



AIR QUALITY GENERAL CONSTRUCTION PERMIT

PERMIT NUMBER: GCP-DMHMAP-1

Permit Name: Drum Mix Hot Mix Asphalt Plant

Project Description: Drum Mix Hot Mix Asphalt Plant

Typical Standard Industrial Classification (SIC) Code: 2951, Asphalt Paving Mixtures and Blocks

Pursuant to Chapter 14 of the Nebraska Air Quality Regulations, the public has been notified by prominent advertisement of the proposed construction of air contaminant sources meeting the specific criteria of this general construction permit and the thirty (30) day period allowed for comments has elapsed. This general construction permit approves the construction of specific types of Drum Mix Hot Mix Asphalt Plants. This permit document and the associated application make up the complete permit for the specific source identified in the application.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard. The permit holder, owner, and operator of the facility shall assure that the installation, operation, and maintenance of all equipment is in compliance with all of the conditions of this permit.

The undersigned issues this permit on behalf of the Director under the authority of Nebraska Administrative Code Title 129 – Nebraska Air Quality Regulations as amended July 6, 2015.

(This is a final unexecuted draft of a permit – For an official executed copy visit the NDEQ website or contact the NDEQ Records Management Section at 402.471.3557 or ndeq.records@nebraska.gov)

11/5/15

{ORIGINAL SIGNED}

Date

Shelley Schneider, Air Administrator
Air Quality Division

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ABBREVIATIONS, SYMBOLS, and UNITS OF MEASURE

AP-42	Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources	MW	Megawatt
bhp	Brake Horsepower	NAAQS	National Ambient Air Quality Standards
BM	Batch Mix	NDEQ	Nebraska Department of Environmental Quality
BMP	Best Management Practice	NESHAP	National Emission Standards for Hazardous Air Pollutants
Btu	British Thermal Unit	NO ₂	Nitrogen Dioxide
CAA	Clean Air Act	NO _x	Nitrogen Oxides
CE	Control Equipment	NSPS	New Source Performance Standard
cf	Cubic feet	Pb	Lead (chemical abbreviation)
CFR	Code of Federal Regulations	PbR	Permit-by-Rule
CO	Carbon Monoxide	PM	Particulate Matter
CO ₂	Carbon Dioxide	PM ₁₀	Particulate Matter with and aerodynamic diameter equal to or less than 10 microns
CO ₂ e	CO ₂ equivalent	PM _{2.5}	Particulate Matter with and aerodynamic diameter equal to or less than 2.5 microns
CP	Construction Permit	ppb	Parts per Billion
DM	Drum Mix	ppm	Parts per Million
dscf	Dry Standard Cubic Feet	ppmv	Parts per Million by volume
dscfm	Dry Standard Cubic Feet per Minute	ppmvd	Parts per Million by volume, dry basis
EPA	Environmental Protection Agency	PSD	Prevention of Significant Deterioration
EQC	Environmental Quality Council	PTE	Potential to Emit
EP	Emission Point	scf	Standard Cubic Feet
EU	Emission Unit	SIC	Standard Industrial Classification
FID	Facility Identification Number	SIP	State Implementation Plan
FDCP	Fugitive Dust Control Plan	SO ₂	Sulfur Dioxide
FIP	Federal Implementation Plan	SO _x	Sulfur Oxides
FR	Federal Register	tpy	Tons per year
ft	Feet	TRS	Total Reduced Sulfur
GHGs	Greenhouse Gases	TSP	Total Suspended Particulate Matter
HMAP	Hot Mix Asphalt Plant	UTM	Universal Transverse Mercator
H ₂ S	Hydrogen Sulfide	VHAP	Volatile Hazardous Air Pollutant
HAP	Hazardous Air Pollutant	VMT	Vehicle Miles Traveled
hp	Horsepower	VOC	Volatile Organic Compound
hr	Hour		
lb	Pound		
Mgal	One Thousand gallons		
MMBtu	One Million British Thermal Units		
MMscf	One Million Standard Cubic Feet		
MSDS	Material Safety Data Sheet		

I. GENERAL CONDITIONS

- (A) Coverage granted under this permit is not transferable to another source or location except as provided for in Condition IV. {Chapter 9}
- (B) Coverage under this permit does not relieve the owner or operator of the source from the responsibility to comply with all applicable portions of the Nebraska Air Quality Regulations and any other requirements under local, State, or Federal law. Any permit noncompliance shall constitute a violation of the Nebraska Environmental Protection Act and the Federal Clean Air Act, and is grounds for enforcement action or permit revocation. {Chapter 41 and Chapter 17, Section 011}
- (C) Application for review of plans or advice furnished by the Director will not relieve the owner or operator of legal compliance with any provision of these regulations, or prevent the Director from enforcing or implementing any provision of these regulations. {Chapter 37}
- (D) Any owner or operator who failed to submit any relevant facts or who submitted incorrect information in a general permit application shall, upon becoming aware of such failure or incorrect submittal, promptly reapply for coverage or submit a construction permit application under the provisions of Chapter 17. {Chapter 17, Sections 006, 007, and 008}
- (E) Approval to construct will become invalid if a continuous program of construction is not commenced within 18 months after the date of coverage granted by this general construction permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time. {Chapter 17, Section 012}
- (F) The owner or operator shall allow the NDEQ, EPA or an authorized representative, upon presentation of credentials to: {Neb. Rev. Statute §81-1504}
- (1) Enter upon the owner or operator's premises at reasonable times where a source subject to this permit is located, emissions-related activity is conducted or records are kept, for the purpose of ensuring compliance with the permit or applicable requirements;
 - (2) Have access to and copy, at reasonable times, any records, for the purpose of ensuring compliance with the permit or applicable requirements;
 - (3) Inspect at reasonable times any facilities, pollution control equipment, including monitoring and air pollution control equipment, practices, or operations, for the purpose of ensuring compliance with the permit or applicable requirements;
 - (4) Sample or monitor at reasonable times substances or parameters for the purpose of ensuring compliance with the permit or applicable requirements.
- (G) When requested by the NDEQ, the owner or operator shall submit completed emission inventory forms for the preceding year to the NDEQ by March 31 of each year. {Chapter 6}
- (H) Open fires are prohibited except as allowed by Chapter 30.
- (I) Particulate Matter – General Requirements: {Chapter 32}
- (1) The owner or operator shall not cause or permit the handling, transporting or storage of any material in a manner, which allows particulate matter to become airborne in such

quantities and concentrations that it remains visible in the ambient air beyond the property line.

- (2) The owner or operator shall not cause or permit the construction, use, repair or demolition of a building, its appurtenances, a road, a driveway, or an open area without applying all reasonable measures to prevent particulate matter from becoming airborne and remaining visible beyond the property line. Such measures include, but are not limited to, paving or frequent cleaning of roads, driveways and parking lots; application of dust-free surfaces; application of water; and planting and maintenance of vegetative ground cover.
- (J) If and when the Director declares an air pollution episode as defined in Chapter 38, Section 003.01B, 003.01C, or 003.01D, the owner or operator shall immediately take all required actions listed in Title 129, Appendix I until the Director declares the air pollution episode terminated.
- (K) This permit may be revised (reopened and reissued) or revoked for cause in accordance with Title 129 and Nebraska Administrative Code Title 115 - Rules of Practice and Procedure. Conditions under which this permit will be revised or revoked for cause, include but are not limited to: {Title 129, Chapter 15, Section 006}
- (1) A determination by the Director, or the Administrator of EPA that:
- (a) the permit must be revised to ensure compliance with the applicable requirements;
- (b) the permit contains a material mistake or that inaccurate statements were made in the emissions standards or other terms or conditions of the permit.
- (2) A determination by the Director that the source or activity endangers human health or the environment and that the danger cannot be removed by a revision of the permit.
- (L) Coverage under this permit may be revoked for cause in accordance with Title 129 and Title 115. Conditions under which this permit will be revised or revoked for cause, include but are not limited to: {Title 129, Chapter 15, Section 006}
- (1) The existence at the source of unresolved noncompliance with applicable requirements or a term or condition of the permit, and refusal of the owner or operator to agree to an enforceable schedule of compliance to resolve the noncompliance;
- (2) The failure of the owner or operator to pay a penalty owed pursuant to court order, stipulation and agreement, or order issued by the Administrator of the EPA; or
- (3) The submittal by the owner or operator of false, incomplete, or misleading information to the NDEQ or EPA.

