded for the duration of silo loading and those readings compared to the manufacturer's specification;
	Record the Silo Baghouse manufacturer's specified normal differential pressure range or the opacity readings that correlate with compliance requirements pursuant to the 40 CFR 60, NSPS Subpart I opacity limit.
	The Permittee shall have these records available at all times of operation: performance test normal differential pressure range, and the differential pressure readings and the simultaneous percent opacity readings that correlate with compliance requirements pursuant to the 40 CFR 60, NSPS Subpart I opacity limit.
	Keep records of any excessive deviation in the Silo Baghouse differential pressure, the cause of the deviation, the time silo loading ceased for repairs, the time silo loading commenced after repairs, and the corrective actions taken;
	Keep records of the weekly Method 9 opacity observations;
	Keep records of the inspections conducted once per calendar week of the interior and exterior of the filters in the Silo Baghouse for evidence of leaking, damaged and/or missing filters and the appropriate corrective actions taken to restore those filters to proper operation before resuming normal operations. The records shall include the unit number, the date the inspection was conducted, the inspection results and any corrective actions taken as a result of the required inspections;
	Keep the manufacturer's documentation on filter inspection and filter replacement requirements for the Silo Baghouse;
	Keep a copy of the manufacturer's equipment specifications and preventive maintenance plan for the Silo Baghouse; or the most recent performance test that provides the normal differential pressure range.
Unit #16 Drum Dryer/Mixer	<i>Monitoring Conditions for Unit #16 Differential Pressure</i>
	During operation, the Mixer Baghouse differential pressure shall be monitored once every hour, at a minimum, during daylight operations; and it shall be monitored continuously during night-time. This is to show that airflow is being maintained in compliance with the manufacturer's specifications;
	Operations shall cease immediately if the pressure drop is not within the manufacturer's specified normal operating range or the range correlating with opacity tests demonstrating compliance with the 40 CFR 60, NSPS Subpart I opacity limits. Operations shall not recommence until the cause of the deviation is determined and rectified;
	EPA Method 9 Opacity tests shall be conducted according to the requirements of 40 CFR 60, Subpart I and Appendix A;
	At least once each calendar week, the Permittee shall conduct an EPA Method 9 Opacity test on the Mixer Baghouse to verify that the Mixer Baghouse is not damaged, that the stack is secured, that emissions are routed to the Baghouse, and that compliance with 40 CFR 60, NSPS Subpart I opacity limits is demonstrated;
	Concurrently during any visible emissions monitoring of the Mixer Baghouse, differential pressure shall be monitored every one (1) minute, at a minimum;

	Monitor once per calendar week the inspection of the interior and exterior of the fabric/cartridge filters in the Mixer Baghouse for evidence of leaking, damaged and/or missing filters and take appropriate corrective actions to restore filters to proper operation before resuming normal operations; and,
	Inspect and replace filter bags according to the manufacturer's documentation or more frequently as indicated by the weekly Mixer Baghouse inspections.
Unit #16 Drum Dryer/Mixer	<i>Recordkeeping Conditions for Unit #16 Differential Pressure</i>
	Record the Mixer Baghouse manufacturer's specified normal differential pressure range along with differential pressure readings and the simultaneous percent opacity readings that correlate with compliance requirements pursuant to 40 CFR 60, NSPS Subpart I opacity limit. The Mixer Baghouse differential pressure shall be recorded once per hour of operation, at a minimum, during daylight operations.
	Keep records of any excessive deviation in differential pressure, the cause of the deviation, the time operations ceased for repairs, the time operations commenced after repairs, and the corrective actions taken;
	Record the Mixer Baghouse differential pressure one-minute readings during the opacity observations;
	Keep records of the EPA Method 9 weekly opacity observations;
	Keep records of the weekly inspections conducted for the interior and exterior of the filters in the Mixer Baghouse for evidence of leaking, damaged and/or missing filters and the appropriate corrective actions taken to restore filters to proper operation before resuming normal operations. The records shall include the unit number, the date the inspection was conducted, the inspection results and any corrective actions taken as a result of the required inspections; and,
	Keep records of the manufacturer's documentation on filter inspection and filter replacement requirements for the Mixer Baghouse;
	Keep records of the manufacturer's equipment specifications and preventive maintenance plan for the Mixer Baghouse; or the most recent performance test that provides the normal differential pressure range.
Unit #16 Drum Dryer/Mixer	The unit is authorized to burn only pipeline quality natural gas.
	<i>Monitoring and Recordkeeping Conditions</i>
	Monitor the type of fuel used in Unit #16.
	Maintain delivery shipment records of pipeline quality natural gas for Unit #16.
Unit #16b Drum Mixer Baghouse	The HMA baghouse stack must have a height of at least 23.2 feet, a diameter of no more than 4.6 feet and an exit velocity of at least 74.89 feet/second.
	The HMA baghouse stack must be located at least 200 feet from the western property fence, at least 300 feet from the northern property fence, at least 340 feet from the eastern property fence and at least 230 feet from the southern property fence as captured in the modeling submitted with the application.
	<i>Monitoring and Recordkeeping Conditions</i>

