United States Environmental Protection Agency
Region 10, Office of Air, Waste and Toxics
AWT-107
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

Permit Number: R10NT501800
Issued: August 10, 2010
AFS Plant ID Number: 16-777-

Non-Title V Air Quality Operating Permit

Is issued in accordance with the provisions of the Federal Air Rules for Reservations (FARR), 40 CFR § 49.139, and applicable rules and regulations to

Columbia Ready Mix Incorporated
Portable Hot Mix Asphalt Plant

For operations in accordance with the conditions in this permit at locations listed in Section 1.3.

Owner/Operator:	Larry Sali Columbia Ready Mix Inc. P.O. Box 9337 Yakima, Washington 98909
General Manager:	Chad Carlson Columbia Ready Mix Inc. P.O. Box 9337 Yakima, Washington 98909 Phone: 509.457.3654, Fax: 509.877.6963 Email: chad@columbiaasphalt.com
Contact Person:	Chad Carlson (See contact details above.)

A technical support document that describes the bases for conditions contained in this permit is also available.

Nancy Helm, Manager
Federal and Delegated Air Programs Unit
Office of Air, Waste and Toxics
U.S. EPA, Region 10

8/11/10
Date

1. General Conditions

1.1. For purposes of this permit, the permittee is Columbia Ready Mix Incorporated and the permitted source includes the hot mix asphalt drum dryer (CMI Model PTD 400) and a combination of rock extraction and crushing (when required to be aggregated with this asphalt plant), handling and storage equipment used to produce hot mix asphalt.

1.2. The permittee shall comply with all conditions of this permit and any site-specific approval conditions. Any permit noncompliance constitutes a violation of the Clean Air Act.

1.3. Compliance with all conditions in this permit and any site-specific approval conditions allows the permitted source to operate at any location on the following Indian reservations that have been specifically approved for the purpose of this permit in a letter from EPA to the permittee:

1.3.1. Coeur d'Alene Reservation (Idaho);

1.3.2. Fort Hall Reservation (Idaho);

1.3.3. Kootenai Reservation (Idaho);

1.3.4. Nez Perce Reservation (Idaho);

1.3.5. Umatilla Reservation (Oregon);

1.3.6. Colville Reservation (Washington);

1.3.7. Kalispel Reservation (Washington);

1.3.8. Spokane Reservation (Washington);

1.3.9. Yakama Reservation (Washington).

1.4. Compliance with the terms of this permit does not relieve or exempt the permittee from compliance with other applicable federal, tribal, state or local laws or regulations.

2. Emission Limits and Work Practice Requirements

2.1. Permitted Source Carbon Monoxide (CO) Emission Limit. Source-wide CO emissions shall not exceed 80 tons per year as determined on a rolling 12-month basis by calculating the emissions (tons) for each month and adding the emissions (tons) calculated for the previous 11 months. Monthly CO emissions shall be determined by multiplying appropriate emission factors (lb/unit) by the actual monthly operation/production rates (units/month) and dividing by 2000 lb/ton.

2.2. Permitted Source Nitrogen Oxides (NOx) Emission Limit. Source-wide NOx emissions shall not exceed 80 tons per year as determined on a rolling 12-month basis by calculating the emissions (tons) for each month and adding the emissions (tons) calculated for the previous 11 months. Monthly NOx emissions shall be determined by multiplying appropriate emission factors (lb/unit) by the actual monthly operation/production rates (units/month) and dividing by 2000 lb/ton.

2.3. Permitted Source Particulate Matter (PM) Emission Limit. Source-wide PM emissions shall not exceed 200 tons per year as determined on a rolling 12-month basis by calculating the emissions (tons) for each month and adding the emissions (tons) calculated for the previous 11 months. Monthly PM emissions shall be determined by multiplying appropriate emission factors (lb/unit) by the actual monthly operation/production rates (units/month) and dividing by 2000 lb/ton.

2.4. Permitted Source Fine Particulate Matter (PM10) Emission Limit. Source-wide PM10 emissions shall not exceed 80 tons per year as determined on a rolling 12-month basis by calculating the emissions (tons) for each month and adding the emissions (tons) calculated for the previous 11 months. Monthly PM10 emissions shall be determined by multiplying appropriate emission factors (lb/unit) by the actual monthly operation/production rates (units/month) and dividing by 2000 lb/ton.

2.5. Permitted Source Sulfur Dioxide (SO2) Emission Limit. Source-wide SO2 emissions shall not exceed 80 tons per year as determined on a rolling 12-month basis by calculating the emissions (tons) for each month and adding the emissions (tons) calculated for the previous 11 months. Monthly SO2 emissions shall be determined by multiplying appropriate emission factors (lb/unit) by the actual monthly operation/production rates (units/month) and dividing by 2000 lb/ton.

2.6. Permitted Source Volatile Organic Compound (VOC) Emission Limit. Source-wide VOC emissions shall not exceed 80 tons per year as determined on a rolling 12-month basis by calculating the emissions (tons) for each month and adding the emissions (tons) calculated for the previous 11 months. Monthly VOC emissions shall be determined by multiplying appropriate emission factors (lb/unit) by the actual monthly operation/production rates (units/month) and dividing by 2000 lb/ton.

2.7. Good Operation. All fuel burning equipment and the drum dryer baghouse control device shall be maintained in good operating condition. The drum dryer exhaust shall be routed to the baghouse control device at all times. The drum dryer baghouse control device shall be operated at all times that the drum dryer operates.

3. Monitoring and Recordkeeping Requirements

3.1. Visible Emission Monitoring and Recordkeeping. The permittee shall monitor and record visible emissions of particulate matter as described in Conditions 3.2 through 3.5.

3.2. Once each day, the permittee shall visually survey the drum dryer baghouse stack for the presence of visible emissions of particulate matter.

3.2.1. The observer conducting the visual survey must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting and wind, and the presence of uncombined water on the visibility of emissions (see 40 CFR part 60, Appendix A, Test Method 22).

3.2.2. For the surveys, the observer shall select a position that enables a clear view of the emission point to be surveyed, that is at least 15 feet from the emission point, and where the sunlight is not shining directly in the observer's eyes.

3.2.3. The observer shall observe emissions from the emission point for at least 15 seconds.

3.2.4. Any visible emissions of particulate matter other than uncombined water shall be recorded as a positive reading associated with the emission unit.

3.2.5. Surveys shall be conducted while the drum dryer is operating and during daylight hours.

3.3. If the survey conducted under Condition 3.2 identifies any visible emissions of particulate matter, the permittee shall:

3.3.1. Immediately upon conclusion of the visual observation in Condition 3.2, investigate the source and reason for the presence of visible emissions; and

3.3.2. As soon as practicable, take appropriate corrective action.

3.4. If the corrective actions undertaken pursuant to Condition 3.3.2 do not eliminate the visible emissions, the permittee shall within 24 hours of the initial survey conduct a visible emissions observation of the emission source in question for thirty minutes using EPA Test Method 9 (see 40 CFR part 60, Appendix A).

3.5. The permittee shall maintain records of the following:

3.5.1. Details of each visual survey and visible emissions observation, including date, time, observer and results;

3.5.2. Date, time and type of any investigation conducted pursuant to Condition 3.3.1;

3.5.3. Findings of the investigation, including the reasons for the presence of visible emissions;

3.5.4. Date, time and type of corrective actions taken pursuant to Condition 3.3.2;

3.5.5. Complete documentation of any Method 9 visible emissions observations conducted pursuant to Condition 3.4.

3.6. Baghouse Inspection and Recordkeeping. At least once each year during which the permitted source operates on an Indian reservation, the permittee shall inspect and keep records of the physical condition of the baghouse internals.

3.7. Operation and Production Records. The permittee shall track and record the operation and production such that source-wide emissions can be calculated on a daily, monthly and 12-month rolling basis. Records shall include, but not be limited to:

3.7.1. Daily hot mix asphalt, extracted rock and crushed rock (when required to be aggregated with this asphalt plant) production (tons) and type fuel used for drum dryer;

3.7.2. Daily fuel type(s) and amount (gallons) combusted by generator;

3.7.3. Ash and sulfur content (%) of any reprocessed fuel oil combusted;

3.7.4. Sulfur content (%) of any diesel combusted;

3.7.5. Pressure drop (inches) across the baghouse, recorded at least once per day while operating;

3.7.6. Documentation of any time periods when the drum dryer is producing hot mix asphalt and the baghouse is not fully operational, the baghouse is not in good operating condition, or the drum dryer exhaust is not being routed to the baghouse; and

3.7.7. Daily water and dust suppressant usage for roads, rock crushing (when required to be aggregated with this asphalt plant) and material handling including type and application technique, amount and frequency.

3.8. Equipment Installation. The permittee shall install, calibrate, maintain and operate equipment or systems for recording the operation and production records required by this permit. Equipment must be installed and calibrated before operating the asphalt plant on an Indian reservation.

3.9. Emissions Calculations. Within 20 days after each month (beginning with the first month of operating the permitted source at a location on an Indian reservation and continuing until eleven months after moving the permitted source to a location off an Indian reservation), the permittee shall calculate and record the source-wide monthly emissions (tons/month) and the rolling 12-month total emissions (tons/year) for CO, NOx, PM, PM10, SO2 and VOC using the calculation techniques required in Condition 2.

3.10. Records Retention. Copies of all required monitoring records, notifications and reports required by this permit and location approval letters from EPA shall be kept with the asphalt plant for a period of five years and shall be made available to EPA upon request.

4. Reporting Requirements

4.1. Notification before Relocation. The permittee shall notify EPA in writing at least 40 days before relocating the permitted source to or from a location on an Indian reservation. The notification shall include:

4.1.1. Complete descriptions of the existing and new locations including state, county, physical address and longitude and latitude coordinates;

4.1.2. Whether the new location(s) is on an Indian reservation;

4.1.3. If the new location(s) is not on an Indian reservation, the name of the Title V permitting authority at the new location(s); and

4.1.4. If the new location(s) is on an Indian reservation, the following information;

4.1.4.1. The source of crushed rock used by the hot mix asphalt plant including the owner name, operator name, contact information and location of the rock extraction and rock crushing operation and whether either or both is under contract to the owner or operator of the hot mix asphalt plant;

4.1.4.2. The expected existence of any other air pollution emitting operations located at the same site(s) as the permitted source;

4.1.4.3. The expected equipment list and operating configuration of the permitted source including a flow diagram;

4.1.4.4. The expected operating hours and production rates of the permitted source at the new location(s);

4.1.4.5. The expected duration (days) of operation of the permitted source at the new location(s);

4.1.4.6. An inventory of emissions actually emitted by the permitted source during the most recent previous 12 months for CO, NOx, PM, PM10, SO2 and VOC;

4.1.4.7. If the new location(s) has not previously been approved pursuant to Condition 1.3, a plot plan and a map showing locations of any water bodies or wetlands within 5 miles of the new location(s);

4.1.4.8. If the new location has not previously been approved pursuant to Condition 1.3, a list of endangered/threatened species in the new county and any adjacent counties that are within 5 miles of the new location(s) and any available site-specific assessments or approvals related to the Endangered Species Act; and

4.1.4.9. If the new location has not previously been approved pursuant to Condition 1.3, a list of any historical/cultural preservation sites in the county of the new location(s) and any available archeological surveys.