II. SPECIFIC CONDITIONS

- (A) The owner/operator of the source shall provide the following notifications to the NDEQ:
- (1) The date construction commenced as defined in Chapter 1. Notification shall be postmarked no later than 30 days after such date and include a summary description and whether the requirement to commence construction was met through: {Title 129, Chapter 17, Section 012}
 - (a) Initiating physical on-site construction activities of a permanent nature that meet the definition of “begin actual construction”, or
 - (b) Entering into binding agreements or contractual obligations. If this option is used, the notice shall also include a brief summary of each binding agreement or contractual obligation entered into, the date of the agreement or contract, and why it cannot be cancelled or modified without substantial loss to the owner or operator.
 - (2) The notification required in Condition II.(A)(1) shall also include an equipment list which must detail all equipment associated with the facility and the corresponding maximum capacities. {Title 129, Chapter 17, Sections 006, 007, and 008}
 - (3) The date on which the source first becomes operational, postmarked within 15 days after such date. {Chapter 7, Section 002.03}
- (B) Recordkeeping: Records of all measurements, results, inspections, and observations as required to ensure compliance with all applicable requirements shall be maintained on-site as follows:
- (1) All calculations and records required throughout this permit shall be completed no later than the fifteenth (15th) day of each calendar month and shall include all information through the previous calendar month, unless otherwise specified in this permit.
 - (2) All records required throughout this permit shall be kept for a minimum of five (5) years and shall be clear and readily accessible to NDEQ representatives, unless otherwise specified in this permit.
 - (3) Copies of all notifications, reports, test results, and plans.
 - (4) Calibration records for all operating parameter monitoring equipment.
 - (5) Operation and Maintenance manuals, or equivalent documentation, detailing proper operation and maintenance of all permitted emission units, required control equipment, and required monitoring equipment shall be kept for the life of the equipment.
 - (6) Records documenting equipment failures, malfunctions, or other variations, including date and time of occurrence, remedial action taken, and when corrections were made to each piece of permitted equipment, required control equipment, and required monitoring equipment.
- (C) All permitted emission units, control equipment, and monitoring equipment shall be properly installed, operated, and maintained. {Chapter 34, Section 006 and Chapter 35 Sections 006.02 and 006.05}
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- (D) When performance testing is required it shall be completed and submitted to the NDEQ as follows: {Chapter 34}
- (1) Performance tests shall be conducted while operating at maximum capacity (operating conditions producing the highest emissions or loading to the control device) within sixty (60) days after first reaching the maximum capacity, but not more than 180 days after the start-up of operations of each unit, unless otherwise specified by the NDEQ.
 - (2) Testing shall be conducted according to the methodologies found in Title 129, Chapter 34, Section 002, or other NDEQ approved methodologies.
 - (3) Performance tests shall be conducted for a minimum of three (3) one hour runs unless another run time is specified by the applicable Standard or as deemed appropriate by the NDEQ.
 - (4) The owner or operator of a source shall provide the NDEQ at least thirty (30) days written notice prior to testing to afford the NDEQ an opportunity to have an observer present. The owner or operator shall also provide the NDEQ with an emissions testing protocol at least thirty (30) days prior to testing. The NDEQ may, in writing, approve a notice of less than 30 days. If the testing is pursuant to an underlying requirement contained in a federal rule, the notice provisions of the underlying requirement apply.
 - (5) The owner or operator shall monitor and record the operating parameters for process and control equipment during the performance testing required in the permit.
 - (6) A written copy of the test results signed by the person conducting the test shall be provided to the NDEQ within sixty (60) days of completion of the test unless a different period is specified in the underlying requirements of an applicable Federal Rule and will, at a minimum, contain the following items:
 - (a) A description of the source's operating parameters (e.g., production rates, firing rates of combustion equipment, fuel usage, etc.), control equipment parameters (e.g., baghouse fan speeds, scrubber liquid flow rates, etc.), and ambient conditions (e.g., weather conditions, etc.) during testing.
 - (b) Copies of all data sheets from the test run(s).
 - (c) A description and explanation of any erroneous data or unusual circumstance(s) and the cause for such situation.
 - (d) A final conclusion section describing the outcome of the testing.
- (E) Any emissions due to malfunctions, unplanned shutdowns, and ensuing start-ups that are, or may be, in excess of applicable emission limits shall be reported to the NDEQ in writing and mailed within 48 hours of the beginning of each period of excess emissions. {Chapter 35, Sections 004 and 005}

III.(A) Specific Conditions for Drum Mix Hot Mix Asphalt Plants

- (1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the maximum capacity and fuel type listed. Each emission unit shall be controlled by the required control equipment as indicated:

Emission Point ID#	Required Control Equipment ID# & Description	Emission Unit Description	Maximum Combustion Capacity	Permitted Fuel Type
EP-01	-	EU-01: Aggregate Storage Pile(s)	-	-
EP-02	-	EU-02: Conveyors	-	-
EP-03	-	EU-03: Screening	-	-
EP-04	-	EU-04: Asphalt Storage Tank	-	-
EP-05	-	EU-05: Load-Out	-	-
EP-06	C-01: Baghouse	EU-06: Dryer	500 MMBtu/hr	Propane, Natural Gas, Diesel, and Waste Oil
EP-07	-	EU-07: Hot oil heater	10 MMBtu/hr	Diesel and Natural Gas

- (2) Emission Limitations and Testing Requirements:

- (a) The emissions limitations of Chapter 20, Sections 001 and 002 apply to the emission points in Condition III.(A)(1). {Chapter 20}
- (b) The emission limitations and required test methods of 40 CFR 60, Subparts A and I (as of the issuance date of this permit) are identified in the following table. The intent of this condition is only to identify the applicable Federal emission limitation and test methods and is not to establish any new or different requirements than the underlying Federal Standard. {Chapter 18}

Emission Point ID#	Pollutant	Permitted Limit	Basis for Limit	Testing Method
All emission points identified in III.(A)(1)	PM	90 mg/dscm (0.04 gr/dscf)	40 CFR 60, Subpart I & Chapter 18	Method 5
	Opacity	20%	40 CFR 60, Subpart I & Chapter 18	Method 9

- (c) The source shall conduct performance tests on EP-06 in accordance with testing requirements and emission limitations required by 40 CFR 60 Subpart I not later than 180 days after start-up of operation in the state of Nebraska. {Chapter 34}
- (d) The NDEQ may waive the testing requirement of Condition III.(A)(2)(c) if the source submits valid performance test results demonstrating compliance with the emission limitations of 40 CFR 60 Subpart I. {Chapter 34}
- (3) Operational and Monitoring Requirements and Limitations
- (a) The production of hot mix asphalt shall not exceed the following maximum rates: {Chapter 17}

- (i) 500 tons per any hour;
 - (ii) 550,000 tons per consecutive twelve (12) calendar months; and
 - (iii) 550,000 tons during the first eleven (11) calendar months after permit coverage is obtained
- (b) Emissions from the dryer (EU-06) shall be controlled by a baghouse (C-01). {Chapter 17}
- (c) Operation and maintenance of the baghouse shall be in accordance with the following requirements: {Chapters 17 and 20}
- (i) The baghouse shall be operated and control emissions at all times when the associated emission units are in operation.
 - (ii) The baghouse shall be equipped with an operational pressure differential indicator. Pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is in operation.
 - (iii) Baghouse filter bags are to be inspected and replaced as often as necessary to ensure proper operation or more frequently as indicated by pressure differential indicator readings or other indication of bag failure.
 - (iv) The owner or operator shall maintain an on-site inventory of spare bags of each type used to ensure rapid replacement in the event of bag failure.
- (d) Observations of the emission units identified in Condition III.(A)(1) shall be conducted at least once each day during operation to determine whether there are visible emissions, leaks, or other indications that may necessitate corrective action. If corrective action is required, it shall occur immediately. {Chapter 34}
- (i) The results of the observations and any corrective actions shall be recorded in a log.
- (e) The following combustion capacities shall not be exceeded: {Chapter 17}
- (i) The combustion capacity of the Dryer (EU-06) shall not exceed 500 MMBtu/hr.
 - (ii) The combustion capacity of the hot oil heater (EU-07) shall not exceed 10 MMBtu/hr.
- (f) The dryer (EU-06) and the hot oil heater (EU-07) shall combust only the following fuel types. {Chapter 17}
- (i) The Dryer (EU-06) shall combust only Propane, Natural Gas, Diesel, and Waste Oil.
 - (ii) The hot oil heater (EU-07) shall combust only Diesel and Natural Gas.
- (g) The total area of the aggregate storage pile (EU-01) shall not exceed 5 acres.
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- (h) Refer to 40 CFR Part 60, Subpart I for operational and monitoring requirements and limitations that apply to applicable emission units in Condition III.(A)(1).