	Monitor the clearance between the HMA baghouse stack part of Unit #16b to be set back at least 200 feet from the western property fence, at least 300 feet from the northern property fence, at least 340 feet from the eastern property fence and at least 230 feet from the southern property fence on a weekly basis.
	Maintain records of the engineering drawings, analysis, calculations, or stack emissions testing to demonstrate compliance with the stack parameters for Unit #16b.
	Maintain records of the weekly setback measurements from the property's fence boundary for the baghouse stack that is part of Unit #16b.
Unit #17 Asphalt Drag Conveyor	The unit shall be operated with a recirculation system that captures asphalt fumes, organic PM, CO and VOC gases, then recirculates the gas back to the drum dryer (Unit #16) to be re-burned.
	<i>Monitoring and Recordkeeping Conditions</i>
	Monitor and maintain the recirculation system according to manufacturer specifications;
	Keep records of the manufacturer's specifications and instructions for the recirculation system that is part of Unit #17.
	Keep records of maintenance conducted for Unit #17.
Unit #18 Asphalt Storage Silos (6)	The silo heater that controls the temperature of Unit #18 Asphalt Storage Silos must be powered only by commercial line power.
	The silo heater that controls the temperature for Unit #18 Asphalt Storage Silos must not exceed 280 F. This condition is a result of emissions calculations and air dispersion modeling that were submitted in the application.
	<i>Monitoring and Recordkeeping Conditions</i>
	The permittee shall monitor the temperature of the silo heater for Unit #18 Asphalt Storage Silos on an hourly basis to be at or below 280 F.
	The permittee shall keep logs of the silo heater temperature for Unit #18 Asphalt Storage Silos on an hourly basis.
	The permittee shall keep records of the manufacturer's specifications and instructions for the silo heater that is part of Unit #18 Asphalt Storage Silos.
Unit #19 Asphalt Cement Storage Tanks (3)	No equipment-specific conditions for the three asphalt cement storage tanks.
	<i>Monitoring and Recordkeeping Conditions</i>
	No equipment-specific conditions for the three asphalt cement storage tanks.
Unit #20 Asphalt Heater	The unit is authorized to burn pipeline quality natural gas.
	<i>Monitoring and Recordkeeping Conditions</i>
	Monitor the type of fuel used in Unit #20.
	Maintain delivery shipment records of pipeline quality natural gas for Unit #20.
Unit #21 Haul Road Traffic	Truck traffic at the facility is permitted only on the haul roads shown in Figure 1 of Appendix A in Permit #3443, and as included in the air dispersion modeling submitted in the application.

	Haul roads shall be paved and shall be one lane traffic. Trucks can travel in one direction on a roadway at any given time.
	Paved roads must be cleaned up from any spillage and track out as necessary to minimize fugitive emissions and prevent material from leaving the property.
	The facility is limited to the following truck traffic: <ul style="list-style-type: none"> • A maximum of 32 trucks per hour, of which only 16 trucks per hour are permitted to transport asphalt. A maximum of 116,070 trucks per year
	<i>Monitoring and Recordkeeping Conditions</i>
	Monitor the buildup of silt on paved haul roads that are part of Unit #21.
	Monitor the number of trucks entering and leaving the facility to demonstrate compliance with the hourly and annual limits of trucks on the haul roads on a 12-month rolling total.
	If a street sweeper is used to remove silt buildup from paved haul roads apart of Unit #21, then the permittee shall keep records of the sweeper's user instructions on site.
	Maintain records of the hourly and annual truck traffic.
Unit #22 HMA Yard	No equipment-specific conditions for the HMA yard.
	<i>Monitoring and Recordkeeping Conditions</i>
	No equipment-specific conditions for the HMA yard.
Fugitive Dust	Each person shall use reasonably available control measures or any other effective control measure during active operations or on inactive disturbed surface areas, as necessary to prevent the release of fugitive dust, whether or not the person is required by 20.11.20 NMAC to obtain a fugitive dust control permit.
	<i>Monitoring and Recordkeeping Conditions</i>
	Monitor fugitive dust emissions and the potential for fugitive dust to carry beyond the property line and measures taken to mitigate such issues, including buildup of silt on paved roads for Unit #21.
	Maintain records of the observation of fugitive dust and the potential for fugitive dust to carry beyond the property line and a description of measures taken to mitigate such issues.
Compliance Test	Unit #16 Drum Dryer/Mixer and Unit #16b Mixer Baghouse: <ul style="list-style-type: none"> • Initial compliance tests shall be conducted in order to demonstrate compliance with the standard for particulate matter of any gas pursuant to 40 CFR 60, Subpart I §60.92(a)(1), and the standard for opacity pursuant to 40 CFR 60, Subpart I §60.92(a)(2). Initial compliance tests of Unit #16 Drum Dryer/Mixer and Unit #16b Mixer Baghouse shall be conducted utilizing pipeline quality natural gas within the timeframe specified in Condition 2.F in the permit. • Initial compliance tests shall also be conducted to demonstrate compliance of the lb/hr emission limits for NOx and CO as stated in Condition 2 in the permit. Initial compliance tests of Unit #16 Drum Dryer/Mixer and Unit #16b Mixer Baghouse shall be conducted utilizing pipeline quality natural gas within the timeframes specified in Condition 2.F in the permit. • Annual compliance tests have been imposed on Unit #16 Drum Dryer/Mixer and Unit #16b Mixer Baghouse to demonstrate compliance with the standard for particulate matter of any gas pursuant to 40 CFR 60, Subpart I §60.92(a)(1), and the standard for opacity pursuant to 40 CFR 60, Subpart I §60.92(a)(2).