4.2. Notification after Relocation. The permittee shall notify EPA in writing within 15 days after relocating the permitted source to a location on an Indian reservation. The notification shall include:

4.2.1. Actual dates of relocation (last date of operation at previous location, date physically moved from previous location, date of physical arrival at new location, and date operation began at new location); and

4.2.2. Any corrections or adjustments to the information required to be previously submitted in Condition 4.1.

4.3. Notification of Deviations. The permittee shall notify EPA:

4.3.1. By telephone (describing the situation) within 24 hours and in writing within 10 days of determining that the drum dryer is producing hot mix asphalt and the baghouse is not fully operational, the baghouse is not in good operating condition, or the drum dryer exhaust is not being routed to the baghouse; and

4.3.2. In writing (describing the exceedance) within 10 days of determining that the rolling 12-month total emissions, calculated pursuant to Condition 3.9, exceed an emission limit in Condition 2.

4.4. Annual and Final Emission Report. Annually, within 45 days after the end of any calendar year in which the permitted source operated on an Indian reservation and (as a final report) within 13½ months after relocating from a location on an Indian reservation to a location off an Indian reservation, the permittee shall submit to EPA a report that includes:

4.4.1. The locations on an Indian reservation at which the permitted source operated during the time period being reported and the dates of operation at each location; and

4.4.2. The monthly and rolling 12-month total emissions required by Condition 3.9 for the reporting period including all assumptions and calculations used. The final report shall only include monthly and rolling 12-month total emissions, including all assumptions and calculations, not previously reported in an annual report.

4.5. Mailing Addresses and Telephone Numbers. All original notifications and reports shall be sent to EPA at the address below and all telephone notifications shall be made to the telephone number below. A copy of each notification required in Conditions 4.1, 4.2 and 4.3 and each emission report required in Condition 4.4 that does not contain confidential business information shall be sent to the Tribal Environmental Contact at the addresses below if the notification or report applies to that Tribe's reservation.

Original Documents go to EPA at:

Non-Title V Coordinator, AWT-107
U.S. EPA Region 10
Suite 900
1200 Sixth Avenue
Seattle, WA 98101

For telephone notifications:
Call: 1-800-424-4372
(mention the "FARR")

Copies go to Tribal Contacts at:

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Technical Support Document
Non-Title V Air Quality Operating Permit

Permit Writer: Dan Meyer

Columbia Ready Mix Incorporated
Portable Hot Mix Asphalt Plant

Purpose of Owner-Requested Non-Title V Operating Permit And Technical Support Document

Title 40 Code of Federal Regulations Section 49.139 establishes a permitting program to provide for the establishment of Federally-enforceable requirements for air pollution sources located within Indian reservations in Idaho, Oregon and Washington. The owner or operator of an air pollution source who wishes to obtain a Federally-enforceable limitation on the source's actual emissions or potential to emit must submit an application to the Regional Administrator requesting such limitation. The United States Environmental Protection Agency (EPA) then develops the permit via a public process. The permit remains in effect until it is modified, revoked or terminated by EPA in writing.

This document, the technical support document, fulfils the requirement of 40 CFR § 49.139(c)(3) by describing the proposed limitation and its effect on the actual emissions and/or potential to emit of the air pollution source. Unlike the Operating Permit, this Technical Support Document is not legally enforceable. The permittee is obligated to follow the terms of the permit. Any errors or omissions in the summaries provided here do not excuse the permittee from the requirements of the permit.

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1. EPA Authority to Issue Non-Title V Permits

On April 8, 2005 the United States Environmental Protection Agency (EPA) adopted regulations (70 FR 18074) codified at 40 CFR Parts 9 and 49, establishing Federal Implementation Plans under the Clean Air Act for Indian reservations in Idaho, Oregon and Washington. One Federal Implementation Plan, commonly referred to as the Federal Air Rules for Reservations (FARR), put in place basic air quality regulations to protect health and welfare on Indian reservations located in the Pacific Northwest. This permit has been developed pursuant to 40 CFR § 49.139 which creates a non-Title V permitting program for establishing Federally-enforceable requirements for air pollution sources on Indian reservations.

2. Project Description

2.1 Background

Three federal air quality programs exist that apply to primarily major sources of air pollution: Prevention of Significant Deterioration (PSD) construction permits; Title V operating permits; and Maximum Achievable Control Technology (MACT) standards. The definition of "major source" is slightly different in each program, but is generally based on the amount of pollutants emitted by a source. A source that would otherwise be major can avoid these programs by voluntarily limiting emissions of the regulated pollutants to less than the thresholds for applicability in each program. EPA's non-Title V permit program, created in the FARR, can be used by sources to establish limits for avoiding PSD permitting, Title V permitting and MACT standards. Columbia Ready Mix Inc. (Columbia) believes that its portable hot mix asphalt (HMA) plant potential emissions are less than the MACT thresholds considering inherent physical limitations. To avoid Title V and PSD permitting obligations, however, Columbia is requesting emission limits not already in place.

2.2 Request Description

On March 24, 2010, EPA Region 10 received an application from Columbia requesting emission limits be established that allow Columbia to operate its portable HMA plant on the Coeur d'Alene, Fort Hall, Kootenai, Nez Perce, Umatilla, Colville, Kalispel, Spokane and Yakama Indian Reservations without being subject to PSD and Title V permitting. Although additional information in support of the non-Title V application has been submitted to EPA through subsequent email and phone conversations, Columbia has not yet identified any specific locations for which it intends to operate. As a source that normally operates seasonally, Columbia believes its actual annual emissions will be well below the Title V, PSD and MACT major source applicability thresholds.

3. Facility Information

3.1 Ownership & Location

The portable HMA plant is privately owned and operated by Columbia. The plant is considered a portable source because the equipment can be easily dismantled, transported to different locations and reassembled for operation. As such, Columbia must comply with the requirements of each jurisdiction in which it operates. Columbia currently has a permit to construct from the State of Washington Department of Ecology's Central Regional Office (Permit Number 10AQ-C140 issued on May 3, 2010) that authorizes it to operate within that jurisdiction. This non-Title V permit authorizes Columbia to operate on nine Indian reservations in Idaho, Oregon and Washington provided Columbia complies with the permit conditions and receives approval from EPA for each specific location through the mechanism described in the permit. At the time of initial permit issuance, no specific locations have been approved.

3.2 Facility Description

This facility is a portable counter-flow HMA plant which uses a mixture of sized aggregate and liquid asphalt cement to make HMA paving material. Stockpiled aggregate, which may consist of recycled asphalt pavement (RAP), is transferred to feed bins. Virgin aggregate is dispensed from a set of bins onto feeder conveyors, which transfer the aggregate to the drum mix dryer through a scalper screen. The scalper screen removes oversized material from the aggregate feed. Virgin aggregate travels the entire length of the rotating drum dryer where it is heated and dried. RAP is dispensed through a separate set of bins and is introduced nearer the exit of the drum mix dryer. A measured amount of heated asphalt cement is added and mixed with the hot aggregate and RAP just prior to the resultant HMA exiting the dryer. The HMA is then conveyed to a hot storage silo until it can be loaded into trucks for transport off site

The dryer is heated by burners fueled by natural gas, propane, #2 diesel or reprocessed fuel oil (RFO) sometimes referred to as used oil or waste oil. Asphalt cement is stored in an above-ground storage tank, kept in a liquid state using an electric tank heater. All fuels are stored in above-ground tanks. Electrical power is provided by a connection to the local grid (when available) or by a 820 kW portable generator that is fueled by #2 diesel. A second 205 kW portable generator fueled by #2 diesel is available. The facility Standard Industrial Classification code is 2951, Asphalt Paving Mixtures and Blocks. The drum dryer emissions are controlled by a baghouse (fabric filter). Water may be applied to traffic areas to control fugitive dust.

Plant configurations from project to project can vary somewhat. Typically, the plant configuration will include the HMA plant drum dryer, a diesel generator, an asphalt tank, fuel storage tanks, HMA storage silo, along with some combination of conveyors, trucks, and loaders. Table 1 lists and describes the emission units and emission controls that typically exist.

Columbia owns and operates businesses that mine, crush and screen rock to produce aggregate that is used as a raw material. Typically, rock is extracted from the earth and crushed at a different location or before the portable HMA plant is moved to the work site. EPA's source aggregation policy requires two sources to be considered one source for permit applicability purposes if their operations are: (1) located on one or more contiguous or adjacent properties, (2) are under common control (e.g. CPM owns both or the rock crusher is a subcontractor to CPM), and (3) belong to the same industrial grouping (two-digit Standard Industrial Classification code) or one operation supports the other operation with most of its output. HMA manufacturing (29) and nonmetallic mineral extraction & crushing (14) have different Standard Industrial Classification codes but while rock is extracted and crushed for an HMA plant, it is clearly a support operation to the HMA plant even if the rock is extracted and crushed before the HMA plant is moved to a contiguous or adjacent site. If a combination of HMA manufacturing and rock extraction and rock crushing meet all three of EPA's criteria for aggregation and consideration as one source, then it is necessary to count the emissions from the HMA plant and rock extraction and rock crushing (while the upstream activities support the HMA plant) to determine compliance with emission limits in this non-Title V permit. Source aggregation decisions can be very complicated. EPA should be consulted for regulatory advice about aggregation.

Table 1: Emission Units (EU)

EU #	Source Description	Emission Controls
1	**HMA Drum Dryer**: CMI Model PTD 400; manufactured 1996, portable, counter-flow design drum; 400 ton/hr rated capacity; RAP capability; 88 mmBtu/hr burner, fueled with natural gas, propane, #2 diesel or RFO	Roto-Aire Model RA-418PTD Baghouse*

EU #	Source Description	Emission Controls
2	**Generators** **(1) Primary Generator**: Caterpillar Model 3508TA (compression ignition); manufactured 1999; fueled with #2 diesel; 820 kW output (7.9 mmBtu/hr heat input) **(2) Backup Generator**: Caterpillar Model 3306 (compression ignition); manufactured 1996; fueled with #2 diesel; 205 kW output (2.2 mmBtu/hr heat input)	None
3	**Storage Tanks** **(1) Liquid Asphalt Cement Storage Tank:** 30,000 gallon capacity; electrically heated **(2) #2 Diesel Storage Tank:** 12,000 gallon capacity to supply drum dryer **(3) #2 Diesel Storage Tank:** 4,000 gallon capacity portable tank trailer **(4) Undefined Liquid Fuel Storage Tank:** 1,500 gallon capacity	None
4	**Aggregate Handling**: via trucks, loader and conveyors; to and from piles and to drum dryer; includes RAP	Water spray bars and enclosures
5	**Silo Filling**: via conveyor from drum dryer	Reinjection to dryer
6	**Truck Loading and Fumes**: HMA truck load-out from silos and fumes from loaded truck bed while in plant	None
7	**Traffic**: HMA trucks, aggregate and RAP trucks, asphalt trucks, loader for aggregate and RAP	Water application
8	**Wind Erosion**: open areas and aggregate storage piles	None

* All known emission controls are listed – required controls are noted with an asterisk

3.3 Local Air Quality

Columbia has requested this permit to allow operation on nine Indian reservations. All of the reservations are currently unclassifiable or attain the national ambient air quality standards for all criteria pollutants with the exception of the Fort Hall Reservation. A portion of the reservation is designated moderate nonattainment for PM10 as specified in 40 CFR 81.131. Areas of the country where ambient air pollution concentrations exceed the NAAQS are designated "nonattainment," and NNSR applies in nonattainment areas. An area is unclassifiable when there is insufficient monitoring data to determine its attainment status, and PSD applies in attainment and unclassifiable areas. Ambient air quality designations are presented in 40 CFR Part 81

4. Regulatory Analysis and Permit Content

4.1 Evaluation of Request

The Clean Air Act requires all major sources to obtain a PSD permit to construct and a Title V permit to operate. Major sources of hazardous air pollutants (HAP) are also subject to the MACT program. The definition of "major" and the criteria for qualifying as a major source are slightly different for each of the three programs. Asphalt plants that have the potential to emit (PTE) 250 tons per year or more are subject to PSD. Sources that have the potential to emit 10 tons per year or more of any individual HAP or 25 tons per year or more of all HAPs emitted (including fugitive emissions) are subject to the MACT program. Sources that have the potential to emit 100 tons per year or more or that are major for PSD or MACT purposes, are subject to Title V. PTE is based on the source's maximum capacity operating 8760 hours per year and only considers emission controls or limits that are enforceable (see the federal requirements

discussions in Section 4.2). Sources categories subject to a New Source Performance Standard (NSPS) that was promulgated as of August 7, 1980, must count fugitive as well as non-fugitive criteria pollutants when determining major source status. NSPS Subpart I, originally promulgated in 1973, applies to HMA plants, so fugitive emissions must be counted when determining major source status for HMA plants.