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The following standards are applicable to all emission points identified in III.(A)(1):

Applicable Standard	Title	Rule Citation
NSPS, Subpart A	General Provisions	Chapter 18, Sec. <u>001.01</u> 40 CFR 60.1
NSPS, Subpart I	Standards of Performance for Hot Mix Asphalt Facilities	Chapter 18, Sec. <u>001.21</u> 40 CFR 60.90

(5) Reporting and Recordkeeping Requirements:

- (a) The source shall maintain records documenting the maximum hot mix asphalt production capacity of the plant.
- (b) The source shall keep records for each month and each period of twelve consecutive months documenting the total amount of hot mix asphalt produced in tons.
- (c) Records documenting the date, time, and pressure differential reading for each day the associated baghouse is in operation.
- (d) Filter replacement records including the date the filter replacement occurred and the type of filter installed.
- (e) Records documenting the date, time, observations, and corrective actions taken for each day the associated baghouse is in operation.
- (f) Records documenting the types of fuel combusted in the dryer and the hot oil heater (EU-06 and EU-07).
- (g) Records documenting the maximum combustion capacity of the dryer and the hot oil heater (EU-06 and EU-07).
- (h) Records of the visible emission survey log.
- (i) Recordkeeping and Reporting as required by 40 CFR 60, Subparts A and I.

III.(B) Specific Conditions for Haul Roads**(1) Permitted Emission Points:**

All on-site haul roads with production-related truck traffic shall comply with the following conditions. {Chapters 17 and 32}

(2) Emission Limitations and Testing Requirements:

Haul roads are subject to the requirements of Title 129, Chapter 32, Section 002.

(3) Operational and Monitoring Requirements and Limitations:

(a) The owner or operator shall utilize best management practices (BMP) on haul roads. The effectiveness of the BMP to minimize emissions from haul roads will be demonstrated by compliance with General Condition I.(I). {Chapters 17 and 32}

(b) A survey of the plant property and haul roads shall be conducted for each day of operation during daylight hours to determine if visible fugitive emissions are being generated and leaving plant property. Implementation of BMP shall be taken upon observation of visible fugitive emissions leaving plant property. {Chapter 32}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the haul roads.

(5) Reporting and Recordkeeping Requirements:

(a) Records shall be kept documenting the use of BMP on haul roads.

(b) Records shall be kept documenting the date and time of fugitive dust surveys, whether visible emissions crossed site boundaries, and any corrective action taken if visible emissions are observed in areas to which the public has access.

IV. Specific Conditions for Relocation

- (A) The owner or operator shall notify the Director at least 20 days in advance of any proposed change in source location. The following information shall be provided for the proposed new location: {Chapter 10}
- (1) A specific description of the source, including Standard Industrial Classification (SIC),
 - (2) A legal description, accurate to the nearest quarter section,
 - (3) Present or previous use,
 - (4) Distance to the nearest occupied building,
 - (5) General description of the site location and adjacent land use,
 - (6) The anticipated dates of operation of the source at the proposed new location,
 - (7) Contact information for the responsible on site source operator including: name, mailing address, and telephone number,
 - (8) The source FID number assigned by the Department, and
 - (9) The relocation notification shall be signed by a responsible source official or source owner certifying its content.
- (B) Relocation within any of the following jurisdictions will require additional notifications:
- (1) Lancaster County {Neb. Rev. Statute §81-1504(23)}
 - (a) If the proposed new location is within Lancaster County, the source shall also notify the Air Quality Section of the Lincoln-Lancaster County Health Department (LLCHD) at least 20 days in advance of the proposed location change. An additional permit may also be required from LLCHD if the source intends to locate within this jurisdiction.
 - (2) City of Omaha {Neb. Rev. Statute §81-1504(23)}
 - (a) If the proposed new location is within 3 miles of the Omaha Corporate City limits, the source shall also notify the Air Quality Section at Omaha Air Quality Control (OAQC) at least 20 days in advance of the proposed location change. An additional permit may also be required from OAQC if the source intends to locate within this jurisdiction.
 - (3) Tribal Lands
 - (a) If the proposed new location is on Tribal Lands, the source shall also notify and receive approval from the United States Environmental Protection Agency Region VII office and/or the Tribe, as appropriate, at least 20 days advance of the

proposed location change. An additional permit may also be required if the source wants to locate within these jurisdictions.

- (4) Cass County {Chapter 21}
 - (a) If the proposed new location is within Cass County, Nebraska, rock processing operations at the source are subject to Chapter 21 requirements requiring 85% reduction in potential emissions from conveying, transfer operation, and railcar and truck loading. Demonstration of the 85% reduction in potential emissions must be submitted with the change in source location notification. An air quality impact analysis, including dispersion modeling, may also be required to ensure compliance with Title 129, Chapter 4 prior to locating in Cass County.
- (C) The Director may disapprove a new proposed location for a temporary source if operation in the new location would cause or contribute to a violation of state or local standards or otherwise adversely affect human health or the environment. {Chapter 10}



Typical Standard Industrial Classification Code: 2951, Asphalt Paving Mixtures and Blocks

Typical North American Industry Classification System Code: 324121 - Asphalt Paving Mixture and Block Manufacturing

DESCRIPTION OF GENERAL CONSTRUCTION PERMIT:

The Nebraska Department of Environmental Quality (NDEQ) has determined there are numerous similar sources in Nebraska that are subject to the same Federal and State regulatory requirements. Chapter 9 of Nebraska Administrative Code Title 129 - Air Quality Regulations allows the NDEQ to issue a general construction permit (GCP) for these sources. This GCP follows the applicable procedures of Chapters 9, 14, and 17 of Title 129. The owner of a source that qualifies for this GCP must apply to the NDEQ for coverage under the applicable terms of the GCP. Each application must include all information necessary to determine qualification for, and to ensure compliance with, the GCP.

The NDEQ will notify the applicant of the determination of coverage under this GCP for the source identified in the application. If the Director of the NDEQ denies coverage of the source under the GCP, the applicant may request an adjudicative hearing in accordance with the procedures established in Title 115 - Rules of Practice and Procedure. The NDEQ may issue coverage under a GCP to an individual source without repeating the notice and comment procedures required in Chapter 14 of Title 129. The NDEQ shall maintain a list of all sources covered by general permits, which shall be available for public review.

DESCRIPTION OF THE SOURCE GROUP:

The drum mix hot mix asphalt plant permitted herein may be used as a portable or stationary plant. The materials used are a mixture of size-graded, high quality aggregate and liquid asphaltic cement, which are heated and mixed in measured quantities to produce hot mix asphalt (HMA). This GCP is only applicable to counter flow drum mix HMA Plants (DMHMAP) with a maximum HMA production capacity of 500 tons or less per hour. Please, refer to the US Environmental Protection Agency's (US EPA) Compilation of Air Pollutant Emission Factors (AP-42), Chapter 11.1 for more information about HMA plant types. The plant's emission units may consist of aggregate storage pile(s), conveyors, screening, storage silo(s), a rotary drum dryer, and a hot oil heater. An engine will typically accompany a DMHMAP.

This GCP does not permit the installation of a stationary engine. However, if the engine is portable and will not remain at the same location for more than 12 consecutive months, it will be considered a non-road engine and therefore is not subject to stationary source permitting.

TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

Potential emissions from the DMHMAP were calculated using emission factors from the US EPA AP-42. Detailed emission calculations and emission factor citations are included in the attachment to this fact sheet. The expected air pollutants for each process evaluated for their potential emissions are shown in the table below:

Equipment/Process	Expected Pollutants
Aggregate storage, transfer, and screening	PM, PM ₁₀ , and PM _{2.5}
Aggregate Drying and hot oil heater	PM, PM ₁₀ , PM _{2.5} , SO _x , NO _x , CO, VOC, HAPs, and GHGs
Silo filling and loadout	PM, PM ₁₀ , PM _{2.5} , CO, VOC, and HAPs

These processes are discussed in detail below.

Aggregate storage piles, transfer, and screening

Processing begins as the aggregate is hauled from the storage piles and placed in the appropriate hoppers of the cold feed unit and screened. The material is metered from the hoppers onto a conveyer belt and is transported into the rotary drum dryer. The GCP does not authorize the total area of the storage piles to exceed 5 acres.

Emission factors for aggregate storage piles, transfer, and screening are derived from AP-42, Chapters 11.19 and 13.2.