	<ul style="list-style-type: none"> Annual compliance tests of Unit #16 Drum Dryer/Mixer and Unit #16b Mixer Baghouse shall be conducted utilizing pipeline quality natural gas as the fuel. Compliance tests shall be conducted in accordance with EPA methods contained in Appendix A of 40 CFR, Part 60, unless otherwise approved by the Department.
	Compliance tests have not been imposed for the remainder of the Facility. However, compliance tests may be imposed or re-imposed if inspections of the source indicate non-compliance with permit conditions, or if the previous test showed non-compliance or was technically unsatisfactory.
Opacity	All remaining units, except for Unit #22: 20% Opacity based on 20.11.5.12 NMAC
Other Assumptions	The facility has the option to operate within a range of 57.5% Aggregate and 35.0% RAP. The facility also requests to operate without RAP, which would result in a production rate with 92.5% aggregate. The total controlled emissions were calculated with both scenarios and the most conservative scenario was used to calculate annual emissions from the entire facility.
	The controlled annual emissions for all equipment, except Unit #20 Asphalt Heater, were calculated using a limited annual production rate of 1,450,000 tons per year. Annual emissions for Unit #20 Asphalt Heater use 8,760 hours per year.
	The H ₂ S emissions from Units #16 Drum Dryer/Mixer, Unit #17 Asphalt Drag Conveyor (Drum Unloading) and Unit #18 Asphalt Storage Silos (Silo Unloading) were calculated using the emission factors from the North Carolina Spreadsheet for Asphalt Plants, available at https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/emission-estimation-spreadsheets . Annual emissions were based on the annual hours of operation as a result of the limited throughput (1,450,000 tons per year / 400 tons per hour = 3625 hours per year).
	The controlled emissions from Unit #16 Drum Dryer/Mixer were estimated using emission factors from AP-42 11.1.

TOTAL ESTIMATED CONTROLLED EMISSIONS with RAP 35%

Unit		NOx		CO		VOC		SO2		PM10		PM2.5	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
1	Cold Agg Sto Piles									0.51	0.93	0.078	0.14
2	Cold Agg Feed Bin Load (5)									0.51	0.93	0.078	0.14
3	Cold Agg Feed Bin Unl Conveyor									0.011	0.019	0.0030	0.0054
4	Cold Agg Scalp Screen									0.17	0.31	0.012	0.021
5	Scalp Screen Unl Conv									0.011	0.019	0.0030	0.0054
6	Conv Transfer to Slinger Conv									0.011	0.019	0.0030	0.0054
7	RAP Storage Pile									0.094	0.17	0.014	0.026
8	RAP Feed Bins (2)									0.094	0.17	0.014	0.026
9	RAP Feed Bin Unl Conveyor									0.0064	0.012	0.0018	0.0033
10	RAP Scalping Screen									0.10	0.19	0.0070	0.013
11	RAP Screen Recycle Unl Conv									0.0064	0.012	0.0018	0.0033
12	RAP Crusher									0.076	0.14	0.014	0.025
13	RAP Transfer Conv									0.0064	0.012	0.0018	0.0033
14	RAP Transfer Conv									0.0064	0.012	0.0018	0.0033
15	Mineral Filler Silo									0.12	0.051	0.027	0.012
16	Drum Dryer/ Mixer	10.40	18.85	52.00	94.25	12.80	23.20	1.36	2.47	9.20	16.68	9.20	16.68
17	Asphalt Drag Conveyor			0.19	0.34	1.95	3.53			0.094	0.17	0.094	0.17
18	Asphalt Storage Silos (6)			0.17	0.32	0.54	0.97			0.12	0.21	0.12	0.21
19	Asphalt Cement Sto Tanks (3)					0.071	0.31						
20	Asphalt Heater	0.26	1.14	0.22	0.96	0.029	0.13	0.0056	0.024	0.020	0.087	0.020	0.087
21	Haul Road Traffic									0.15	0.27	0.036	0.065
22	Yard			0.14	0.26	0.44	0.80						
TOTAL		10.66	19.99	52.72	96.12	15.83	28.94	1.37	2.49	11.32	20.40	9.73	17.64

TOTAL ESTIMATED CONTROLLED EMISSIONS with RAP 0%

Unit		Nox		CO		VOC		SO2		PM10		PM2.5	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
1	Cold Agg Sto Piles									0.83	1.50	0.13	0.23
2	Cold Agg Feed Bin Load (5)									0.83	1.50	0.13	0.23
3	Cold Agg Feed Bin Unl Conveyor									0.017	0.031	0.0048	0.0087
4	Cold Agg Scalp Screen									0.27	0.50	0.019	0.034
5	Scalp Screen Unl Conv									0.017	0.031	0.0048	0.0087
6	Conv Transfer to Slinger Conv									0.017	0.031	0.0048	0.0087
7	RAP Storage Pile									0.00	0.00	0.00	0.00
8	RAP Feed Bins (2)									0.00	0.00	0.00	0.00
9	RAP Feed Bin Unl Conveyor									0.00	0.00	0.00	0.00
10	RAP Scalping Screen									0.00	0.00	0.00	0.00
11	RAP Screen Recycle Unl Conv									0.00	0.00	0.00	0.00
12	RAP Crusher									0.00	0.00	0.00	0.00
13	RAP Transfer Conv									0.00	0.00	0.00	0.00
14	RAP Transfer Conv									0.00	0.00	0.00	0.00
15	Mineral Filler Silo									0.12	0.051	0.027	0.012
16	Drum Dryer/ Mixer	10.40	18.85	52.00	94.25	12.80	23.20	1.36	2.47	9.20	16.68	9.20	16.68
17	Asphalt Drag Conveyor			0.19	0.34	1.95	3.53			0.094	0.17	0.094	0.17
18	Asphalt Storage Silos (6)			0.17	0.32	0.54	0.97			0.12	0.21	0.12	0.21
19	Asphalt Cement Sto Tanks (3)					0.071	0.31						
20	Asphalt Heater	0.26	1.14	0.22	0.96	0.029	0.13	0.0056	0.024	0.020	0.087	0.020	0.087
21	Haul Road Traffic									0.14	0.23	0.035	0.057
22	Yard			0.14	0.26	0.44	0.80						
TOTAL		10.66	19.99	52.36	94.91	15.36	28.02	1.36	2.47	11.50	20.69	9.72	17.58