On the occasion that a major source intends to locate in a nonattainment area, the source is required to obtain a NNSR permit. Columbia is requesting authorization to erect and operate its HMA plant on the Fort Hall Reservation, and a portion of the reservation is designated nonattainment for PM10. Any source with potential PM10 emissions exceedeing 100 tpy is subject to NNSR.

As shown is Table 2, Columbia has the potential to emit more than 250 tpy of CO, PM and SO2 and more than 100 tpy of NOx, PM10 and VOC. HAP (total and individual) and lead emissions are predicted to be below the Title V and MACT applicability thresholds. See Appendix A for emission inventory details. Without enforceable emission limits in all jurisdictions in which they operate, Columbia is subject to PSD and Title V.

Table 2: Potential to Emit (PTE)

#	Emission Unit	Annual Potential Emissions (tons per year)[1]								
		CO	Pb	NOx	PM	PM10	SO2	VOC	HCOH	HAP
1	Drum dryer	228	<1	96	49	7	307	56	5.4	18.7
2	Generators	29	<1	111	3	3	18	3	<0.1	0.1
3	Storage tanks	<1						1	0.5	0.9
4	Aggregate handling				74	22				
5	Silo filling	2			1	1		21	0.1	0.3
6	Truck loading/fumes	3			<1	<1		9	<0.1	0.2
7	Traffic				275	71				
8	Wind erosion				1	<1				
	Calculated PTE	262	<1	207	404	105	325	90	6.1	20.2
	New PTE Limits[2]	80	N/A	80	200	80	80	80	N/A	N/A

[1] Carbon monoxide; lead; nitrogen oxides; particulate matter; particulate matter less than 10 microns; sulfur dioxide; volatile organic compounds; formaldehyde (highest plant wide single HAP); total hazardous air pollutants.

[2] The PTE is capped by new limits created in this non-Title V permit.

The emission estimates considered each applicable emission limit paired with each fuel type that can be used by the equipment to determine the worst-case emissions that are allowed, assuming full-time operation at full capacity, which would produce 3.5 million of tons of HMA per year. Note that individual HAP PTE estimates were based on the worst-case fuel for each individual HAP, while the emission unit HAP PTE was based on a summation of the worst-case fuel for the emission unit. Plantwide HAP PTE was a summation of the emission units' HAP PTE. PTE was also limited by applicable NSPS and FARR emission limits when the limits resulted in lower emissions than available emission estimation techniques predicted. Emission testing performed in 2009 demonstrated that actual PM emissions were well below the NSPS limit. The permittee can use the site-specific PM data to develop an emission factor for use when reporting actual emissions.

As explained in Section 2.2 above and in Table 2, to avoid being subject to Title V and PSD, Columbia has requested PTE limits (called synthetic minor limits) be created in a non-Title V permit. Columbia

anticipates only seasonal operations, resulting in production of less than 6% (200,000 tpy) of the potential production (3.5 million tpy) used in the emission estimates. At the lower production rate and using fuels with much lower sulfur content than required, Columbia is confident that its actual emissions will be well below the emission limits requested. Actual emissions will be determined using actual production rates, fuels and control efficiencies. If better emission factors (e.g. developed by testing the emissions from this source) are available that better reflect actual emissions, then those factors should be used. As described in more detail in Section 4.3, the permit will limit emissions on a rolling 12-month basis to:

- Not more than 200 tpy for PM (avoids PSD);
- Not more than 80 tpy for CO, NOx, PM10, SO2, VOC (avoids PSD and Title V).

Over 80 percent of the PM and PM10 emissions from this plant are expected to be fugitive emissions. Emission estimates do not take into account any unenforceable emission reductions techniques that the permittee might use (e.g. road watering) to comply with the fugitive dust or visible emission requirements that may apply. Techniques exist for quantifying emission reductions due to road watering. If the permittee relies upon controls to lower actual emissions, EPA will require adequate documentation of the emission reduction techniques and applicable operational parameters that the quantification techniques employ. The permittee should discuss the use of such techniques with EPA before using them for calculation, compliance and reporting purposes.

For portable sources such as HMA plants that move around frequently, it is questionable whether the generators would be considered to be a stationary source or a non-road engine (see the generator discussion in the NSPS discussion in section 4.2). If a generator qualifies as a non-road engine it does not need to be included in the PTE analysis. Even though Columbia does not intend to operate the generators in the same location for more than 12 months, since we are considering worst-case scenarios, the PTE analysis assumes the emissions from the generators count towards applicability. Note that even if the generators were not counted, the source would still be major for CO, PM, PM10 and SO2 emissions and limits (and this permit) would be necessary to avoid PSD and Title V.

The emission inventory in Appendix A does not include any rock extraction or crushing emission units because Columbia has not indicated to EPA any specific and certain intention of performing either activity in support of the HMA plant. As explained in TSD Section 3.2, if a rock extraction and crushing operation ever meets EPA's source aggregation criteria and must be considered part of the portable HMA plant, then Columbia will be required to account for the emissions from the rock extraction and crushing operation to document compliance with the emission limits in this permit. In that case, only the actual emissions (including fugitives) emitted by the rock extraction and crushing activities while they support the HMA plant must be added to the HMA plant's rolling 12-month emissions (including fugitives) to determine compliance with the 12-month rolling emission limits in this permit. Columbia's request is reasonable and approvable.

4.2 Other Federal Requirements

Endangered Species Act (ESA) – EPA is obligated under ESA, Section 7, 16 U.S.C. §1531, to consider the impact that a federal project may have on listed species or critical habitats. EPA considers ESA issues in the context of permitting decisions on a case-by-case basis.

Although this permit creates emission limits that allow the permittee to operate on nine Indian reservations in Idaho, Oregon and Washington without being subject to PSD or Title V permitting, Columbia cannot actually erect and operate its portable HMA plant until after EPA approves of the specific location. To gain approval for a specific location, the permittee must notify EPA 40 days prior to moving there and supply location-specific information. EPA will post a notice on EPA Region 10's web

site describing the new location and stating that EPA is assessing potential ESA impacts as a part of EPA's approval of a the permittee's relocation. EPA will within 40 days assess the potential for effects on listed species and critical habitat. EPA may refer to the ESA decision in any storm water permits issued to the permittee. If EPA determines, for that requested location, that there will be "no effect" regarding ESA impacts, EPA will send the permittee a letter approving the permittee's move to and operation at the new location and post the decision on EPA Region 10's web site. If EPA cannot conclude that there will be no effect, EPA will notify the permittee of the need for consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service and proceed with that process. Consultation can be expected to delay the permittee's planned move.

Given that Columbia has identified no specific location upon which to erect and operate its portable HMA plant, EPA is not seeking input at this time regarding possible ESA concerns.

Environmental Justice (EJ) – Pursuant to Executive Order 12898 issued on February 11, 1994 and entitled, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," EPA is required to identify and address disproportionately high and adverse human health or environmental effects of regulatory programs, policies, and activities on minority populations and low-income populations. Consistent with a December 1, 2000, EPA memorandum entitled, "EPA Statutory and Regulatory Authorities under Which Environmental Justice Issues May Be Addressed in Permitting," EPA considers environmental justice issues in the context of permitting decisions on a case-by-case basis.

Although this permit creates emission limits that allow the permittee to operate on nine Indian reservations in Idaho, Oregon and Washington without being subject to PSD or Title V permitting, Columbia cannot actually erect and operate its portable HMA plant until after EPA approves of the specific location. To gain approval for a specific location, the permittee must notify EPA 40 days prior to moving there and supply location-specific information. EPA will post a notice on EPA Region 10's web site describing the new location and stating that EPA is assessing potential EJ issues as a part of EPA's approval of a relocation. EPA will within 40 days assess the potential for disproportionately high and adverse effects on an EJ community utilizing, in part, maps that show environmental justice indicators for poverty and people of color living on Indian Reservations in the Pacific Northwest. These maps are available on EPA's air permits website at this address: http://yosemite.epa.gov/R10/ocrej.nsf/environmental+justice/maps. If EPA determines, for the requested location, that there will be no disproportionate or adverse impacts regarding EJ, EPA will send the permittee a letter approving the permittee's move to and operation at the new location and post the decision on EPA Region 10's web site. If EPA concludes that there will be a disproportionate or adverse effect, EPA will notify the permittee of the need for additional consideration and begin to address those concerns. If EJ issues are identified, the permittee's planned relocation may be delayed.

Given that Columbia has identified no specific location upon which to erect and operate its portable HMA plant, EPA is not seeking input at this time regarding possible EJ concerns and whether the permittee's operation might cause a disproportionately high environmental or public health impact on an EJ community.

National Historic Preservation Act (NHPA) – Under Section 106 of NHPA (16 U.S.C. 470f), federal agencies are required to take into account the effect a permitted project may have on any sites that are listed or eligible for listing in the National Register of historic properties as well as sites that are considered tribal cultural resources.

Although this permit creates emission limits that allow the permittee to operate on nine Indian reservations in Idaho, Oregon and Washington without being subject to PSD or Title V permitting, Columbia cannot actually erect and operate its portable HMA plant until after EPA approves of the

specific location. To gain approval for a specific location, the permittee must notify EPA 40 days prior to moving there and supply location-specific information. EPA will within 40 days assess the potential for effects on historic or cultural resources. EPA will contact the State and/or Tribal Historic Preservation Officer (SHPO/THPO) to confirm whether there is a concern about the permittee's proposed new location. Based on that input, if EPA determines, for that specific location that there are no concerns, EPA will send the permittee a letter approving the permittee's move to and operation at the new location. If historic or cultural issues are identified, EPA will work with the permittee and the preservation officer(s) to address the concerns before approving the permittee's relocation.

Given that Columbia has identified no specific location upon which to erect and operate its portable HMA plant, EPA is not seeking input at this time regarding possible NHPA concerns.