Aggregate rotary drum dryer

Dryers are equipped with flights designed to tumble the aggregate inside the drum to promote better drying efficiency. In counter flow drum mix plants, the liquid asphalt cement-mixing zone is located behind the burner flame zone to remove the materials from direct contact with hot exhaust gases. Liquid asphalt cement flow is controlled by a variable flow pump, which is electronically linked to the virgin aggregate and reclaimed asphalt pavement (RAP) weigh scales. It is injected into the mixing zone along with any RAP and particulate matter from the attached baghouse. This GCP will only be valid for DMHMAP with dryer capacities no greater than 500 MMBtu/hr and limits the dryer to combusting only the following fuels: Propane, Natural Gas, Diesel, and Waste Oil.

Emission factors for aggregate rotary drum drying operations are from AP-42, Chapter 11.1 (Tables 11.1-3, -4, -7, -8, -10 and -12).

Hot oil heater

Asphalt cement must be kept heated so that it can be easily pumped and mixed with the dry aggregate. The proposed hot oil heater must have a capacity of less than 10 MMBtu/hr and combust only diesel or natural gas. Emission factors for the hot oil heater are derived from AP-42, Chapter 11.1 (Tables 11.1-13), Chapter 1.3, and Chapter 1.4.

Silo filling and loadout

After mixing in the drum, the HMA is conveyed to a storage silo or is loaded directly into a truck and hauled to the job site. Emission factors for HMA load-out and silo-filling operations are from AP-42, Chapter 11.1 (Tables 11.1-14, -15, and -16).

Potential facility-wide emissions, as limited by the GCP from the DMHMAP are found in the table below. The potential to emit (PTE) is the maximum possible PTE at the maximum allowable capacities using the worst polluting fuel combinations.

Regulated Pollutant	Emissions (tons/year)	Emissions (Excluding Haul Roads) (tons/year)
Particulate Matter (PM)	28.56	25.38
PM smaller than or equal to 10 microns (PM ₁₀)	17.97	14.15
PM smaller than or equal to 2.5 microns (PM _{2.5})	8.53	8.15
Sulfur Dioxide (SO ₂)	21.13	21.13
Oxides of Nitrogen (NO _x)	39.79	39.79
Carbon Monoxide (CO)	36.96	36.96
Volatile Organic Compounds (VOC)	13.63	13.63
Hazardous Air Pollutants (HAPs)	2.88	2.88

Regulated Pollutant	Emissions (tons/year)	Emissions (Excluding Haul Roads) (tons/year)
Greenhouse Gases (GHG):		
Mass Basis	45,763.00	45,763.00
CO ₂ e Basis	45,915.00	45,915.00

APPLICABLE REQUIREMENTS AND VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS:

Chapter 4 – Ambient Air Quality Standards:

Based on the limits in this GCP, potential emissions of all regulated air pollutants from this permitting action are below the air dispersion modeling thresholds for which modeling is typically required for all pollutants as established in the NDEQ’s *Atmospheric Dispersion Modeling Guidance for Permits* (09/2005). As a result, the NDEQ does not expect this source to cause or contribute to any violations of any ambient air quality standards.

Chapters 5 and 7 – Operating Permit Requirements:

For the operating permit program, a major or Class I source is one that emits, or has the potential to emit, 100 tons per year (tpy) or more of any criteria pollutant, 10 tpy or more of any individual HAP, 25 tpy or more of total HAPs, or 5 tpy or more of lead. A minor or Class II source is any facility which does not meet or exceed the major source thresholds, but has actual emissions greater than one half of these thresholds.

Before issuance of coverage under this permit, potential emissions from facilities may or may not meet or exceed the major source thresholds. Most facilities will not have other significant sources of air pollutants, and therefore will be a “No Permit Required Synthetic Minor” or “No Permit Required Natural Minor” source for the operating permit program because potential and actual emissions will be below the minor source thresholds after coverage is issued.

However, a facility with other sources of emissions, such as equipment covered by another construction permit, may meet or exceed Class II or major source thresholds for the operating permit program. Each facility covered by this GCP must determine if they are obligated to apply for an operating permit, or revise an existing operating permit, due to coverage under this general construction permit. Fugitive emissions must be included when determining operating permit program applicability because the source is one of the listed categories in Chapter 2, Section 002.

Chapter 17 – Construction Permit Requirements:

The source is required to obtain a construction permit, because potential emissions prior to GCP coverage exceed the emission thresholds of Chapter 17, Section 001.01. The source-wide PTE, including fugitive emissions, after coverage under this construction permit, falls into one of the following fee categories:

Category I (Fee \$250):

Less than 50 tons per year of any listed air pollutant;
Less than 2.5 tons per year of any single HAP; or
Less than 10 tons per year of any combination of HAPs

Category II (Fee \$1,500):

50 tons or more but less than 100 tons per year of any listed air pollutant;
2.5 tons or more but less than 10 tons per year of any single HAPs; or
10 tons or more but less than 25 tons per year of any combination of HAPs

Category III (Fee \$3,000):

100 tons or more per year of any listed air pollutant;
10 tons or more per year of any single HAP; or
25 tons or more per year of any combination of HAPs

Therefore, the source must submit a fee to obtain coverage under this GCP, in accordance with Chapter 17, Section 003.01 and Chapter 9. The NDEQ does not consider PM a regulated pollutant when determining the fee for a construction permit.

Chapter 18 – New Source Performance Standards (NSPS), and 40 CFR Part 60:

DMHMAPs are subject to NSPS Subpart I - Standards of Performance for Hot Mix Asphalt Facilities. Because the source is subject to this NSPS, it is also subject to NSPS Subpart A – General Provisions. A brief description of Subparts A and I is provided below.

Subpart A – General Provisions:

NSPS Subpart A, adopted by reference in Title 129, Chapter 18, Section 001.01, applies to those units covered by the specific NSPS as discussed below. The permittee is required to submit notification of the date construction commenced postmarked no later than 30 days after such date (40 CFR 60.7(a)(1)), notification of the anticipated date of initial startup of the equipment postmarked not more than 60 days nor less than 30 days prior to such date (40 CFR 60.7(a)(2)), and notification of the actual date of initial startup of the equipment postmarked within 15 days after such date (40 CFR 60.7(a)(3)). Because a DMHMAP is subject to the requirements of other NSPS Subparts, the requirements of this subpart also apply.

Subpart I - Standards of Performance for Hot Mix Asphalt Facilities

This subpart, adopted by reference in Title 129, Chapter 18, Section 001.21, applies to each hot mix asphalt facility that commences construction or modification after June 11, 1973.

The affected facilities (equipment/process) that are subject include 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 the emission control systems.

All emission units identified at a DMHMAP are subject to this subpart according to 40 CFR 60.90. Once initial performance tests are performed, a DMHMAP shall not emit particulate matter in excess of 90 mg/dscm (0.04 gr/dscf) and shall not exhibit 20% opacity or greater (§60.92). US EPA test Method 5 for particulate matter and Method 9 for opacity shall be performed (§60.93).

It is the source's obligation to comply with all applicable NSPS subparts and requirements whether or not they are identified in this permitting action or Title 129. Additional and updated information on all NSPS is available on the NDEQ NSPS Notebook, which can be located by visiting the NDEQ website at <http://deq.ne.gov/>, and first selecting the “Air” tab, then the “Air Grants, Planning and Outreach Program” dropdown menu tab, then the “New Source Performance Standards (NSPS) Program” dropdown menu tab, and then select “New Source Performance Standards (NSPS) Program”. Or alternately use the “Search NDEQ Web” search box on the upper right of the webpage and enter “New Source Performance Standards”.

Chapter 19 – Prevention of Significant Deterioration (PSD):

If the source falls into one of the 28 categories described in Title 129, Chapter 2, Section 008, a 100 ton per year PSD regulated pollutant threshold applies as described. Otherwise, a 250 ton per year per PSD regulated pollutant threshold applies to the facility. Fugitive emissions must be included when determining PSD applicability if the source is one of the listed categories in Chapter 2, Section 002.

Existing major sources in the PSD program do not qualify for this GCP. New DMHMAPs and existing minor sources are not subject to any PSD requirements as part of this permit because the project PTE is below the PSD major source threshold.

Chapter 20 – Particulate Matter Emissions:

Section 001 – Process Weight Rate

A DMHMAP will comply with the requirements of this section by properly operating their equipment as stated by the manufacturer and by appropriately operating a baghouse. Emission points not controlled by the baghouse will remain in compliance with this requirement because the pound per hour PM PTEs are below the allowable PM emission thresholds as specified in Section 001. Potential emissions calculations which demonstrate that a DMHMAP will comply with the requirement of this section are located in the attachment to this fact sheet.