TOTAL ESTIMATED H₂S AND HAP EMISSIONS

Unit		H ₂ S		HAPs	
		<i>lbs/hr</i>	<i>tpy</i>	<i>lbs/hr</i>	<i>tpy</i>
1	Cold Agg Sto Piles				
2	Cold Agg Feed Bin Load (5)				
3	Cold Agg Feed Bin Unl Conveyor				
4	Cold Agg Scalp Screen				
5	Scalp Screen Unl Conv				
6	Conv Transfer to Slinger Conv				
7	RAP Storage Pile				
8	RAP Feed Bins (2)				
9	RAP Feed Bin Unl Conveyor				
10	RAP Scalping Screen				
11	RAP Screen Recycle Unl Conv				
12	RAP Crusher				
13	RAP Transfer Conv				
14	RAP Transfer Conv				
15	Mineral Filler Silo				
16	Drum Dryer/ Mixer	0.021	0.038	2.15	3.90
17	Asphalt Drag Conveyor	0.00058	0.0011		
18	Asphalt Storage Silos (6)	0.00058	0.0011		
19	Asphalt Cement Sto Tanks (3)				
20	Asphalt Heater			0.0049	0.022
21	Haul Road Traffic				
22	Yard				
TOTAL		0.022	0.040	2.16	3.92

CALCULATIONS

Material Handling and Mineral Filler Silo Emissions

The facility has the option to operate with 57.5% Aggregate and 35% RAP. The facility is also requesting to operate without RAP, resulting in a production with 92.5% Aggregate. Emissions were calculated with both scenarios and the most conservative scenario was used to calculate the hourly and annual emissions from the entire facility.

Background information:

- Controlled hourly emissions from Units 1, 2, 7, and 8 were calculated using *EPA AP-42 13.2.4 Aggregate Handling and Storage Piles*, where the emission factor (EF) was calculated by using Equation 1 in Section 13.2.4.3 – Predictive Emission Factor Equations. Equation 1 uses units in lbs/ton, and the k factor refers to the particle sizes of particulate matter.

$$k, \text{PM}_{10} = 0.35$$

$$k, \text{PM}_{2.5} = 0.053$$

$$EF = k(0.0032) \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

- The controlled hourly emissions from Units 3, 4, 5, 6, 9, 10, 11, 12, 13 and 14 were calculated using emission factors from *EPA AP-42 11.19.2 – Crushed Stone Processing and Pulverized Mineral Processing*.
- The controlled hourly emissions for Unit 15 were calculated using emission factors from *EPA AP-42 11.12 – Concrete Batching*.
- The controlled annual emissions were calculated based on a limited annual production of 1,450,000 tons per year.

Controlled Emissions with and without RAP

Throughput	with RAP	
	tons/ year	tons/ hour
Asphalt TOTAL	1,450,000	400
Aggregate, 57.5%	833,750	230
RAP, 35%	507,500	140
Asphalt Cement, 6%	87,000	24
Mineral Filler, 1.5%	21,750	6

Throughput	without RAP	
	tons/ year	tons/ hour
Asphalt TOTAL	1,450,000	400
Aggregate, 92.5%	1,341,250	370
RAP, 0%	0	0
Asphalt Cement, 6%	87,000	24
Mineral Filler, 1.5%	21,750	6

Other Assumptions:

- RAP Storage Piles & RAP Feed Bin Loading (Units 7 and 8) have a 70% reduction in emission rate due to RAP material properties

Controlled Material Handling Emissions with RAP 35%

Unit		Process Rate	Emission Factor		Emissions w RAP 35%			
No.	Description		PM ₁₀	PM _{2.5}	<i>EF lbs/ton * Process Rate tons/hr = lbs/hr</i>			
					<i>EF lbs/ton * Process Rate tons/yr * 1ton/2000lbs = tpy</i>			
			tons/hr	lbs/ton	lbs/ton	PM ₁₀		PM _{2.5}
				lbs/hr	tpy	lbs/hr	tpy	
1	Cold Aggregate Storage Piles	230	0.0022	0.00034	0.5135	0.9307	0.0778	0.1409
2	Agg Feed Bin Loading	230	0.0022	0.00034	0.5135	0.9307	0.0778	0.1409
3	Agg Feed Bin Unl Conveyor	230	0.000046	0.000013	0.0106	0.0192	0.0030	0.0054
4	Agg Scalping Screen	230	0.00074	0.000050	0.1702	0.3085	0.0115	0.0208
5	Agg Scalping Screen Conveyor	230	0.000046	0.000013	0.0106	0.0192	0.0030	0.0054
6	Agg Conveyor Transfer	230	0.000046	0.000013	0.0106	0.0192	0.0030	0.0054
7	RAP Storage Pile	140	0.00067	0.00010	0.0938	0.1700	0.0142	0.0257
8	RAP Feed Bin Loading	140	0.00067	0.00010	0.0938	0.1700	0.0142	0.0257
9	RAP Bin Unloading Conveyor	140	0.000046	0.000013	0.0064	0.0117	0.0018	0.0033
10	RAP Screen	140	0.00074	0.00005	0.1036	0.1878	0.0070	0.0127
11	RAP Screen Recycle Unl Conveyor	140	0.000046	0.000013	0.0064	0.0117	0.0018	0.0033
12	RAP Crusher	140	0.00054	0.00010	0.0756	0.1370	0.014	0.025
13	RAP Screen Unl Conveyor	140	0.000046	0.000013	0.0064	0.0117	0.0018	0.0033
14	RAP Transfer Conveyor	140	0.000046	0.000013	0.0064	0.0117	0.0018	0.0033
15	Mineral Filler Silo	25	0.0047	0.0011	0.1175	0.0511	0.0271	0.0118

Color Key:

	EPA AP-42 13.2.4 – Aggregate Handling and Storage Piles
	EPA AP-42 11.19.2 – Crushed Stone Processing and Pulverized Mineral Processing
	EPA AP-42 11.12 – Concrete Batching