National Environmental Policy Act (NEPA) Review – Under Section 793(c) of the Energy Supply and Environmental Coordination Act of 1974, no action taken under the Clean Air Act shall be deemed a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969. This permit is an action taken under regulations implementing the Clean Air Act and is therefore exempt from NEPA.

New Source Performance Standards (NSPS) – Applicable NSPS requirements, found in 40 CFR 60, can be considered in determining a source's PTE because they are enforceable limits on emissions. Five NSPS subparts may apply to portable asphalt plants: 40 CFR 60, subparts I (asphalt plants), K (tanks), Ka (tanks), Kb (tanks) and IIII (internal combustion engines). The permittee should be aware that newly promulgated NSPS not discussed here may also be applicable.

Subpart I (HMA Plants) applies to the permittee because the asphalt plant was constructed in 1996, well after the June 11, 1973, cutoff for applicability. The standard includes a particulate matter emission limit of 0.04 grains per dry standard cubic foot of exhaust and an opacity limit of 20% or greater. The standard also requires a source test upon startup. The permittee accomplished testing most recently in May 2009, results indicate compliance with the NSPS limit. The NSPS requirements are not included in the permit; however, the permittee is still subject to the standard and responsible for complying with the limit. The particulate matter emission limit was also used to evaluate worst-case "allowable" potential to emit estimates in the emission inventory.

The permittee has four liquid storage tanks. Three NSPS subparts may apply to the storage tanks: 40 CFR 60, Subparts K (Storage Vessels "Commenced" from 6/12/73 to 5/18/78), Ka (Storage Vessels "Commenced" from 5/19/78 to 7/22/84) and Kb (Storage Vessels "Commenced" after 7/23/84). Subparts K and Ka apply to tanks larger than 40,000 gallons and subpart Kb applies to tanks greater than or equal to 75 cubic meters (19,813 gallons). The permittee's tank capacities are as follows: Tank #1 - 30,000 gallon heated liquid asphalt cement storage tank, Tank #2 – 12,000 gallon #2 diesel storage tank, Tank #3 – 4,000 gallon #2 diesel portable storage tank, and Tank #4 – 1,500 gallon undefined liquid fuel storage tank. One of the four tanks is larger than 75 cubic meters and presumably was manufactured after 1984. Storage tanks that are greater than 75 cubic meters but less than 151 cubic meters storing a liquid with a maximum true vapor pressure less than 15.0 kilopascals are exempt from subpart Kb [see 60.110b(b)]. The predicted maximum vapor pressure, based on the daily liquid surface temperature, for liquid asphalt cement in a heated tank can be expected to be less than 1 kPa. Based on the size of the tanks and the maximum true vapor pressure of the stored liquids, none of the tanks are subject to NSPS.

Subpart IIII (Stationary Compression Ignition Internal Combustion Engines) applies to generators manufactured, modified or reconstructed after July 11, 2005. The permittee has two generators. NSPS does not apply to a generator that qualifies as a non-road engine. If a generator operates in the same location for more than 12 months (can be shorter for seasonal sources), it will not be considered a non-

road engine and could be subject to this subpart. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. If the generator does not qualify as a non-road engine, then NSPS applicability must be considered. Columbia's generators were manufactured in 1996 and 1999 and so, based on the criteria in 60.4200, they are not subject to subpart IIII (see the applicability discussion for MACT subpart ZZZZ below) unless it is modified or reconstructed (as defined in NSPS) after July 11, 2005. The permittee should maintain records that document the manufacture date of the generator, whether the generator is ever modified or "reconstructed" (see NSPS for definitions) and how long the generator operates in the same location (to confirm non-road engines status).

National Emission Standards for Hazardous Air Pollutants (NESHAP) – Applicable NESHAP requirements, found in 40 CFR 61 and 63 can be considered in determining a source's PTE because they are enforceable limits on emissions. There are no NESHAP requirements in 40 CFR part 61 that apply to HMA plants. The emission inventory created for this permit indicate that the permittee's portable HMA plant is a true minor source of hazardous air pollutants; as such, the permittee is not subject to any "major source" MACT standards in 40 CFR part 63. One "area source" MACT standard could apply to generators at portable asphalt plants: 40 CFR 63, subpart ZZZZ (internal combustion engines). The permittee should be aware that newly promulgated NESHAP not discussed here may also be applicable.

Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines) applies to stationary compression ignition engines including generators constructed after June 12, 2006. Generators constructed before that date and located at a non-major source are considered existing area sources and are exempted from subpart ZZZZ in 63.6590(b)(3) at this time. Like NSPS, NESHAP do not apply to generators that qualify as non-road engines (see the NSPS discussion about non-road engines above). If the generators do not qualify as non-road engines, then NESHAP applicability must be considered. Columbia's generators were manufactured before 2006 so, per 63.6590(c), it is not subject to subpart ZZZZ or NSPS subpart IIII. The permittee also should maintain records to document the manufacture date of the generators, as well as any modification or reconstruction, of the generators and how long the generators operate in the same location (to confirm non-road engines status).

Federal Air Rules for Reservations (FARR) – Applicable FARR requirements can be considered in determining a source's PTE. There are five FARR requirements that apply to portable asphalt plants and that could contain enforceable limits for PTE purposes: 49.124 (visible emissions); 49.125 (particulate matter emissions); 49.126 (fugitive particulate matter emissions); 49.129 (sulfur dioxide emissions); and 49.130 (sulfur in fuels). The PTE emissions inventory in Appendix A considered these requirements where appropriate when estimating emissions.

4.3 Permit Conditions

The permit establishes PTE limits as well as monitoring, recordkeeping and reporting requirements necessary to assure compliance with the limits. The permit is organized into 4 sections as follow:

1. General Conditions
2. Emission Limits and Work Practice Requirements
3. Monitoring and Recordkeeping Requirements
4. Reporting Requirements

An explanation of each condition in the permit follows.

Permit Section 1, General Conditions

Permit Condition 1.1 clarifies who the permittee is and that the permitted source is the HMA drum dryer (CMI Model PTD 400) and any combination of rock extraction and crushing (when required to be aggregated with this asphalt plant), handling and storage equipment used to produce hot mix asphalt.

Permit Condition 1.2 requires the permittee to comply with the conditions in the permit and any conditions that are created when EPA approves new locations. Those new conditions will be communicated in the letter of approval referred to in Permit Condition 1.3.

Permit Condition 1.3 states that compliance with the permit (and site-specific conditions) allows the permittee to operate at future locations approved in writing by EPA. This helps assure that historical or cultural areas will not be disturbed. Permit Condition 1.3 allows EPA to approve locations on nine Indian reservations. To gain approval for locations, the permittee is required in Permit Section 4 to notify EPA of its plans to relocate and to supply EPA with information about the location. Before approving a location, EPA will verify that there will be no effect on listed species or critical habitat (per ESA), no disproportionate impacts upon minority populations and low-income populations (per EPA's EJ policy), and no adverse effects on historic properties (per NHPA). EPA will also confirm that the permittee is still in compliance with the limits that allow them to avoid PSD and Title V. If EPA believes that adverse effects may occur, additional analysis and approval steps (e.g. biological assessments, consultations and etc) may be necessary before a final approval decision can be reached. Approval letters will be posted on EPA's web site and the permit may be periodically revised to incorporate any approved locations to this condition. Compliance with the permit means that the permittee will not be subject to PSD or Title V permits.

Permit Condition 1.4 states that the permit does not relieve the permittee from complying with any other federal, tribal, state, or local laws or requirements that apply. This permit only creates owner requested limits for the purposes explained above. The permit does not contain other Clean Air Act requirements to which the permitted facility is or may be subject, such as the FARR; New Source Performance Standards, 40 CFR Part 60; and National Emissions Standards for Hazardous Air Pollutants, 40 CFR Part 61, and 63. If in the future, the permittee chooses to relax the limits in Permit Section 2 such that the facility becomes a major source, permitting requirements may apply.

Permit Section 2, Emission Limits and Work Practice Standards

Permit Conditions 2.1 to 2.6 limit the PTE of the facility to 80% of the major source thresholds for PSD (PM) and Title V (CO, NOx, PM10, SO2 and VOC). The thresholds for each program are 250 tpy (PSD) and 100 tpy (Title V). The Title V limits effectively limit emissions for PSD purposes with the exception of PM which is no longer considered a regulated pollutant for Title V applicability purposes (which is the reason the limit is 200 tpy). These synthetic minor limits allow the permittee to be treated as a minor source for permitting purposes. Each limit is written as a rolling 12-month total where each month, actual emissions must be totaled for the last 12 months to determine compliance with the ton per year limit. Emission factors are relied upon for calculating actual emissions. If a co-located rock crusher is determined to meet the criteria for aggregation (common control; contiguous and adjacent location; and a support relationship) with the asphalt plant, the emissions from the rock crusher must be added to the emission from the asphalt plant's emissions to determine compliance with these emission limits. EPA should be consulted if there is any question about EPA's aggregation policies and specific aggregation determinations.

Limiting emissions to a value equal to 80% of the major source threshold levels is necessary to account for the unknown uncertainty in the calculations employed when determining actual emissions generated

by this source. Limiting these "calculated emissions" to a fraction of the threshold level helps assure that actual emissions remain below the major source threshold level. According to the Clean Air Act Stationary Source Compliance Monitoring Strategy, synthetic minor sources with PTE limits at 80 to 100% of the major source thresholds will be inspected on a once every five year frequency. Setting the limits within that range will help to ensure adequate compliance assurance.

Permit Condition 2.7 requires good operation of the fuel burning equipment (drum dryer and generators) and the drum dryer baghouse. Good operation generally implies proper operation and good maintenance of equipment - burner tuning and baghouse bag inspection and replacement as needed. The emission factors relied upon in this permit are assumed to reflect good operation, so good maintenance and operation of the equipment is necessary to ensure the factors are representative of actual operations. This permit condition also requires the baghouse be operated at all times the drum dryer is operated and receives any emissions generated by the drum dryer, again, to assure a level of emission control that reflects good operation and the emission factors relied upon.

Permit Section 3, Monitoring and Recordkeeping Requirements

Permit Conditions 3.1 to 3.5 Visible Emission Monitoring and Recordkeeping - These conditions require a daily survey (a plant walkthrough) for visible emissions, from the drum dryer baghouse stack, as well as specific follow-up steps (investigation, corrective action, RM9 observation and additional recordkeeping and reporting) if visible emissions are observed. If observed visible emissions can not be eliminated within 24 hours, a RM9 opacity observation must be performed. Records of all surveys and observations are required to be kept. This requirement will help ensure that emissions do not exceed the limits created by this permit.

Permit Condition 3.6 Baghouse Inspection and Recordkeeping - This permit condition requires an annual internal inspection of the baghouse to check for wear, corrosion and bag degradation, blinding or channeling that could impair the performance of the unit. Again, the requirement to inspect and appropriately maintain the baghouse is believed to be necessary to ensure the emission factors used in the monthly compliance evaluation represent actual operations.