Section 002- Particulate Emissions from Combustion Sources

This section applies to the dryer and hot oil heater at a DMHMAP. The dryer and the hot oil heater are permitted to combust several fuels. Potential emissions calculations demonstrate that a DMHMAP will comply with the requirement of this section and are in the attachment to this fact sheet. By properly operating the combustion equipment, a DMHMAP will remain in compliance with this limitation.

Sections 004 and 006 – Opacity

In accordance with Section 006, a DMHMAP does not have to comply with Section 004, because NSPS Subpart I specifies an opacity limit of 20% for all operations and requires USEPA Method 9 performance testing for opacity. DMHMAPs must utilize a baghouse to control particulate emissions and must take corrective actions if visible emissions are observed from any emission points.

Chapter 27 – Hazardous Air Pollutants:

The source is not subject to the requirements of this chapter because the proposed increase in PTE of any single HAP and total HAPs are less than the 2.5 and 10 tons per year thresholds listed in Section 002 of this chapter.

Chapter 28 – Hazardous Air Pollutant Emission Standards (NESHAPs):

The NDEQ has not identified any National Emission Standards for Hazardous Air Pollutants (NESHAP) that applies to a DMHMAP. It is the source's obligation to comply with applicable NESHAP subparts and requirements whether or not they are identified in this permitting action or Title 129.

Permit conditions specific to the proposed permit:

- II.(A) When a source undertakes a program of construction, reconstruction, or modification they are required to notify the NDEQ when they begin construction/reconstruction/modification and when the source or modification becomes operational. In addition, the NDEQ is requiring that the source submit an equipment list that includes the maximum rated capacity of each unit associated with the facility. These notifications help the NDEQ and source determine when an operating permit application (or revision to an existing operating permit) may be necessary and also whether some emission increases or decreases are within the contemporaneous period. This notification is either for initial operation of the source as a whole (if constructing a new source) or initial operation of the completed project (if modifying an existing source), not individual emission units. Individual emission units subject to specific NSPS or NESHAP standards may have additional notification requirements specific to those federal standards that are independent of this requirement. Startup of individual emission units (such as a boiler subject to an NSPS) does not necessarily mean the source or project has begun operations. For portable sources this notification is only required for their first commencement of construction following permit issuance. Notifications related to further relocations are handled by the provisions of Condition IV.

- II.(B) This condition contains general recordkeeping and reporting requirements that apply to all permitted emission units, control equipment, and monitoring devices. These requirements establish several things including, a completion date when records must be completed, how long records need to be maintained, and identifying specific types of records that must be maintained. Records are required to be maintained to ensure compliance with all applicable requirements, specifically those required in this permit. However, additional recordkeeping requirements may be established in the future to better ensure compliance. Documentation detailing operation and maintenance can be operational and maintenance manuals provided by the manufacturer. If manufacturer manuals are not available, the owner or operator must develop a document containing proper operation and maintenance requirements for each permitted emission unit and piece of required control equipment.
- II.(C) This condition requires all permitted emissions units, control equipment, and monitoring equipment to be properly installed, operated, and maintained as required in Specific Condition II.(B)(5). Emission estimates for this permitting action are based on the requirement that all equipment be properly operated and maintained, and comply with the conditions of the permit and regulations.
- II.(D) General performance testing requirements. When performance testing is required, it is intended to demonstrate and ensure the source will be in compliance on a continuous basis. As such, testing is generally required to be conducted under conditions producing the highest emissions or loading to a control device. This typically is done at the maximum capacity, which at that level would not create an unsafe condition, and the facility will operate at that level at least some of the time. For a comprehensive evaluation on representative testing conditions, please review the NDEQ guidance on stack testing available on our web site or the national stack testing guidance document found on EPA's web site. All performance tests required throughout this permit are required to be conducted in accordance with these conditions. The owner or operator must provide a testing protocol and written (i.e. hard copy, not electronic or verbal) notice prior to testing to ensure the NDEQ has the opportunity to witness the testing and review the proposed testing plan. Operating parameters are monitored and recorded to document the conditions under which the testing was conducted. The NDEQ may require additional testing if previous testing is not representative of current operations.
- II.(E) This condition requires any emissions resulting from equipment failures, malfunctions, or other variations in control or process equipment performance that are, or may be, in excess of the applicable emission control regulations to be reported to the NDEQ in accordance with Title 129, Chapter 35, Section 005. The NDEQ must be notified when excess emissions have, or may have occurred along with the cause of the emissions in order to determine the appropriate response. These reports also assist with verifying proper operation and maintenance of process and control equipment.

III.(A) Specific Conditions for Drum Mix Hot Mix Asphalt Plants

- III.(A)(1) This permit condition identifies the emission points, control equipment, fuel type and maximum capacity, if applicable.
- III.(A)(2) This permit condition requires a DMHMAP to comply with the emission limitations of Title 129, Chapter 20 and NSPS Subparts A and I. The source may submit earlier performance test results to the NDEQ instead of performing new testing. The NDEQ will determine if the submitted test results are considered satisfactory or if new testing will be required.
- III.(A)(3) A DMHMAP is limited to a maximum HMA production rate of 550,000 tons per year. This limit was set so modeling would not be required as part of the permitting process.

Condition III.(A)(3)(b) requires that a DMHMAP properly operate and maintain the specified control devices at all times when the associated emission units, as described in III.(A)(1), are operational. Condition III.(A)(3)(c) describes the operational and maintenance requirements for the specified control devices. One indication of baghouse malfunction is an atypical pressure drop across the baghouse. Therefore, each baghouse is required to be equipped with an operational pressure differential indicator. The facility is required to keep an on-site inventory of spare bags or filters of each type used.

Condition III.(A)(3)(d) requires the operator to conduct daily observations during the hours of operation to ensure that there are no visible emissions from the stack or exhaust points of all emission units, leaks, noise from the unit, or atypical monitoring parameters. By requiring daily observations, the NDEQ is confident that any malfunctions will be detected and corrected quickly. The operator must maintain a log containing the results of these observations and any corrective action that occurs as a result of the observations.

The dryer may not exceed a maximum combustion capacity (MCC) of 500 MMBtu/hr, and the hot oil heater may not exceed a MCC of 10 MMBtu/hr. The dryer may only use the following as fuel: Propane, Natural Gas, Diesel, and/or Waste Oil. The hot oil heater may combust only diesel or natural gas. The storage pile must not exceed five acres. These limitations ensure that the DMHMAP is not subject to any case-by-case determinations such as modeling, PSD analysis, and/or Title 129, Chapter 27, Section 002.

In addition, the DMHMAP must comply with the operational and monitoring requirements of NSPS Subpart I.

III.(A)(4) This condition identifies the applicable federal standards that apply to a DMHMAP.

III.(A)(5) This condition identifies reporting and recordkeeping requirements for all of the applicable requirements of Condition III.(A).

III.(B) Specific Conditions for Haul Roads

This condition specifies requirements for haul roads. The facility must use best management practices to prevent fugitive dust from escaping the property and comply with Chapter 32. If necessary, the facility must implement necessary corrective actions, which might include water application, gravel, speed limits, or road maintenance.

IV. Specific Conditions for Relocation

This condition provides the source with the requirements associated with relocation of the DMHMAP operation. The source must notify the NDEQ each time the DMHMAP is relocated. The source is required to obtain the necessary permits and approvals from either Omaha Air Quality or Lincoln Lancaster Health Department prior to locating within Omaha city limits or Lancaster County, respectively. Relocation on Tribal Lands is outside the NDEQ's jurisdiction. The source must contact the US EPA Region VII office or the specific Tribe to determine permit requirements within Tribal jurisdictions. If the source relocates into Cass County, they will become subject to Title 129, Chapter 21, which imposes additional requirements.

STATUTORY OR REGULATORY PROVISIONS ON WHICH PERMIT REQUIREMENTS ARE BASED:

Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended July 6, 2015.

PROCEDURES FOR FINAL DETERMINATION WITH RESPECT TO THE PROPOSED CONSTRUCTION PERMIT:

The public notice, as required under Title 129 Chapter 14, shall be published on Tuesday, September 29, 2015 in the Omaha World Herald newspaper and at <http://deq.ne.gov> under "Public Notices." Persons or groups shall have 30 days from that issuance of public notice (ending October 28, 2015) to provide the NDEQ with any written comments concerning the proposed permit action and/or to request a public hearing, in accordance with Title 129 Chapter 14. If a public hearing is granted by the Director, there will be a notice of that meeting published at least 30 days prior to the hearing.