Controlled Material Handling Emissions with RAP 0%

Unit		Process Rate	Emission Factor		Emissions w/o RAP			
No.	Description		PM ₁₀	PM _{2.5}	<i>EF lbs/ton * Process Rate tons/hr = lbs/hr</i>			
					<i>EF lbs/ton * Process Rate tons/yr * 1ton/2000lbs = tpy</i>			
			tons/hr	lbs/ton	lbs/ton	lbs/hr	tpy	lbs/hr
1	Cold Aggregate Storage Piles	370	0.0022	0.00034	0.8260	1.4972	0.1251	0.2267
2	Agg Feed Bin Loading	370	0.0022	0.00034	0.8260	1.4972	0.1251	0.2267
3	Agg Feed Bin Unl Conveyor	370	0.000046	0.000013	0.0170	0.0308	0.0048	0.0087
4	Agg Scalping Screen	370	0.00074	0.00005	0.2738	0.4963	0.0185	0.0335
5	Agg Scalping Screen Conveyor	370	0.000046	0.000013	0.0170	0.0308	0.0048	0.0087
6	Agg Conveyor Transfer	370	0.000046	0.000013	0.0170	0.0308	0.0048	0.0087
7	RAP Storage Pile	0	0.00067	0.00010	0.0000	0.0000	0.0000	0.0000
8	RAP Feed Bin Loading	0	0.00067	0.00010	0.0000	0.0000	0.0000	0.0000
9	RAP Bin Unloading Conveyor	0	0.000046	0.000013	0.0000	0.0000	0.0000	0.0000
10	RAP Screen	0	0.00074	0.00005	0.0000	0.0000	0.0000	0.0000
11	RAP Screen Recycle Unl Conveyor	0	0.000046	0.000013	0.0000	0.0000	0.0000	0.0000
12	RAP Crusher	0	0.00054	0.00010	0.0000	0.0000	0.0000	0.0000
13	RAP Screen Unl Conveyor	0	0.000046	0.000013	0.0000	0.0000	0.0000	0.0000
14	RAP Transfer Conveyor	0	0.000046	0.000013	0.0000	0.0000	0.0000	0.0000
15	Mineral Filler Silo	25	0.0047	0.0011	0.1175	0.0511	0.0271	0.0118

Color Key:

	<i>EPA AP-42 13.2.4 – Aggregate Handling and Storage Piles</i>
	<i>EPA AP-42 11.19.2 – Crushed Stone Processing and Pulverized Mineral Processing</i>
	<i>EPA AP-42 11.12 – Concrete Batching</i>

Drum Dryer/Mixer, Drum Unloading, Silo Unloading, Asphalt Tanks, and Yard Emissions

Background Information:

- Emission factors from AP-42 11.1 were used in calculating the controlled emissions of Unit 16 Drum Dryer/Mixer, Unit 17 Drum Unloading, Unit 18 Silo Unloading and Unit 22 HMA Yard.

Controlled Emission Factors for Units 16, 17, 18, and 22

Unit		NOx	CO	VOC	SO2	PM10	PM2.5
		lb/ton	lb/ton	lb/ton	lb/ton	lb/ton	lb/ton
16	Drum Mixer	0.0260	0.1300	0.0320	0.0034	0.0230	0.0230
	<i>AP 42 Table</i>	<i>11.1-7</i>	<i>11.1-7</i>	<i>11.1-8</i>	<i>11.1-7</i>	<i>11.1-3 Fabric Filter</i>	
17	Drum Unloading		0.000472	0.004875		0.000234	0.000234
	<i>AP 42 Table</i>	<i>11.1-14, Silo Filling</i>					
18	Silo Unloading (<i>loadout</i>)		0.000436	0.001344		0.000291	0.000291
	<i>AP 42 Table</i>	<i>11.1.14 Plant Loadout</i>					
22	Yard		0.000352	0.0011			
	<i>AP 42 11.1.2.5</i>		<i>VOC * 0.32</i>	<i>pg 11.1-9</i>			

- The emission factors for Unit 17 Drum Unloading and Unit 18 Silo Unloading were based on the formulas provided in AP-42 Table 11.1-14:

Formulas for Emission Factors for Unit 17 Drum Unloading

Emission Factor, Units	Formula
PM EF, lb/ton:	$0.000332 + 0.00105 (-V)e^{(((0.0251)(T + 460)) - 20.43)} * 0.40$
TOC EF, lb/ton:	$0.0504(-V)e^{(((0.0251)T + 460)) - 20.43} * 0.40$
CO, EF, lb/ton:	$0.00488(-V)e^{(((0.0251)(T + 460)) - 20.43)} * 0.40$

Formulas for Emission Factors for Unit 18 Silo Unloading

Emission Factor, Units	Formula
PM EF, lb/ton:	$0.000181 + 0.00141 (-V)e^{(((0.0251)(T + 460)) - 20.43)}$
TOC EF, lb/ton:	$0.0172(-V)e^{(((0.0251)T + 460)) - 20.43}$
CO, EF, lb/ton:	$0.00558(-V)e^{(((0.0251)(T + 460)) - 20.43)}$

- The following input data were used in the Drum Unloading and Silo Unloading equations:

Input Data for Units 17 and 18 Equations:

Input	Value, Units
Throughput	400 tph
Controlled Throughput	1,450,000 tpy
V, volatility:	-0.5
Average mix temp:	325 °F
Silo storage temp (Unit #18):	280 °F
Controlled Hours:	3,625 hrs/year = 1,450,000 tpy / 400 tph

- The equations for calculating the controlled emissions from Unit 16 Drum Dryer/Mixer, Unit 17 Drum Unloading, Unit 18 Silo Unloading, and Unit 22 Yard are the following:

$$lbs/hr = \text{Emission Factor (lb/ton)} * \text{Hourly Throughput (tons/hr)}$$

$$tons/year = \text{Hourly Emission Rate (lbs/hr)} * \text{Controlled Hours/Year} * 1 \text{ ton/} 2000 \text{ lbs}$$

- The controlled emissions from Unit 16 Drum Dryer/Mixer, Unit 17 Drum Unloading, Unit 18 Silo Unloading, and Unit 22 Yard are the following:

Unit No.	NOx		CO		VOC		SO2		PM10		PM2.5	
	lbs/hr	tpy	pph	tpy	pph	tpy	pph	tpy	pph	tpy	pph	tpy
16	10.400	18.850	52.000	94.250	12.800	23.200	1.360	2.465	9.200	16.675	9.200	16.675
17			0.189	0.342	1.950	3.534			0.094	0.170	0.094	0.170
18			0.174	0.32	0.538	0.975			0.116	0.211	0.116	0.211
22			0.141	0.255	0.440	0.798						

Heater Emissions

The emissions from Unit 20 Heater were calculated while operating with natural gas.