Permit Condition 3.7 Operations and Production Records - The permittee must track and record the operations and production of the plant (including rock extraction and crushing equipment when required to be aggregated with this asphalt plant) such that facility-wide emissions can be reliably calculated on a monthly and 12-month basis and for troubleshooting compliance concerns. Records shall include all information necessary to perform emission calculations as required by Permit Condition 3.9. Emission estimation techniques, and the data needed, are described in detail in Appendix A to this TSD. Most of the data (production, fuel usage, baghouse pressure drop and fugitive dust controls) must be recorded each day. Other data, such as fuel sulfur and ash content, must be documented for each fuel load or through actual measurements to represent what is being burned at any time. Pursuant to Permit Condition 2.7, the drum dryer is required to be vented to the baghouse at all times and the baghouse must be kept in good operational condition. Permit Condition 3.6 requires the baghouse internals to be inspected annually. The permittee must document any period of operation when (1) the drum dryer is not vented to the baghouse and (2) the baghouse is not in good operation to assure compliance with Permit Condition 2.7.

Permit Condition 3.8 Equipment Installation – Some monitoring requirements will require the permittee to have equipment to indicate the operational parameters that must be recorded. The permittee can also automate some recordkeeping systems to assure data is recorded. For instance, baghouse pressure drop requires pressure reading instrumentation and can be linked to recording equipment. Some combustion devices can also be equipped with fuel usage measurement and recording instrumentation. All records can

be manually recorded by plant personnel using the technique (or "system") the permittee determines is appropriate to comply with the permit. If monitoring equipment will be installed and used, this condition requires it to be appropriately calibrated and maintained before the source operates on an Indian reservation.

Permit Condition 3.9 Emissions Calculations – Because compliance with the synthetic minor emission limits created in this permit must be determined on a rolling 12-month basis, this condition requires the permittee to confirm compliance with the emission limits in the permit every month that the source operates on an Indian reservation and continuing for an additional 11 months after leaving an Indian reservation, no matter which jurisdiction the source moves to. Consistent with that, it also requires the permittee to include the emissions the plant emitted during the 11 months prior to moving to an Indian reservation, again, no matter which jurisdiction the plant operated in. Obviously, it would be unrealistic to expect the permittee to anticipate when they will have a project on an Indian reservation such that they will have collected 11 months of data to calculate its emissions in advance of moving an Indian reservation; therefore, permittees with EPA-issued permits that contain synthetic minor limits should always collect the necessary data to calculate emissions from its plant, no matter where they operate. This will allow them to be able to produce accurate emissions calculations for any period of time necessary. If the recordkeeping is routine for the plant personnel, it is also less likely that the source will make recordkeeping errors during the time it needs to report to EPA.

Here is an example to demonstrate how the rolling 12-month limits work:

> The permittee moves its plant to an Indian reservation and begins operating in June 2011. While the plant is operated, the permittee records all of the production records required in Permit Condition 3.7. By July 20, 2011 (20 days after the month of June), the permittee must use the production records for June 2011 and emission calculation techniques in Appendix A to this TSD to calculate its emissions (in tons) for six pollutants. If they haven't yet, the permittee must also use previously recorded production records and the same emission calculation techniques to calculate its emissions (in tons) for the 11 months prior to June 2011 (July 2010 to May 2011), no matter where they had been operating during that time period. They must add the calculated June 2011 emissions to the calculated July 2010 - May 2011 emissions to determine whether they are in compliance with the ton per year emission limits in the permit. If the calculated emissions exceed a permit limit, the permittee must notify EPA pursuant to Permit Condition 4.3.2 in writing no later than 10 days after identifying the exceedance (in this example by July 30, 2011). If the plant continues to operate, the calculation routine is repeated within 20 days after the next month of operation. If the plant moves to a location off an Indian reservation before the end of June 2011, the permittee must continue to repeat the calculation routine by tracking production and calculating emissions for the months July 2011 thru May 2012 no matter where it is located, notifying EPA if the calculated emissions ever exceed the permit limits.
>
> By February 15, 2012, the permittee must send to EPA the emission report required in Permit Condition 4.4 including the calculated monthly emissions and 12-month rolling total emissions for the time period time period July 2010 thru December 2011. By June 30, 2012, the permittee must send EPA the emission report required in Permit Condition 4.4 including the calculated monthly emissions and 12-month rolling total emissions for the time period January 2012 to May 2012. The two reports will include a total of 23 months (July 2010 thru May 2012) of calculated emissions and twelve 12-month rolling emission totals (first 12-month period ending June 2011 and last 12-month period ending May 2012). Note that during this time frame, the plant would have been required (by the FARR registration rule, not by this permit) to submit an annual registration report of emissions emitted during the time they operated on an Indian reservation -

this is a separate requirement from the permit requirement to demonstrate compliance with the permit limits.

The emission calculations should be based on the best emission factors available and actual operational and production data. Calculations should be performed as they are described in Appendix A; however, assumptions in Appendix A should be verified as needed and when better information is available, it should be used. For instance, emission factors from site-specific emission testing would likely be more representative than basing emission on NSPS limits or AP-42. Techniques used for the calculations, including any new assumptions, must be clearly documented and acceptable to EPA. The permit does not require the permittee to calculate emissions for operations off an Indian reservation unless those operations fall within the reporting period captured by the permit (11 months before operating on an Indian reservation and 11 months after leaving an Indian reservation); but obviously, the permittee must ensure the information necessary is available when needed.

Permit Condition 3.10 Records Retention – This requirement, to keep all of the required records on site for a period of five years, makes the permit consistent with other EPA recordkeeping requirements.

Permit Section 4, Reporting Requirements

Permit Condition 4.1 Notification before Relocation – The permittee must be able to anticipate relocations of the permitted source (including rock extraction and rock crushing equipment when required to be aggregated with this asphalt plant) well enough to be able to provide EPA information about the new location and its plans for operation at least 40 days before moving; earlier notification would be even better. Information about the permittee's plans to operate will allow EPA to anticipate possible changes to the permittee's emissions when at the new location. Emissions data allows EPA to confirm past compliance with the limits that allow the permittee to avoid PSD and Title V. Location information helps EPA determine agency permitting jurisdictions. If co-located with other operations, EPA can assess whether the operations should be aggregated for program applicability purposes. Other location information allows EPA to assess possible impacts under ESA, EJ and NHPA before approving the new location. If ESA assessments or approvals (even through other permitting programs) or past archeological surveys are available, the permittee should submit them to facilitate EPA's review. The permittee cannot operate at any new locations until they are approved in writing by EPA. Once a specific location has been approved, the permittee still must notify EPA before going there, but no longer needs to submit certain location information already reviewed for that location.

Permit Condition 4.2 Notification after Relocation – When notifying EPA of the actual date of relocation, the permittee can make adjustments/corrections to what was previously reported under Permit Condition 4.1 prior to relocation to ensure EPA has accurate information. The permittee also will be expected to confirm actual dates of its physical move and operation.

Permit Condition 4.3 Notification of Deviations – To expedite the time it takes for EPA to learn that the permittee is having compliance problems, this condition lists the information and timing for notifying EPA about potential deviations from permit conditions. Operating circumstances that are of greatest concern (baghouse not operating or functioning properly) must be reported by telephone within 24 hours of discovery with written follow-up within 10 days. Calculated exceedences of the permit emission limits are expected to be reported in writing within 10 days of discovery. Notifications should include a clear, complete explanation of the exceedance or situation that warrants the notification so EPA understands the severity of the situation.

Permit Condition 4.4 Annual Report – If the permittee operated on an Indian reservation during a given calendar year, the permittee must submit an emission report to EPA that provides a summary of the

operations (dates and locations) and each calculated monthly and 12-month rolling emission total required in Permit Condition 3.9, including any 12-month totals exceeding the permit limits that were previously sent to EPA under the deviation notification requirement in Permit Condition 4.3. The emission report is due annually by February 15 following any year in which the source operated on an Indian reservation. If a source operates on an Indian reservation every year, the source is required to report every year by February 15.

In the case where a source does not operate on an Indian reservation in a given calendar year, but operated on an Indian reservation the previous year, the 12-month rolling totals from the previous year of operation that extend into the new year (recall that 12-month rolling totals extend 11 months after operation ends) will not be captured in the last annual report; a final report that will capture those missing 12-month rolling totals will then be due within 13½ months after leaving the reservation the previous year. If the last month of operation on an Indian reservation happens to be January, the last annual report and final report will be due at the same time; EPA will expect only one report in that case.

The annual report ensures that EPA will receive periodic reports from plants that operate on Indian reservations continually or at least every year. While monthly emissions data might show up in more than one report, each 12-month rolling total should only be reported once. For instance, 12-month rolling totals reported in an annual report due February 15 should not be repeated in a final report later than year; the final report would only include a partial year of 12-month totals that were not reported in the previous annual report. Note that the emission report required by this permit is different than the annual registration report required by 40 CFR 49.138 in the FARR.

Permit Condition 4.5 Mailing Addresses and Telephone Numbers – The telephone number for telephone notifications has been included here. Copies of all notifications and reports must be sent to the Tribal environmental contacts listed that represent the reservation(s) on which the source operated and about which the source is reporting.

5. Permit Procedures

5.1 Permit Revisions, Termination and Reissuance

The permittee may request EPA to revise the conditions of this permit by submitting an application that contains the information specified in 40 C.F.R. 49.139(d). EPA will revise the permit using the same procedures that apply to initial permit issuance.

If the permittee wishes to terminate the permit, a written request must be submitted to EPA explaining the reasons for the request and, if necessary for continued operation, submitting applications for any Clean Air Act permits or approvals that the permittee avoided by establishment of the limits contained in this permit.

This permit may be terminated, revised, or revoked and reissued by EPA for cause. Cause exists to terminate, revise, or revoke and reissue this permit under the following circumstances:

1. This permit contains a material mistake;
2. Inaccurate statements were made in establishing the terms or conditions of this permit;
3. The permittee fails to comply with any condition of this permit; or
4. This permit must be terminated, revised, or reopened and reissued to assure compliance with Clean Air Act requirements.

EPA will use the same proceedings to terminate, revise, or revoke and reissue a permit for cause as for initial permit issuance. Before initiating proceedings to terminate, revise, or revoke and reissue a permit, EPA will provide the permittee at least 30 days' advance written notice of EPA's intent to terminate, revise, or revoke and reissue the permit, except that EPA may provide a shorter notice period in the case of an emergency.

5.2 Public Notice and Comment

As required under 40 CFR § 49.139(c), the draft operating permit was publicly noticed and made available for public comment as follows:

1. Made available for public inspection a copy of the draft operating permit prepared by EPA, the technical support document for the draft permit, the application, and all supporting materials in twelve locations (see the public notice in the administrative record for a list) including at least one location on each of the nine reservations (see 40 CFR 49.139(c)(5)(i));
2. Published the public notice for this draft permit of the availability of the draft permit and supporting materials and of the opportunity to comment in seven newspapers of general circulation in each reservation: Clearwater Progress, Coeur d'Alene Press, Lewiston Tribune, Sho-Ban News, East Oregonian, Spokesman Review and Yakima Herald (see 40 CFR 49.139(c)(5)(ii));
3. Provided copies of the notice to the owner or operator of the air pollution source and each Tribal governing body and Tribal environmental organizations for each of the eight reservations as well as the Idaho Department of Environmental Quality, Oregon Department of Environmental Quality, Benton Clean Air Agency, Southwest Clean Air Agency, Spokane Regional Clean Air Agency, Yakima Regional Clean Air Agency and Washington Department of Ecology (see 40 CFR 49.139(c)(5)(iii)); and
4. Provided for a 30-day period for submittal of public comments, starting upon the date of publication of the notice - note that no public hearing or public comment period extension were requested or held (see 40 CFR 49.139(c)(5)(iv)).