During the 30-day public comment period, persons requiring further information about the proposed permit should contact:

David Graiver, P.E.
Construction Permitting Unit
NDEQ Air Quality Division
(402) 471-2189

Prior to the end of the 30-day public comment period, persons wanting to submit written comments or a written request for a public hearing may contact the Air Quality Division at:

ndeq.airquality@nebraska.gov

David Graiver, P.E.
Construction Permitting Unit Supervisor
NDEQ Air Quality Division
P.O. Box 98922
Lincoln, NE 68509-8922

If no public hearing is requested, the permit may be granted at the close of the 30-day comment period. If a public hearing is requested, the Director of the NDEQ may choose to extend the date on which the permit is to be granted until after that public hearing has been held.

Telephone inquiries may be made at:

(402) 471-2186

TDD users should call (800) 833-7352 and ask the relay operator to call the Department at (402) 471-2186.

Attachments:
Calculation Workbook

Fact Sheet Attachment

Hot Mix Asphalt Plant: Potential to Emit Summary

Summary of lb/hr total emissions

Pollutant	Storage Pile	Conveyors	Screening	Silo Filling	Loadout	Dryer	Hot oil Heater	Haul Roads	Total
PM	3.11	3.14	1.05	0.29	0.26	16.50	0.13	4.08	28.56
PM ₁₀	1.50	1.15	0.35	0.29	0.26	11.50	0.22	0.87	16.14
PM _{2.5}	0.30	0.45	2.38E-02	0.29	0.26	11.15	0.22	8.72E-02	12.79
SO _x	-	-	-	-	-	29.00	9.41	-	38.41
NO _x	-	-	-	-	-	27.50	1.31	-	28.81
CO	-	-	-	0.59	0.85	65.00	7.84E-02	-	66.52
VOC	-	-	-	6.09	2.63	16.00	2.22E-02	-	24.75
Pb	-	-	-	-	-	0.27	9.00E-05	-	0.27
HAP	-	-	-	9.37E-02	4.33E-02	5.09	1.50E-03	-	5.23
GHG (mass basis)	-	-	-	-	-	81,575	1,631	-	83,206
GHG (CO ₂ e basis)	-	-	-	-	-	81,851	1,631	-	83,482

Summary of ton/year total emissions

Pollutant	Storage Pile	Conveyors	Screening	Silo Filling	Loadout	Dryer	Hot oil Heater	Haul Roads	Total*
PM	13.63	1.73	0.57	0.16	0.14	9.08	7.19E-02	17.85	43.23
PM ₁₀	6.57	0.63	0.19	0.16	0.14	6.33	0.12	3.82	17.97
PM _{2.5}	1.33	0.25	1.31E-02	0.16	0.14	6.13	0.12	0.38	8.53
SO _x	-	-	-	-	-	15.95	5.18	-	21.13
NO _x	-	-	-	-	-	15.13	0.72	-	15.84
CO	-	-	-	0.32	0.47	35.75	4.31E-02	-	36.59
VOC	-	-	-	3.35	1.45	8.80	1.22E-02	-	13.61
Pb	-	-	-	-	-	0.15	4.95E-05	-	0.15
HAP	-	-	-	5.15E-02	2.38E-02	2.80	8.27E-04	-	2.87
GHG (mass basis)	-	-	-	-	-	44,866	896.84	-	45,763
GHG (CO ₂ e basis)	-	-	-	-	-	45,018	896.96	-	45,915

Fact Sheet Attachment

Emission Unit Summary

Process type	Emission Point	Control ID #	Control description	Emission Unit ID #	Emission /Process Description
Storage Pile	EP-01	-	-	EU-01	Storage Pile - wind Erosion, Loading and Unloading
Conveyors	EP-02	-	-	EU-02	Gathering, Rap and Slat Conveyors
Screening	EP-03	-	-	EU-03	Screening Emissions
Silo Filling	EP-04	-	-	EU-04	Storage Silo Filling and Asphalt Storage
Load-out	EP-05	-	-	EU-05	Load-Out Emissions
Dryer	EP-06	C-01	Baghouse	EU-06	Dryer
Hot Oil Heater	EP-07	-	-	EU-07	Hot oil heater emissions

Operation parameters and limitations

Hot Mix Asphalt produced per hour (tons/hr) = 500
 Maximum hours of operation (hr/yr) = 1,100
 Asphalt processed per year (ton/yr) = 550,000

Maximum PTE based on different fuels of the dryer and the heater

Pollutant	Propane + NG	Propane + diesel	NG + NG	NG + Diesel	Diesel +NG	Diesel + Diesel	Waste Oil + NG	Waste Oil + Diesel	Maximum
PM	25.32	25.38	25.32	25.38	25.32	25.38	25.32	25.38	25.38
PM ₁₀	14.07	14.15	14.07	14.15	14.07	14.15	14.07	14.15	14.15
PM _{2.5}	8.07	8.15	8.07	8.15	8.07	8.15	8.07	8.15	8.15
SOx	4.51	9.68	0.94	6.11	3.03	8.20	15.95	21.13	21.13
NOx	39.57	39.79	7.65	7.87	15.63	15.84	15.63	15.84	39.79
CO	23.75	23.38	36.96	36.59	36.96	36.59	36.96	36.59	36.96
VOC	7.83	7.82	13.63	13.61	13.63	13.61	13.63	13.61	13.63
Pb	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
HAP	1.59	1.58	1.59	1.58	2.53	2.52	2.88	2.87	2.88
GHG (mass basis)	38,762	39,015	32,813	33,066	45,485	45,739	45,510	45,763	45,763
GHG (CO ₂ e basis)	38,913	39,167	32,845	33,099	45,637	45,891	45,661	45,915	45,915

Fact Sheet Attachment

Storage Pile Emissions: EP-01

Hot Mix Asphalt produced per hour (tons/hr) =	500	
Aggregate processed per hour (tons/hr) =	475	AP-42 Chapter 11.1 states that aggregate and RAP (if used) constitute over 92% by weight of the total mixture. For these calculations, it is assumed that 95% of the hot mix asphalt produced is aggregate.
Maximum occupancy on pile (hr/yr) =	8,760	
Acres occupied by storage piles (acre) =	5	
Storage pile moisture content (%) =	2	

Emissions Source	PM Emission Factor (lb/hr/acre) ^[1]	PM Emission Rate (lb/hr)	PM ₁₀ Emission Rate (lb/hr) ^[2]	PM _{2.5} Emission Rate (lb/hr) ^[2]	PM Emission Rate (tpy) ^[3]	PM ₁₀ Emission rate (tpy) ^[3]	PM _{2.5} Emission Rate (tpy) ^[3]
Storage Pile-Wind Erosion	0.22	1.08	0.54	0.16	4.75	2.38	0.69

^[1] PM Emission Factor (lb/hr/acre) derived from the following equation taken from the Air Pollution Engineering Manual p.136:

$$E = 1.7 * (s/1.5) * ((365-p)/235) * (f/15) * (1/24)$$

where:

E = Emission Factor (lb/hr/acre)

s = silt content of aggregate

1.9 from AP-42 Table 13.2.4-1, the upper range for Crushed Limestone

p = # days with \geq .25mm of precipitation per year

90 from AP-42 Figure 13.2.2-1, For Nebraska

f = % of time that the unobstructed wind speed exceeds 5.4 m/s at the mean pile height

31 %, from Metrological Data, NDEQ

^[2] PM₁₀ and PM_{2.5} emission rates are calculated using the scaling factors found in CEIDARS for Mineral Process Loss- Loading and Unloading Bulk Materials

^[3] Emission Rate (tpy) = Emission Rate (lb/hr) * Maximum occupancy on pile (hr/yr) * (1 ton/2000 lb)

Emissions Source	PM Emission Factor (lb/ton) ^[1]	PM ₁₀ Emission Factor (lb/ton) ^[1]	PM _{2.5} Emission Factor (lb/ton) ^[1]	PM Emission Rate (lb/hr)	PM ₁₀ Emission Rate (lb/hr)	PM _{2.5} Emission Rate (lb/hr)	PM Emission Rate (tpy)	PM ₁₀ Emission rate (tpy)	PM _{2.5} Emission Rate (tpy)
Storage Pile-Loading and Unloading	4.27E-03	2.02E-03	3.06E-04	2.03	0.96	0.15	8.88	4.20	0.64