Summary Information for Unit 20 Heater:

Input	Value
Rated Capacity	2,000,000 BTU/hr
Heat Rate	945 BTU/scf*
Fuel Rate	2,600 scf/ hr*
Fuel Type	Natural gas
Uncontrolled hours	8,760 hrs/ yr
Controlled hours	8,760 hrs/yr
Sulfur	0.75 grains/100 scf

* Value based on manufacturer's information

Equations:

*Hourly Emission Rate, lbs/hr = Emission Factor, (lb/10⁶ scf) * Fuel Usage (scf/hr) / 1,000,000*

*SO₂ Hourly Emission Rate, lbs/hr = Fuel Usage (scf/hr) * 0.75 gr/100 scf * 1 lb/7,000 gr * 2S*

*Annual Emission Rate, ton/yr = Hourly Emissions, lbs/hr * Uncontrolled hours/yr * 1 ton/2,000 lbs*

Natural Gas		NOx		CO		VOC		SO2		PM10		PM2.5	
*Emission Factor		100 lb/ 10 ⁶ scf		84 lb/ 10 ⁶ scf		11 lb/ 10 ⁶ scf		2600 scf/hr		7.6 lb/ 10 ⁶ scf		7.6 lb/ 10 ⁶ scf	
Source		AP42. T1.4.-1, Boiler <100 MMBtu/hr		AP42. T1.4.-1, Boiler <100 MMBtu/hr		AP42. T1.4-2		Heatec Mfg Info (pp. 199 of 265)		AP42. T1.4-2		AP42. T1.4-2	
		lbs/hr	ton/yr	lbs/hr	ton/yr	lbs/hr	ton/yr	lbs/hr	ton/yr	lbs/hr	ton/yr	lbs/hr	ton/yr
20	Unc	0.2600	1.1388	0.2184	0.9566	0.0286	0.1253	0.0056	0.0244	0.0198	0.0865	0.0198	0.0865
	Cont	0.2600	1.1388	0.2184	0.9566	0.0286	0.1253	0.0056	0.0244	0.0198	0.0865	0.0198	0.0865

Haul Road Emissions

The haul road emissions from paved roads for Unit 21 Haul Road Traffic were based on the number of trucks and vehicle miles traveled for the trucks per hour and trucks per year. The trucks per hour and year are a direct result of the hourly and annual throughputs. The emissions take into account the emission factor for paved roads, which was calculated according to AP-42 13.2.1.

Maximum Number of Trucks

Steps to determine maximum number of trucks:

1) Determine throughput calculations according to material mix percentages.

a) Equations:

$$\text{Material mix percentage} * \text{Total annual asphalt throughput} = \text{tpy}$$

$$\text{Material mix percentage} * \text{Total hourly asphalt throughput} = \text{tph}$$

Material w/RAP 35%	tpy	tph
Asphalt TOTAL	1,450,000.00	400.00
Aggregate, 57.5%	833,750.00	230.00
RAP, 35%	507,500.00	140.00
Asphalt Cement, 6.0%	87,000.00	24.00
EvoTherm, 0.10%	1,450.00	0.40
Mineral Filler, 1.5%	21,750.00	6.00

Material w/RAP 0%	tpy	tph
Asphalt TOTAL	1,450,000.00	400.00
Aggregate, 92.5%	1,341,250.00	370.00
RAP, 0%	0.00	0.00
Asphalt Cement, 6.0%	87,000.00	24.00
EvoTherm, 0.10%	1,450.00	0.40
Mineral Filler, 1.5%	21,750.00	6.00

2) Determine length of each haul road.

a) Equations:

$$1 \text{ mile} = 1,609 \text{ meters}$$

Road Name	Length (meters)	Length (miles)
Asphalt	163.6	0.10165658
Aggregate*	103.1	0.12812706*
EvoTherm + Cement + RAP	227.3	0.14123802
Mineral Filler	190	0.11806082
Total Roads	684	0.49

*Aggregate road length was doubled during conversion to miles because traffic is only one-way and trucks must turn around to exit the road.

4) Determine the maximum number of trucks per hour and trucks per year using material throughput and truck load capacity, for RAP 35% and RAP 0%.

a) Equations for Asphalt, Aggregate, RAP, Asphalt Cement, & Mineral Filler Trucks:

$$\text{Material throughput (tph)} / \text{Truck load capacity (ton)} = \text{truck/hr}$$

$$\text{Truck per hour} * \text{hr per year} = \text{Uncontrolled truck/yr}$$

$$\text{Material throughput (tpy)} / \text{Truck load capacity (ton)} = \text{Controlled truck/yr}$$

b) Equations for EvoTherm Truck:

$$\text{Gal/hr rate} * \text{Delivery Load (gal)} = \text{truck/hr}$$

$$(\text{Gal/yr rate}) * (\text{Delivery Load per Truck}) = \text{truck/yr}$$

Background information for determining maximum number of EvoTherm Trucks:

EvoTherm Truck Info:	Value
Delivery load of one truck (gal)	5000
Mix Ratio, 0.10% of 400 ton/hr	0.40
Mix Ratio, 0.10% of 1,450,000 ton/yr	1,450.00
Gal/hr rate	96.4
Gal/yr rate (for contr truck/yr calc)	349,398

Maximum Number of Trucks with RAP 35%:

Material	w/Rap 35%	Uncontr	Contr
	per hr	per year	per year
Asphalt	16.00	140,160.00	58,000.00
Aggregate	9.20	80,592.00	33,350.00
RAP	5.60	49,056.00	20300.00
Asphalt Cement	1.0	8,409.60	3,480.00
EvoTherm	0.02	168.87	69.88
Mineral Filler	0.24	2,102.40	870.00
TOTAL	32	280,488.87	116,069.88

Maximum Number of Trucks with RAP 0%:

Material	w/Rap 0%	Uncontr Trucks	Contr Trucks
	per hr	per year	per year
Asphalt	16.00	140,160.00	58,000.00
Aggregate	14.80	129,648.00	53,650.00
RAP	0.00	0.00	0.00
Asphalt Cement	1.0	8,409.60	3,480.00
EvoTherm	0.02	168.87	69.88
Mineral Filler	0.24	2,102.40	870.00
TOTAL	32	280,488.87	116,069.88

Vehicle Miles Traveled:

Steps to determine vehicle miles traveled:

1) Determine vehicle miles traveled per hour (VMT/hr) to use in controlled lb/hr emissions.

a) Equation:

$$\text{Road Length (mi)} * \text{Trucks per hour} = \text{mi/hr} = \text{VMT/hr}$$

VMT/hr for RAP 35%:

Road Name	VMT/hr
Asphalt	1.63
Aggregate	1.18
EvoTherm + Cement + RAP	0.93
Mineral Filler	0.028
Total VMT/hr	3.76

VMT/hr for RAP 0%:

Road Name	VMT/hr
Asphalt	1.63
Aggregate	1.90
EvoTherm + Cement + RAP	0.14
Mineral Filler	0.028
Total VMT/hr	3.69

2) Determine vehicle miles traveled per year to use in controlled tpy emissions.

a) Equation:

$$\text{Road Length (mi)} * \text{Trucks per year} = \text{mi/yr} = \text{VMT/yr}$$

VMT/yr for RAP 35%:

Road Name	VMT/yr
Asphalt	5897.33
Aggregate	4273.94
EvoTherm + Cement + RAP	3,369.22
Mineral Filler	102.73
Total VMT/yr	13643.22

VMT/yr for RAP 0%:

Road Name	VMT/yr
Asphalt	5897.33
Aggregate	6875.47
EvoTherm + Cement + RAP	501.48
Mineral Filler	102.73
Total VMT/yr	13377.02

Emission Factor Calculations using AP-42 13.2.1 Paved Haul Roads:

Controlled Emission Factor Equation:

$$E_{ext} = [k(sL)^{0.91} * (w)^{1.02}] * [1 - (P/4N)]$$

Emission Factor Variables:

sL: 0.6 g/m²
 P: 60 days
 N: 365 days in averaging period
 w: 27.5 tons

Emission Factors Calculations

Emission Factors	PM ₁₀	PM _{2.5}
k, lbs/VMT	0.0022	0.00054
E_{ext} (Controlled lb/VMT)	0.038943488	0.0095589

Controlled Emissions Calculations for Haul Roads:

Equations:

$$lb/hr = VMT \text{ per hr} * E_{ext} \text{ lb/VMT}$$

$$tpy = VMT/yr * E_{ext} \text{ lb/VMT} * 1 \text{ ton}/2000 \text{ lb}$$

Controlled Emissions for RAP 35%:

Road Name	Controlled Emissions			
	PM10		PM2.5	
	lbs/hr	tpy	lbs/hr	tpy
Asphalt	0.063	0.11	0.016	0.028
Aggregate	0.046	0.083	0.011	0.020
RAP + Asphalt Cement + EvoTherm	0.036	0.066	0.009	0.016
Mineral Filler	0.0011	0.0020	0.00027	0.00049
Total	0.15	0.27	0.036	0.065

Controlled Emissions for RAP 0%:

Road Name	Controlled Emissions			
	PM10		PM2.5	
	lbs/hr	tpy	lbs/hr	tpy
Asphalt	0.063	0.11	0.016	0.028
Aggregate	0.074	0.13	0.018	0.033
RAP + Asphalt Cement + EvoTherm	0.0054	0.010	0.0013	0.0024
Mineral Filler	0.0011	0.0020	0.00027	0.00049
Total	0.14	0.26	0.035	0.064

H₂S Emissions:

The H₂S emissions from Unit 16 Drum Dryer/Mixer, Unit 17 Drum Unloading, and Unit 18 Silo Unloading were calculated using emission factors from the North Carolina Spreadsheet for Asphalt Plants, available at <https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/emission-estimation-spreadsheets>. The annual emissions were based on the hours of operation per year as a result of the limited annual throughput (1,450,000 tons per year / 400 tons per hour = 3,625 hours per year).

Equations:

1. The equations for calculating the controlled H₂S emissions for Unit 16 Drum Dryer/Mixer, Unit 17 Drum Unloading, and Unit 18 Silo Unloading are the following:

*Hourly Emission Rate, lbs/ hr = Emission Factor, (lb/ton) * Maximum Hourly Throughput (tons/hr)*

*Contr Annual Emission Rate, tons/yr = Hourly Contr Emissions, lbs/hr * Contr hours/year * 1 ton/2000 lb*

Unit No.	Unit Description	Process Rate	Emission Factor	H ₂ S Emissions	
		tons/ hr	lb/ ton	lbs/ hr	tons/ yr
16, 16b	Drum Dryer/Mixer and Baghouse	400	0.0000518	0.021	0.038
17	Drum Mixer Unloading	400	0.00000146	0.00058	0.0011
18	Asphalt Silo Unloading	400	0.00000146	0.00058	0.0011
Total H₂S controlled emissions				0.02189	0.0397

HAP Emissions

The HAP emissions from Unit 16 Drum Dryer/Mixer and Unit 20 Heater were calculated using the emission factors from AP-42, Section 11.1, Tables 11.1-10 and 11.1-12.