The public comment period for this permit ran from June 17, 2010 to July 19, 2010. EPA received comments from two organizations: Kalispel Tribe of Indians Natural Resources Department (via email from Ken Merrill, Water Resources Manager) and Yakama Nation Environmental Management Program (via letter from Elizabeth Sanchey, Program Manager). As required in 40 CFR § 49.139(c)(5)(iv) and (c)(6), EPA has considered the comments in preparing a final permit and technical support document and has documented a response to each comment below explaining whether any changes to the permit resulted and the reason the change was or was not made. As required in 40 CFR 49.139(c)(7), EPA will send the final permit and technical support document to each person who provided comments on the draft permit to operate and EPA will make available the final permit and technical support document at all of the locations where the draft permit was made available.

Response to Comments from Kalispel Tribe of Indians Natural Resources Department

Appropriateness of EPA Permitting Action – While EPA may have the jurisdiction to issue non-Title V operating permits to portable asphalt plants, the Kalispel Tribe of Indians (Kalispel Tribe) retains the right to deny and/or condition use of these permits on the Kalispel Reservation. The quality of life our membership and community enjoys on its lands is very important to us. Thus unsightly and otherwise burdensome impositions by third parties will be critically reviewed and assessed as to their benefit to the Kalispel Tribe.

The Kalispel Tribe Natural Resources Department has no intent of allowing an asphalt batch plant to be sited on the Kalispel Reservation. It does not seem appropriate for EPA to continue to process a blanket application and issue a permit to a paving company for an air pollutant emissions permit on Kalispel land where it will not be operating. Please reconsider the appropriateness of EPA continuing to pursue this permitting action.

> EPA Response – As stated in Permit Condition 1.4, compliance with this permit does not relieve the permittee from compliance with tribal laws or regulations. EPA's issuance of the permit and subsequent approval of specific plant locations does not prevent the Kalispel Tribe from creating or applying tribal rules that limit or prevent the operation of the asphalt plant on the Kalispel Reservation. EPA's decision to approve or disapprove this permit, however, must be and is consistent with federal laws, regulations and policy.
>
> The permit generally creates emission limits for the asphalt plant as well as an approval process for specific future locations. After the permit is issued, the permittee may or may not seek approval to operate at a specific location on the Kalispel Reservation. In the event that the permittee notifies EPA of its plans to operate on the Kalispel Reservation, EPA will notify the Tribe and seek the Tribe's input regarding compliance with the permit and federal requirements.
>
> We believe this permit action is consistent with federal laws, regulations and policy. No change will be made to the permit as a result of this comment.

Response to Comments from Yakama Nation Environmental Management Program

EPA Trust Responsibility – The mission of the Yakama Nation Environmental Management Program (EMP) is to protect the land, air, water, and other natural resources of the Yakama Nation for future generations. Your Agency has a trust responsibility to assist us in protecting and improving human health while adhering to governing resolutions and the Treaty of 1855. Because you have the technical expertise to evaluate and balance environmental harms with the benefits of sound development, we trust that you have used sound science to ensure that no detrimental health effects will be placed on our population. You may know that the Yakima Valley has been identified by EPA as an Environmental Justice Showcase Community. At this time, we are not aware of the long-term health or environmental consequences these sources will have on our Reservation. Please keep us informed of any changes to these permits, enforcement actions concerning these plants, or scientific findings you may have to assist our tribal Nation.

> EPA Response – EPA will keep the Yakama Nation informed as requested. No change will be made to the permit as a result of this comment.

6. Abbreviations and Acronyms

AFS	Aerometric Information Retrieval System Facility Subset
CFR	Code of Federal Regulations
CO	Carbon monoxide
EJ	Environmental Justice
EPA	United States Environmental Protection Agency (also U.S. EPA)
ESA	Endangered Species Act
FARR	Federal Air Rules for Reservations
FR	Federal Register
HAP	Hazardous air pollutant (plural: HAPs)
HMA	Hot mix asphalt

MACT	Maximum Achievable Control Technology (Title 40 CFR Part 63)
NESHAP	National Emission Standards for Hazardous Air Pollutants (Title 40 CFR Parts 61 and 63)
NHPA	National Historical Preservation Act
NOx	Nitrogen oxides
NSPS	New Source Performance Standards (40 CFR Part 60)
PM	Particulate matter
PM10	Fine particulate matter (≤ 10 microns)
PSD	Prevention of Significant Deterioration (40 CFR Part 52)
PTE	Potential to emit
RAP	Recycled asphalt pavement
SO2	Sulfur dioxide
Title V	Title V of the Clean Air Act
TPY	Tons per year
VOC	Volatile organic compound

Appendix A

Emission Inventory

Columbia Ready Mix Incorporated
Portable Hot Mix Asphalt Plant

Technical Support Document
Non-Title V Air Quality Operating Permit
R10NT501800

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Summary of Facility Potential Criteria Air Pollutant Emissions

Potential to Emit, (tons per year)

Point Sources

	EU 1	EU 2	EU 3	EU 4	EU 5	EU6	EU 7	EU 8	
	Drum Dryer	Diesel Generators	Storage Tanks	Aggregate Handling	Silo Filling	Truck Loading & Fumes	Traffic	Wind Erosion	**Point Source Subtotals**
Carbon Monoxide (CO)	227.76	29.41	0.07		2.07				259.31
Lead (Pb)	0.0263	0.00	0.00		0.00				0.0266
Nitrogen Oxides (Nox)	96.36	110.73	0.00		0.00				207.09
Particulates (PM)	49.37	3.46	0.00		0.58				53.41
Fine Particulates (PM10)	6.83	3.46	0.00		0.58				10.87
Sulfur Dioxide (SO2)	307.33	17.93	0.00		0.00				325.26
Volatile Organic Compounds (VOC)	56.06	3.11	0.76		21.35				81.28

Fugitive Sources

	EU 1	EU 2	EU 3	EU 4	EU 5	EU 6	EU 7	EU 8	
	Drum Dryer	Diesel Generators	Storage Tanks	Aggregate Handling	Silo Filling	Truck Loading & Fumes	Traffic	Wind Erosion	**Fugitive Source Subtotals**
Carbon Monoxide (CO)				0.00		2.98	0.00	0.00	2.98
Lead (Pb)				0.00		0.00	0.00	0.00	0.0000
Nitrogen Oxides (Nox)				0.00		0.00	0.00	0.00	0.00
Particulates (PM)				73.66		0.32	275.32	0.98	350.28
Fine Particulates (PM10)				22.30		0.32	70.92	0.46	94.01
Sulfur Dioxide (SO2)				0.00		0.00	0.00	0.00	0.00
Volatile Organic Compounds (VOC)				0.00		8.66	0.00	0.00	8.66

All Sources

	EU 1	EU 2	EU 3	EU 4	EU 5	EU 6	EU 7	EU 8	
	Drum Dryer	Diesel Generators	Storage Tanks	Aggregate Handling	Silo Filling	Truck Loading & Fumes	Traffic	Wind Erosion	**Plantwide Totals**
Carbon Monoxide (CO)	227.76	29.41	0.07	0.00	2.07	2.98	0.00	0.00	262.29
Lead (Pb)	0.0263	0.0003	0.0000	0.00	0.00	0.00	0.00	0.00	0.0266
Nitrogen Oxides (Nox)	96.36	110.73	0.00	0.00	0.00	0.00	0.00	0.00	207.09
Particulates (PM)	49.37	3.46	0.00	73.66	0.58	0.32	275.32	0.98	403.69
Fine Particulates (PM10)	6.83	3.46	0.00	22.30	0.58	0.32	70.92	0.46	104.88
Sulfur Dioxide (SO2)	307.33	17.93	0.00	0.00	0.00	0.00	0.00	0.00	325.26
Volatile Organic Compounds (VOC)	56.06	3.11	0.76	0.00	21.35	8.66	0.00	0.00	89.94

Plantwide PTE Limits

Carbon Monoxide (CO)	80	tpy, based on emission limit in FARR Non-Title V permit
Lead (Pb)	N/A	
Nitrogen Oxides (Nox)	80	tpy, based on emission limit in FARR Non-Title V permit
Particulates (PM)	200	tpy, based on emission limit in FARR Non-Title V permit
Fine Particulates (PM10)	80	tpy, based on emission limit in FARR Non-Title V permit
Sulfur Dioxide (SO2)	80	tpy, based on emission limit in FARR Non-Title V permit
Volatile Organic Compounds (VOC)	80	tpy, based on emission limit in FARR Non-Title V permit

Notes:

1. The "All Sources" table sums the values in the "Point Sources" and "Fugitive Sources" tables above
2. PM2.5 is assumed to be 0-100% of PM10; because this project is limiting emissions below PSD and Title V applicability thresholds, PM2.5 emission have not been estimated
3. Condensible particulate matter has not been included in PM10 emissions based on EPA's transition period for PM2.5 - see 73FR28321

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Summary of Facility Potential Hazardous Air Pollutant (HAP) Emissions

Potential to Emit, (tons per year)

Inorganics	EU 1 Drum Dryer	EU 2 Diesel Generator	EU 3 Storage Tanks	EU 5 Silo Filling	EU 6 Truck Loading & Fumes	Single HAP Plantwide Totals (tpy)
Antimony Compounds	3.15E-04	0.00E+00				3.15E-04
Arsenic Compounds (incl arsine)	9.81E-04	1.38E-04				1.12E-03
Beryllium Compounds	0.00E+00	1.04E-04				1.04E-04
Cadmium Compounds	7.18E-04	1.04E-04				8.22E-04
Chromium Compounds (incl hexavalent)	9.64E-03	1.04E-04				9.74E-03
Cobalt Compounds	4.56E-05	0.00E+00				4.56E-05
Lead Compounds (not elemental lead)	2.63E-02	3.11E-04				2.66E-02
Manganese Compounds	1.35E-02	2.08E-04				1.37E-02
Mercury Compounds	4.56E-03	1.04E-04				4.66E-03
Nickel Compounds	1.10E-01	1.04E-04				1.10E-01
Phophorus Compounds	4.91E-02	0.00E+00				4.91E-02
Selenium Compounds	6.13E-04	5.19E-04				1.13E-03
Organics						
Acetaldehyde	2.28E+00	8.72E-04	0.00E+00	0.00E+00	0.00E+00	2.28E+00
Acrolein	4.56E-02	2.73E-04	0.00E+00	0.00E+00	0.00E+00	4.58E-02
Benzene	6.83E-01	2.69E-02	2.37E-02	6.83E-03	4.79E-03	7.45E-01
Bromomethane (methyl bromide)	0.00E+00	0.00E+00	3.62E-03	1.05E-03	8.85E-04	5.56E-03
1,3-Butadiene	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbon Disulfide	0.00E+00	0.00E+00	1.18E-02	3.42E-03	1.20E-03	1.64E-02
Chloroethane (ethyl chloride)	0.00E+00	0.00E+00	2.96E-03	8.54E-04	1.93E-05	3.83E-03
Chloromethane (methyl chloride)	0.00E+00	0.00E+00	1.70E-02	4.91E-03	1.38E-03	2.33E-02
Cumene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dichlorobenzene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-02	1.01E-02
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)	3.68E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.68E-10
Ethyl Benzene	4.20E-01	0.00E+00	2.81E-02	8.11E-03	2.58E-02	4.83E-01
Formaldehyde	5.43E+00	2.73E-03	5.10E-01	1.47E-01	8.11E-03	6.10E+00
Furans (all PCDF)	7.01E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.01E-08
Hexane (incl n-Hexane)	1.61E+00	0.00E+00	7.40E-02	2.14E-02	1.38E-02	1.72E+00
Hydrogen Chloride	3.68E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.68E-01
Isooctane (2,2,4-trimethylpentane)	7.01E-02	0.00E+00	2.29E-04	6.62E-05	1.66E-04	7.05E-02
Methyl Chloride (chloromethane)	0.00E+00	0.00E+00	2.00E-04	5.76E-05	0.00E+00	2.57E-04
Methyl Chloroform (1,1,1-trichloroethane)	8.41E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.41E-02
Methyl tert-Butyl Ether (MTBE)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene[1] (also a POM)	1.14E+00	4.50E-03	0.00E+00	8.10E-03	3.16E-02	1.18E+00
Phenol	0.00E+00	0.00E+00	0.00E+00	5.25E-03	2.98E-02	3.50E-02
Polycyclic Organic Matter* (incl naphthalene)	1.55E+00	7.32E-03	0.00E+00	5.08E-02	5.95E-02	1.67E+00
Propionaldehyde	2.28E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-01
Quinone	2.80E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.80E-01
Styrene	0.00E+00	0.00E+00	3.99E-03	1.15E-03	6.74E-04	5.82E-03
Tetrachloroethane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.09E-04	7.09E-04
Toluene	5.08E+00	9.72E-03	4.59E-02	1.32E-02	1.93E-02	5.17E+00
Xylene (incl isomers and mixtures)	3.50E+00	6.68E-03	1.90E-01	5.49E-02	4.51E-02	3.80E+00