^[1] Emission Factors (lb/ton) derived from the following equation in AP-42 Chapter 13.2.4 (Nov. 2006), Equation 1:

$$E = k * (0.0032) * ((U/5)^{1.3}) / ((M/2)^{1.4})$$

where:

E = Emission Factor (lb/ton)

U = mean wind speed (mph) =

10 mph in Nebraska

M = material moisture content =

2.5 % given by facility in the form of an input question in this spreadsheet

k = particle size multiplier =

0.74 for PM30 from AP-42 Section 13.2.4

k = particle size multiplier =

0.35 for PM10 from AP-42 Section 13.2.4

k = particle size multiplier =

0.053 for PM2.5 from AP-42 Section 13.2.4

Total Storage Pile Pollutant Emissions	Emissions (lb/hr)	Emissions (tpy)
PM	3.11	13.63
PM ₁₀	1.50	6.57
PM _{2.5}	0.30	1.33

Fact Sheet Attachment

Conveyor Emissions: EP-02

Hot Mix Asphalt produced per hour (tons/hr) = 500
 Maximum hours of operation (hr/yr) = 1,100
 Asphalt processed per year (ton/yr) = 550,000
 Storage pile moisture content (%) = 2
 Oil applied to the material after the dryer: 0

(Yes = 1, No = 0)

Pollutant	Emission Factor (lb/ton) ^[1]	Emission Rate (lb/hr)	Emission Rate (tpy)
Gathering Conveyor			
PM	1.40E-04	7.00E-02	3.85E-02
PM ₁₀	4.60E-05	2.30E-02	1.27E-02
PM _{2.5}	1.30E-05	6.50E-03	3.58E-03
Belt Conveyor			
PM	1.40E-04	7.00E-02	3.85E-02
PM ₁₀	4.60E-05	2.30E-02	1.27E-02
PM _{2.5}	1.30E-05	6.50E-03	3.58E-03
RAP Conveyor			
PM	3.00E-03	1.50E+00	8.25E-01
PM ₁₀	1.10E-03	5.50E-01	3.03E-01
PM _{2.5}	4.38E-04	2.19E-01	1.20E-01
Slat Conveyor			
PM	3.00E-03	1.50E+00	8.25E-01
PM ₁₀	1.10E-03	5.50E-01	3.03E-01
PM _{2.5}	4.38E-04	2.19E-01	1.20E-01

^[1] Emission Factors are from AP-42 Chapter 11.19 (August, 2004), Table 11.19.2-2, Conveyor Transfer Point:

Gathering and Belt Conveyor Emission Factors	PM (lb/ton)	PM ₁₀ (lb/ton)	PM _{2.5} (lb/ton) *
If storage pile moisture content is ≤ 1.3%, Emission Factor is:	3.00E-03	1.10E-03	4.38E-04
If storage pile moisture content is > 1.3%, Emission Factor is:	1.40E-04	4.60E-05	1.30E-05

RAP Conveyor Emission Factor	PM (lb/ton)	PM ₁₀ (lb/ton)	PM _{2.5} (lb/ton) *
Emission Factor is:	3.00E-03	1.10E-03	4.38E-04

Slat Conveyor Emission Factor	PM (lb/ton)	PM ₁₀ (lb/ton)	PM _{2.5} (lb/ton) *
If oil is applied after the dryer, a 60% control is assumed and the Emission Factor is:	1.20E-03	4.40E-04	1.75E-04
If oil is not applied after the dryer, the Emission Factor is:	3.00E-03	1.10E-03	4.38E-04

* Uncontrolled PM_{2.5} emission factors are derived using the scaling factors found in CEIDARS for Mineral Process Loss- Loading and Unloading Bulk Materials.

^[2] Emission Rate (tpy) = Emission Rate (lb/hr) * (asphalt processed per year (ton/yr) / asphalt processed per hour (ton/hr)) * (1 ton/2000 lb)

Total Conveyor Pollutant Emissions	Emissions (lb/hr)	Emissions (tpy)
PM	3.14	1.73
PM ₁₀	1.15	0.63
PM _{2.5}	0.45	0.25

Fact Sheet Attachment

Screening Emissions: EP-03

Hot Mix Asphalt produced per hour (tons/hr) = 500

Aggregate processed per hour (tons/hr) = 475

AP-42 Chapter 11.1 states that aggregate and RAP (if used) constitute over 92% by weight of the total mixture. For these calculations, it is assumed that 95% of the hot mix asphalt produced is aggregate.

Maximum hours of operation (hr/yr) = 1,100

Asphalt processed per year (ton/yr) = 550,000

Storage pile moisture content (%) = 2

Pollutant	Emission Factor (lb/ton) ^[1]	Emission Rate (lb/hr)	Emission Rate (tpy)
PM	2.20E-03	1.05E+00	5.75E-01
PM ₁₀	7.40E-04	3.52E-01	1.93E-01
PM _{2.5}	5.00E-05	2.38E-02	1.31E-02

^[1] Emission Factors are from AP-42 Chapter 11.19 (August, 2004), Table 11.19.2-2, Screening:

	PM (lb/ton)	PM ₁₀ (lb/ton)	PM _{2.5} (lb/ton) *
If storage pile moisture content is ≤ 1.3%, Emission Factor is:	2.50E-02	8.70E-03	3.65E-03
If storage pile moisture content is > 1.3%, Emission Factor is:	2.20E-03	7.40E-04	5.00E-05

* The uncontrolled (moisture content ≤ 1.3%) PM_{2.5} emission factor is derived using the scaling factor found in CEIDARS for Mineral Process Loss- Loading and Unloading Bulk Materials.

Fact Sheet Attachment

Storage Silo Filling and Asphalt Storage Tank Emissions: EP-04

Hot Mix Asphalt produced per hour (tons/hr) = 500
Maximum hours of operation (hr/yr) = 1,100
Asphalt processed per year (ton/yr) = 550,000

Pollutant	Emission Factor (lb/ton) ^[1]	Emission Rate (lb/hr)	Emission Rate (tpy)
PM	5.86E-04	2.93E-01	1.61E-01
PM ₁₀	5.86E-04	2.93E-01	1.61E-01
PM _{2.5}	5.86E-04	2.93E-01	1.61E-01
CO	1.18E-03	5.90E-01	3.24E-01
VOC	1.22E-02	6.09E+00	3.35E+00
HAP	1.87E-04	9.37E-02	5.15E-02

^[1] Emission factors for PM, PM₁₀, PM_{2.5}, CO, and VOC derived from the equations in AP-42 Chapter 11.1 (Apr. 2004), Table 11.1-14 for Silo Filling, using the default values as discussed in footnote "a" of the table. The emission factor for HAP was derived from Tables 11.1-15 and 11.1-16 for Speciation Profile for Silo Filling and Asphalt Storage Tanks Emissions.

Fact Sheet Attachment

Loadout Emissions: EP-05

Hot Mix Asphalt produced per hour (tons/hr) = 500
Maximum hours of operation (hr/yr) = 1,100
Asphalt processed per year (ton/yr) = 550,000

Pollutant	Emission Factor (lb/ton) ^[1]	Emission Rate (lb/hr)	Emission Rate (tpy)
PM	5.22E-04	2.61E-01	1.44E-01
PM ₁₀	5.22E-04	2.61E-01	1.44E-01
PM _{2.5}	5.22E-04	2.61E-01	1.44E-01
CO ^[2]	1.70E-03	8.51E-01	4.68E-01
VOC ^[2]	5.26E-03	2.63E+00	1.45E+00
HAP	8.66E-05	4.33E-02	2.38E-02

^[1] Emission factors derived from the equations in AP-42 Chapter 11.1 (Apr. 2004), Table 11.1-14 for Drum-mix or batch plant load-out, using the default values as discussed in footnote "a" of the table. The emission factor for HAP was derived from Tables 11.1-15 and Table 11.1-16; this includes HAP emissions from loadout and those that occur after the trucks are loaded (referred to as yard emissions).

^[2] In addition to loadout, emissions of CO and TOC occur after the trucks are loaded (referred to as yard emissions). The emission factors for yard emissions as found in AP-42 Chapter 11.1, page 11.1-9 are accounted for in the CO and VOC emission factors above. (0.0011 lb/ton for TOC and (0.0011 * 0.32) lb/ton for CO.)