HAP Emissions Equation Inputs:

Input information for HAP emission equations for Unit 16 Drum Dryer/Mixer:

Input	Value
Average Hourly Production Rate:	400 tons per hour
Yearly Production Rate:	1,450,000 tons per year
Type of Fuel:	Natural Gas

Input information for HAP emission equations for Unit 20 Heater:

Input	Value
Rated Capacity	2,000,000 BTU/hr
Heat Rate	945 BTU/scf*
Fuel Rate	2,600 scf/ hr*
Fuel Type	Natural gas
Uncontrolled hours	8,760 hrs/ yr
Controlled hours	8,760 hrs/yr
Sulfur	0.75 grains/100 scf

* Fuel usage based on manufacturer's information

Equations:

Unit 16 Drum Dryer/Mixer

$$\begin{aligned} \text{lbs/hr} &= EF \text{ (lb/ton)} * \text{Hourly Throughput (tons/hr)} \\ \text{tons/year} &= \text{Hourly Emission Rate (lbs/hr)} * \text{Controlled Hours/ Year} * 1 \text{ ton/ 2000 lbs} \end{aligned}$$

Unit 20 Heater

$$\begin{aligned} \text{lbs/hr} &= EF \text{ (lb/10}^6 \text{ scf)} * \text{Fuel Usage (scf/hr)} / 1,000,000 \\ \text{tons/year} &= \text{Hourly Emission Rate (lbs/hr)} * \text{Uncontrolled Hours/ Year} * 1 \text{ ton/ 2000 lbs} \end{aligned}$$

HAPs Summary for Emission Factors for Unit 16:

HAPs from AP-42 for Unit 16	
<i>AP42 11.1-10</i>	
HAP Name	Emission Factor (lb/ton)
Benzene	0.00039
Ethylbenzene	0.00024
Formaldehyde	0.0031
Hexane	0.00092
Isooctane	0.00004
Methyl Chloroform	0.000048
Toluene	0.00015
Xylene	0.0002
Total non-PAH HAPs	0.005088
2-methylnapthalene	0.000074
Acenaphthene	0.0000014
Acenaphthylene	0.0000086
Anthracene	0.00000022
Benzo(a)anthracene	0.00000021
Benzo(a)pyrene	9.8E-09
Benzo(b)fluoranthene	1.00E-07
Benzo(e)pyrene	1.10E-07
Benzo(g,h,i)perylene	4.00E-08
Benzo(k)fluoranthene	4.10E-08
Chrysene	1.80E-07
Fluoranthene	6.10E-07
Fluorene	3.80E-06
Indeno(1,2,3-cd)pyrene	7.00E-09
Napthalene	9.00E-05
Perylene	8.80E-09
Phenanthrene	7.60E-06
Pyrene	5.40E-07
Total PAH HAPs	0.000187477

HAPs Metal Summary from AP-42 for Unit 16	
<i>AP42 11.1-12</i>	
HAP Name	Emission Factor (lb/ton)
Arsenic	5.60E-07
Beryllium	0
Cadmium	4.10E-07
Chromium	5.50E-06
Cobalt	2.60E-08
Hexavalent chromium	4.50E-07
Lead	6.20E-07
Manganese	7.70E-06
Mercury	2.40E-07
Nickel	6.30E-05
Phosphorus	2.80E-05
Selenium	3.50E-07
Total HAP Metals	0.000107

Total non-PAH HAPs, PAH HAPs, and HAP Metals for Unit 16:

TOTAL	0.00538 lb/ton
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HAPs Summary for Unit 20 Emission Factors from AP-42:

<i>AP42. 1.4-2</i>	
<i>AP-42 1.4-3</i>	
<i>AP-42 1.4-4</i>	
HAP Name	Emission Factor in lb/10⁶ scf
Lead	0.0005
2-Methylnaphthalene	0.000024
3-Methylchloranthrene	0.0000018
7,12-Dimethylbenz(a)anthracene	0.000016
Acenaphthene	0.0000018
Acenaphthylene	0.0000018
Anthracene	0.0000024
Benz(a)anthracene	0.0000018
Benzene	0.0021
Benzo(a)pyrene	0.0000012
Benzo(b)fluoranthene	0.0000018
Benzo(g,h,i)perylene	0.0000012
Benzo(kperylene	0.0000018
Chrysene	0.0000018
Dibenzo(a,h)anthracene	0.0000012
Dichlorobenzene	0.0012
Fluoranthene	0.000003
Fluorene	0.0000028
Formaldehyde	0.075
Hexane	1.8
Indeno(1,2,3-cd)pyrene	0.0000018
Napthalene	0.00061
Phenanathrene	0.000017
Pyrene	0.000005
Toluene	0.0034
Arsenic	0.0002
Beryllium	0.000012
Cadmium	0.0011
Chromium	0.0014
Cobalt	0.000084
Manganese	0.00038
Mercury	0.00026
Nickel	0.0021
Selenium	0.000024
TOTAL	1.8879582

Controlled HAP Emissions for Units 16 and 20:

Emission Unit		Total HAPs from HAP Summary Table	Total HAPs Emissions	
		<i>Emission Factor</i>	lb/hr	tpy
16	Drum Mixer	0.00538 lb/ton	2.15	3.90
20	Heater	1.8879582 lb/10 ⁶ scf	0.0049	0.022