	EU 1 Drum Dryer	EU 2 Diesel Generator	EU 3 Storage Tanks	EU 5 Silo Filling	EU 6 Truck Loading & Fumes
Emission Unit HAP Totals	18.698	0.056	0.912	0.319	0.222

Plantwide HAP Total	20.206	tons per year	
Highest Plantwide Single HAP	6.100	tons per year	(formaldehyde)

Notes:

1. Emission-Unit HAP Totals will not equal the sum of individual pollutants
2. Isomers of xylene (m-, p-, o-) are grouped as Xylenes for applicability even though the individual isomers are each listed HAPs in the Clean Air Act
3. Emission units #4, 7 and 8 are not known to emit HAPs

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Criteria Air Pollutant Emission Inventory

Emission Unit: **#1 Drum Dryer**
Description: Hot Mix Asphalt Plant Drum Dryer - counter flow drum mix design, CMI Model PTD 400, manufactured 1996
Control: Roto-Aire Model RA-418PTD Baghouse
Fuel: RF0, #2 diesel, propane or natural gas (RF0, reprocessed fuel oil is called waste oil by AP-42)
Capacity: 400 tph hot mix asphalt Burner: 88 mmBtu/hr capacity
Operation: 8760 hours/year

Potential to Emit, (tons per year)

	RF0		#2 Diesel		Natural Gas		Max
	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	PTE TPY
CO	0.13	227.8	0.13	227.8	0.13	227.8	227.8
Lead	1.5E-05	0.026	1.5E-05	0.026	6.2E-07	0.001	0.03
NOx	0.055	96.4	0.055	96.4	0.026	45.6	96.4
PM	0.028	49.4	0.028	49.4	0.028	49.4	49.4
PM10	0.004	6.8	0.004	6.8	0.004	6.8	6.8
SO2	0.175	307.3	0.055	97.0	0.007	12.6	307.3
VOC	0.032	56.1	0.032	56.1	0.032	56.1	56.1

Estimation Explanations
Emission factor (EF) units are lb/ton HMA product
Worst-case PTE is the higher emitting of the fuel options taking into consideration the most stringent emission limits that exist

CO factor: For RFO, diesel, natural gas: AP-42 3/04, Hot Mix Asphalt Plants, Table 11.1-7, uncontrolled (factor can vary greatly)

Lead factor: For RFO, diesel, natural gas: AP-42 3/04, Table 11.1-12, fabric filter controlled (note: assumes fabric filter is necessary to meet NSPS PM limit)

NOx factor: For RFO, diesel, natural gas: AP-42 3/04, Table 11.1-7 RF0, uncontrolled

PM factor: Option 1: EF based on NSPS limit (40 CFR 60.92, Subpart I) and actual test data as follows (RF0, diesel, natural gas):
EF = (gr/dscf) / (7000 gr/lb) * (dscf/min) * (60 min/hr) / (tph HMA)

NSPS PM Limit =	0.04	gr/dscf (tested at 0.0158 gr/dscf counting front half during May 2009 test)
stack flow during test =	28438	dscf/min measured during May 2009 test
production during test =	346	ton/hr HMA measured during May 2009 test
NSPS-based emission factor =	0.028	lb/ton HMA

Note: NSPS limit is more strict than FARR PM limit of 0.1 gr/dscf, so NSPS will be used for PTE
Option 2: EF Based on AP42, 3/04, Table 11.1-3, PM=0.014 lb/ton for RF0, diesel and natural gas
Note: NSPS based factor is very close to controlled EF from AP-42, so will assume fabric filter is necessary to meet NSPS for all particulates

PM10 factor: AP-42 3/04, Table 11.1-3 -- fabric filter controlled filterable PM10 for RF0, diesel, natural gas (does not include condensible particulate)
filterable = 0.0039 organic = 0.0074 inorganic = 0.012 PM10 EF = 0.0039
Note: assumes fabric filter control is required for NSPS, so will use controlled factors for PM10
Emission factor does not include condensible PM pursuant to EPA's May 16, 2008 final rulemaking.

SO2 factor: Option 1: EF based on FARR combustion stack SO2 limit (40 CFR 49.129(d)(1)) = 500 ppm (dry volume basis at 7% O2) for RF0 oil, diesel, natural gas
EF = (ppm limit) * (1.66E-7 lb/dscf / ppm) * (21-O2test) / (21-O2limit) * (dscf test/min) * (60 min/hr) / (tph HMA)

SO2 limit =	500	ppm @ 7%O2
measured flow rate =	28438	dscf/min measured during May 2009 test
O2 during test =	15	% measureing during May 2009 test
FARR limit O2 =	7	%
production during test =	346	ton/hr HMA
emission factor =	0.175	lb/ton HMA

Note: FARR process SO2 500 ppm limit is not corrected for O2, so in this case is less strict than the combustion limit
Note: For RFO: AP-42 3/04, Table 11.1-7 (0.058 lb/ton) results in lower emissions, but assumed fuel S content is not listed
Note: For #2 diesel: AP-42 3/04, Table 11.1-7 (0.011 lb/ton) results in lower emissions
Note: For natural gas: AP-42 3/04, Table 11.1-7 (0.0034 lb/ton) results in lower emissions
Option 2: EF based on FARR fuel % sulfur limit (40 CFR 49.130(d)(4)) used oil and #2 diesel are %S by wt
For used oil: EF = (%Slimit / 100)*(max BTU/hr)/(140000 Btu/gal fuel)*(gal fuel/7.88 lb)*(2 lb SO2 per lb S)/(max tph HMA)-(SO2 staying in HMA)
For #2 diesel: EF = (%Slimit / 100)*(max BTU/hr)/(140000 Btu/gal fuel)(gal fuel/7.05 lb)*(2 lb SO2 per lb S)/(max tph HMA)*(SO2 fraction not in HMA)
For nat gas: EF = (ppmSlimit * 32 / 385.1E6)*(max mmBTU/hr)/(1020 Btu/cf fuel)*(2 lb SO2 per lb S)/(max tph HMA)*(1 - SO2 staying in HMA)
nat gas conversion: (ppm S) * (MW) / (385.1E6) = lb S / cf nat gas

	used oil	diesel	nat gas	
FARR S limit =	2	0.5	400	% by weight (nat gas is standard ppmv)
max burner firing rate =	8.80E+07	8.80E+07	8.80E+07	BTU/hr
fuel heating value =	1.40E+05	1.40E+05	1020	BTU/gal (nat gas is BTU/cf)
fuel weight =	7.88	7.05		lb/gal
max HMA production rate =	400	400	400	ton/hr HMA
SO2 staying in HMA =	0.1	50	50	% not to exceed 0.1 lb/ton (per AP-42 3/2004, Table 11.1-7)
emission factor =	0.395	0.055	0.007	lb/ton HMA

Option 3: EF Based on AP42, 3/04, Table 11.1-7 for RF0, diesel and natural gas
For RFO: SO2 = 0.058 lb/ton - so actual emission should be lower, but assumed fuel S content is not listed
For #2 diesel: SO2 = 0.011 lb/ton - so actual emissions should be lower
For natural gas: SO2 = 0.0034 lb/ton - so actual emissions should be lower
RFO SO2 PTE EF will be based on FARR 500 ppm SO2 combustion stack limit because it is more strict than FARR 2% fuel sulfur limit.
#2 diesel SO2 PTE EF will be based on FARR 0.5% sulfur limit because it is more strict than FARR 500 ppm SO2 combustion stack limit.
Natural gas SO2 PTE EF will be based on FARR 400 ppmv sulfur limit because it is more strict than FARR 500 ppm SO2 combustion stack limit.

VOC factor: For RFO, diesel, natural gas: AP-42 3/04, Table 11.1-8, uncontrolled

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Criteria Air Pollutant Emission Inventory

Emission Unit: **#2 Diesel Generators**

Description: Caterpillar brand, model 3508TA, 820 kW (7.9 mmBtu/hr - application), manufactured in 1999
Caterpillar brand, model 3306, 205 kW (2.2 mmBtu/hr - application), manufactured in 1996

Control: none

Fuel: #2 diesel

	Caterpillar 3508TA	Caterpillar 3306	
Capacity:	7.900	2.2	mmbtu/hr
Operation:	8760	8760	hours/year

Potential to Emit, (tons per year)

	Caterpillar 3508TA		Caterpillar 3306		Total
	EF	PTE TPY	EF	PTE TPY	PTE TPY
CO	0.85	29.4	0.95	9.2	38.57
Lead	9.0E-06	0.0	9.0E-06	0.0	0.00
NOx	3.2	110.7	4.41	42.5	153.22
PM	0.100	3.5	0.310	3.0	6.45
PM10	0.100	3.5	0.310	3.0	6.45
SO2	0.518	17.9	0.518	5.0	22.92
VOC	0.09	3.1	0.35	3.4	6.49

Estimation Explanations

Note that EU#2 PTE only counts in PSD and Title V applicability if the plant stays in one location for more than one year; otherwise it is considered a non-road engine
Emission factor (EF) units are lb/mmbtu of fuel fired
AP-42 Section 3.3 applies to stationary diesel engines with power output less than 450 kW while Section 3.4 applies to engines with power output greater than 450 kW.