Fact Sheet Attachment

Dryer Emissions: EP-06

Hot Mix Asphalt produced per hour (tons/hr) =	500
Maximum hours of operation (hr/yr) =	1100
Asphalt processed per year (ton/yr) =	550000
Storage pile moisture content (%) =	2
Control Device that Operates on the Dryer:	1
(Baghouse=1, Wet Scrubber=2, No Control=3)	
Dryer Heat Input Rating (MMBtu/hr) =	500

Pollutant	Emission Factor	Emission Rate (lb/hr)	Emission Rate (tpy)
PM	3.30E-02	16.50	9.08
PM ₁₀	2.30E-02	11.50	6.33
PM _{2.5}	2.23E-02	11.15	6.13
SO _x	0.06	29.00	15.95
NO _x	0.06	27.50	15.13
CO	0.13	65.00	35.75
VOC	0.03	16.00	8.80
Pb	5.40E-04	0.27	1.49E-01
HAP	1.02E-02	5.09	2.80
Green House Gases			
CO ₂	74.00	81,570.94	44,864.02
CH ₄	3.00E-03	3.31	1.82
N ₂ O	6.00E-04	0.66	0.36
GHG (mass basis)	-	81,574.91	44,866.20
GHG (CO ₂ e basis)	-	81,850.71	45,017.89

	PM (lb/ton)	PM ₁₀ (lb/ton)*	PM _{2.5} (lb/ton) **
If the dryer is uncontrolled, the emission factor is:	28	6.5	1.5654
If the dryer is controlled by a venturi or wet scrubber, the emission factor is:	0.045	0.045	6.57E-03
If the dryer is controlled by a fabric filter, the emission factor is:	0.033	0.023	2.23E-02

* All PM data are derived from AP-42 tables 11.1-1 through 4. PM₁₀ assumed to equal total PM if no data are available for PM₁₀ emissions

** The wet scrubber PM_{2.5} emission factor is derived using the scaling factor found in CEIDARS for Mineral Process Loss- Loading and Unloading Bulk Materials. Both other values are derived from AP42 Table 11-1-2 + Inorganic and Organic condensable PM from Table 11-1-1

Fact Sheet Attachment

Hot Oil Heater Emissions EP-07

Hot Mix Asphalt produced per hour (tons/hr) =	500
Maximum hours of hot oil heater operation per year (hr/yr) =	1,100
Rated capacity of hot oil heater (MMBtu/hr) =	10.00
Maximum Fuel Rate (gal/hr) [MMBtu/hr / 0.153 gal/MMBtu] =	65.36
Maximum Fuel Rate (10 ⁶ scf/hr) [MMBtu/hr / 1100 10 ⁶ scf/MMBtu] =	9.1E-03

Pollutant	Emission Factor (lb/103 gal)	Emission Factor Source ^[1]	Emission Rate (lb/hr)	Emission Rate (tpy) ^[3]
PM	2.00	Table 1.3-1	0.13	0.07
PM ₁₀	3.30	Tables 1.3-1 and 1.3-2	0.22	0.12
PM _{2.5}	3.30	Tables 1.3-1 and 1.3-2	0.22	0.12
SO _x	144.00	Table 1.3-1	9.41	5.18
NO _x	20.00	Table 1.3-1	1.31	0.72
VOC	0.34	Table 1.3-3	0.02	0.01
	Emission Factor (lb/gal)			
CO	1.20E-03	Table 11.1-13	0.08	0.04
HAP	2.30E-05	Table 11.1-13	1.50E-03	8.27E-04
	Emission Factor (lb/10 12 Btu)			
Pb	9.00	Table 1.3-10	0.00	0.00
Greenhouse Gases				
	Emission Factor (kg/MMBtu)	Emission Factor Source ^[2]	Emission Rate (lb/hr)	Emission Rate (tpy) ^[3]
CO ₂	73.96	40 CFR 98, Subpart C, Tables 1	1,630.54	896.80
CH ₄	3.00E-03	40 CFR 98, Subpart C, Tables 2	0.07	0.04
N ₂ O	6.00E-04		0.01	7.28E-03
GHG (mass basis)	73.96		1,630.62	896.84
GHG (CO ₂ e)	73.97		1,630.83	896.96

^[1] Emission Factors are from AP-42, Chapter 1.3 and 1.4 (May 2010) for Boilers < 100 MMBtu/hr and Chapter 11.1 (Apr. 2004), for No. 2 fuel oil and natural gas. The emission factors that require a sulfur content input are calculated using 1%, which is the maximum sulfur content of fuel allowed by Chapter 42, Section 011.06B.

^[2] Emission Factors for GHGs are summations of the CO₂, CH₄, and N₂O emission factors for Distillate Fuel Oil No. 2 from 40 CFR Part 98.

^[3] Emission Rate (tpy) = Emission Rate (lb/hr) * Maximum hours of hot oil heater operation per year (hr/yr) * (1 ton/2000 lb)

Fact Sheet Attachment

Ch. 20 Emission Limitations

Title 129, Chapter 20, Section 001

Emission Point ID	Description	Design Throughput	CH. 20 Limit lb/hr	Max. Emissions lb/hr
		tph		
EP-01	Storage Pile- Wind Erosion, Loading and Unloading	500	68.96	3.11
EP-02	Gathering, Rap and Slat Conveyors	500	68.96	3.14
EP-03	Screening Emissions	500	68.96	1.05
EP-04	Storage Silo Filling and Asphalt Storage Tank Emissions	500	68.96	0.29
EP-05	Load-Out Emissions	500	68.96	0.26
EP-06	Dryer	500	68.96	16.50
EP-07	Hot oil heater emissions	500	68.96	0.13
EP-08	Engine	500	68.96	4.08

^a Where applicable, design throughput is estimated based on the lowest throughput rate. This ensures the most conservative limit for each emission point category.

^b Permitted emission are calculated to be the total lb/hr emissions expected for all emission points in every category.

Title 129, Chapter 20, Section 002

Total Heat Input (MMBtu/hr)	Maximum Allowable Emissions of PM (lbs/MMBtu)
10 or less	0.6
Between 10 and 10,000	$1.026/I^{0.233}$ Where I = total heat input in MMBtu/hr.
10,000 or more	0.12

Emission Point	Emission Unit	Description	Rating	Allowable PM	Max. Emissions
			MMBtu/hr	lb/MMBtu	lb/MMBtu
EP-06	EU-06	Dryer	500	0.24	0.03
EP-07	EU-07	Hot Oil Heater	10.0	0.60	1.31E-02

Fact Sheet Attachment

Haul Roads (EP-09)

Unpaved roads {AP-42 Chapter 13.2.2 (11/06)}

Equation (1a):
(modified)
$$E = k \times \left(\frac{sC}{12}\right)^a \times \left(\frac{W}{3}\right)^b \times \left(\frac{365-P}{365}\right) \times \left(\frac{S}{30}\right)^d \times (1-CE)$$

	<i>k</i>	<i>a</i>	<i>b</i>	<i>d</i>
PM	4.90	0.70	0.45	0.3
PM₁₀	1.50	0.90	0.45	0.5
PM_{2.5}	0.15	0.9	0.45	0.5

Haul Road / Traffic Parameters

Activity / Road Description	Road Type / Silt Value		Roundtrip		Truck Weight			Ave. Speed (mph)	Maximum Throughput	Ave. Truck Capacity		Annual VMT
			empty	full	empty	full	Ave.					
Aggregate In	u	6.00	500	500	15	45	30.0	10	550,000	30	ton	3,472
Asphalt Out	u	6.00	500	500	15	40	27.5	10	550,000	25	ton	4,167

Emission Calculations

Activity / Road Description	Emission Factors (lb/VMT)			Potential Emissions (tons/yr)		
	PM	PM ₁₀	PM _{2.5}	PM	PM ₁₀	PM _{2.5}
Aggregate In	4.77	1.02	0.10	8.29	1.77	1.77E-01
Asphalt Out	4.59	0.98	9.82E-02	9.56	2.05	2.05E-01
Total Annual Emissions:				17.85	3.82	0.38

Description of Constants/Variables

- E*: haul road emissions (lb/VMT)
k, d: dimensionless constants from AP-42 Chapter 13.2.1 (paved)
k, a, b, c, d: dimensionless constants from AP-42 Tables 13.2.1-1 & 13.2.2-2 (unpaved)
sL: silt loading (g/m²) of paved road surface
sC: silt content (%) of unpaved road surface
W: average vehicle weight (tons)
P: days/yr with at least 0.01" of precipitation
P = default = 90
S: mean vehicle speed on road (mph)
 default = 30, minimum = 15
CE: unpaved road, dust control efficiency
CE = default = 0%
 VMT: vehicle miles traveled