Caterpillar 3508TA Generator

CO factor: AP-42 10/96, Table 3.4-1 Diesel fuel
Lead factor: AP-42 9/98, Table 1.3-10 - this assumes the lead emissions from internal and external combustion will be similar
NOx factor: AP-42 10/96, Table 3.4-1 Diesel fuel
PM factor: AP-42 10/96, Table 3.4-1 Diesel fuel
PM10 factor: All PM assumed to be PM10
SO2 factor: Option 1: EF based on FARR fuel % sulfur limit

EF = S / 100 / (heat content) x ($1x10^6$) x (2 lb SO2) / (1 lb S)

fuel oil heat content =	19,300	btu/lb, AP-42 10/96, Table 3.3-1, footnote c
S =	0.5	% sulfur from FARR 40 CFR 49.130(d)(4)
EF =	0.518	lb/mmBTU fuel oil

Option 2: EF based on FARR 500 ppm stack limit

EF = (ppm) * (1.66E-7 lb/dscf / ppm) * (21-O2RM19) / (21-O2limit) * (dscf/mmbtu)

SO2 limit =	500	ppm @ 7%O2 from FARR 40 CFR 49.129(d)(1)
fuel oil f-factor from RM19 =	9190.0	dscf/mmBtu from 40 CFR 60 App A, Table 19-2 at 0% O2
O2 assumed in RM19 =	0	%
FARR limit O2 =	7	%
EF =	1.14	lb/mmBTU fuel oil

SO2 EF will be based on the FARR fuel sulfur limit because it is more strict than FARR stack SO2 limit
VOC factor: AP-42 10/96, Table 3.4-1 Diesel fuel as TOC

Caterpillar 3306 Generator

CO factor: AP-42 10/96, Table 3.3-1 Diesel fuel
Lead factor: AP-42 9/98, Table 1.3-10 - this assumes the lead emissions from internal and external combustion will be similar
NOx factor: AP-42 10/96, Table 3.3-1 Diesel fuel
PM factor: All PM assumed to be PM10
PM10 factor: AP-42 10/96, Table 3.3-1 Diesel fuel
SO2 factor: Option 1: EF based on FARR fuel % sulfur limit

EF = S / 100 / (heat content) x ($1x10^6$) x (2 lb SO2) / (1 lb S)

fuel oil heat content =	19,300	btu/lb, AP-42 10/96, Table 3.3-1, footnote c
S =	0.5	% sulfur from FARR 40 CFR 49.130(d)(4)
EF =	0.518	lb/mmBTU fuel oil

Option 2: EF based on FARR 500 ppm stack limit

EF = (ppm) * (1.66E-7 lb/dscf / ppm) * (21-O2RM19) / (21-O2limit) * (dscf/mmbtu)

SO2 limit =	500	ppm @ 7%O2 from FARR 40 CFR 49.129(d)(1)
fuel oil f-factor from RM19 =	9190.0	dscf/mmBtu from 40 CFR 60 App A, Table 19-2 at 0% O2
O2 assumed in RM19 =	0	%
FARR limit O2 =	7	%
EF =	1.14	lb/mmBTU fuel oil

SO2 EF will be based on the FARR fuel sulfur limit because it is more strict than FARR stack SO2 limit
VOC factor: AP-42 10/96, Table 3.3-1 Diesel fuel as TOC

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Criteria Air Pollutant Emission Inventory

Emission Unit: **#3 Storage Tanks**

Description: Four tanks are used to store petroleum liquids
(Tank 1) Storage of liquid asphalt
(Tank 2) Storage of #2 diesel fuel for combustion in drum dryer
(Tank 3) Storage of #2 diesel in portable tank trailer which supplies generators
(Tank 4) Storage of undefined liquid

Parameter	Tank 1	Tank 2	Tank 3	Units
Liquid:	Asphalt	#2 Diesel	#2 Diesel	
Control:	none	none	none	
Capacity:	30,000	12,000	4,000	gallons (EPA estimate for Tanks No. 2 and 3)
Operation:	44,991,360	5,506,286	631,971	gallons per year throughput
TOC Emissions	1479.48	25.69	5.10	lbs/yr TOC - value based upon Tanks Program 4.0.9d and adjusted for EPA-calculated throughput

Potential to Emit, (tons per year)

	Tank 1 - Asphalt		Tank 2 - RFO		Tank 3 - #2 diesel		Total
	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	PTE TPY
CO	0.097	7.2E-02					0.072
Lead							
NOx							
PM							
PM10							
SO2							
VOC	1	7.40E-01	1	1.28E-02	1	2.6E-03	0.755

Estimation Explanations

Emission factors (EF) units in table are fraction (%/100) of Total Organic Compound (TOC) emissions from computer program

TOC Emissions: Tanks Computer Program (see AP-42, 7.1 (11/06)), lbs/yr; see application for computer program input details
EPA adjusted Tanks Computer Program output to reflect EPA-calculated annual liquid throughput as reflected in table below:

Parameter	Tank 1	Tank 2	Tank 3	Units
Modeled Operation:	2,313,000	5,506,286	631,971	gallons per year throughput. Applicant modeled emissions for Tank No. 1 while EPA modeled emissions for Tanks No. 2 and 3.
PTE Operation:	44,991,360	5,506,286	631,971	gallons per year throughput as calculated by EPA and presented below
Ratio of PTE Operation to Modeled Operation:	19.45	1.00	1.00	
Modeled TOC Emissions:	76.06	25.69	5.10	lbs/yr TOC - calculated with Tanks Program 4.0.9d
PTE TOC Emissions:	1479.48	25.69	5.10	lbs/yr TOC - calculated by adjusting applicant's modeled value for Tank No. 1 by ratio of PTE/modeled annual tank throughput

PTE Annual Asphalt Throughput:
Asphalt is assumed to be 5.5% wt of final HMA product and 8.57 lb/gal; so, gallons/ton of asphalt = (5.5/100)/(8.57 lb/gal)*(2000 lb/ton) = 12.84 gal/ton
Maximum HMA production = (400 tph)*(8760 hpy) = 3,504,000 tpy HMA; using (12.84 gpt)*(3,504,000 tpy) = 44,991,360 gal/yr liquid asphalt
PTE Annual Drum Dryer #2 Diesel Usage:[1]
Maximum #2 diesel usage = (88,000,000 Btu/hr)*(gal #2 diesel/140,000 Btu)*(8760 hpy) = 5,506,286 gal/yr #2 diesel
PTE 820 kW and 205 kW Generators Tank #2 Diesel Usage:[2]
Maximum #2 diesel usage = (10,100,000 Btu/hr)*(gal #2 diesel/140,000 Btu)*(8760 hpy) = 631,971 gal/yr #2 diesel

VOC factor: For tank 1, EF from AP-42, 3/04, table 11.1-16
For tanks 2, 3, 4 and 5, VOC = TOC
CO factor: AP-42, 3/04, Page 11.1-9; multiply factor by TOC emissions

[1] Drum dryer firing capacity is 88 mmBtu/hr.
[2] Generators combined firing capacity is 10.10 mmBtu/hr.

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Criteria Air Pollutant Emission Inventory

Emission Unit: **#4 Aggregate Handling & Screening**

Description: Three transfers of aggregate and three transfers of recycled asphlat paving (RAP) material from storage pile to drum dryer
- a. Aggregate transfer to aggregate bins
- b. Aggregate transfer from bins to conveyor belt
- c. Aggregate transfer from conveyor to drum mixer
- d. undefined by applicant
- e. undefined by applicant
- f. undefined by applicant
- g. RAP transfer to RAP bin
- h. RAP transfer from RAP bin to conveyor
- i. RAP transfer from conveyor to drum mixer
- j. scalping screen

Control: none

Capacity: 400 tons/hour HMA (worst case assumes all material runs through 3 transfers)

200 tph RAP (assumes 50% max)

Operation: 8760 hours/year

Potential to Emit, (tons per year)

	6 Aggregate transfers		3 RAP transfers		Scalping Screen		Total
	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	PTE, TPY
CO							0.0
Lead							0.0
NOx							0.0
PM	0.0028	29.9		0.0	0.0250	43.8	73.7
PM10	0.0013	7.1		0.0	0.0087	15.2	22.3
SO2							0.0
VOC							0.0

Estimation Explanations

Emission factor (EF) units are lb/ton of aggregate handled/screened

PM factor: For transfers, AP-42, 11/06, Section 13.2.4, Equation 1 for each drop operation (worst case assumes all material is aggregate passing through 6 transfers)

Emission factor=k(0.0032)(U/5)^1.3/(M/2)^1.4

U, mean wind speed: 8.9 mph, NOAA data for Spokane found at http://www.ncdc.noaa.gov/oa/climate/online/ccd/wndspd.txt

M, material moisture content: 3 %, Emission Inventory Improvement Program, Vol II, Chapter 3, page 3.2-3, July 1996 (range = 3-7%)

k, particle size multiplier: 0.74 for <30 microns particle size

PM10 factor: For transfers, same as for PM emission factor, except that

k, particle size multiplier: 0.35 for <10 microns particle size

Emissions are multiplied by 6 to account for all six transfers

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Criteria Air Pollutant Emission Inventory

Emission Unit: **#5 Silo Filling**
Description: Loading of hot-mix asphalt mix (HMA mix) into Silo
Control: Reinjection of gases to dryer
Capacity: 400 tons/hour HMA
Operation: 8760 hours/year

Potential to Emit, (tons per year)

	Silo filling	
	EF	PTE TPY
CO	1.18E-03	2.07
Lead		0
NOx		0
PM	3.32E-04	0.58
PM10	3.32E-04	0.58
SO2		0
VOC	1.22E-02	21.35

Estimation Explanations
Emission factor (EF) units are lb/ton of HMA handled
Predictive Emission Equations used to calculate Emission Factors from AP-42 3/04, Table 11.1-14

CO factor: $CO\ EF = 0.00488(-V)e^{((0.0251)(T+460)-20.43)}$
PM factor: PM EF = 0.000332 lb/ton HMA (assumes only fraction captured by RM5 counts as PM)
PM10 factor: $PM10\ EF = 0.000332+0.00105(-V)e^{((0.0251)(T+460)-20.43)}$ (assumes all of Total PM is PM10)
PM10 EF = only the PM fraction because condensables are not counted
VOC factor: $VOC\ EF = 0.0504(-V)e^{((0.0251)(T+460)-20.43)}$ (100% of TOC measured as propane, per AP42, Table 11.1-16)
V = asphalt volatility = -0.5 AP-42 default value
T = HMA mix temperature = 325 ^{O}F, AP-42 default value

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Criteria Air Pollutant Emission Inventory

Emission Unit: **#6 Truck Loading & Fumes**

Description: a Load-out of hot-mix asphalt mix (HMA mix) from silo to asphalt trucks
b Fumes from HMA in loaded asphalt trucks while in plant

Control: none

Capacity: 400 tons/hour HMA

Operation: 8760 hours/year

Potential to Emit, (tons per year)

	Silo loadout		Truck fumes		Total
	EF	PTE TPY	EF	PTE TPY	PTE TPY
CO	1.35E-03	2.36	3.52E-04	0.62	2.98
Lead					
NOx					
PM	1.81E-04	0.32			0.32
PM10	1.81E-04	0.32			0.32
SO2					
VOC	3.91E-03	6.85	1.03E-03	1.81	8.66

Estimation Explanations

Emission factor (EF) units are lb/ton of HMA handled

a Silo Loadout

Predictive Emission Equations used to calculate Emission Factors from AP-42 3/04, Table 11.1-14

CO factor: $0.00558(-V)e^{((0.0251)(T+460)-20.43)}$

PM factor: PM EF = 0.000181 lb/ton HMA (assumes only fraction captured by RM5 counts as PM)

PM10 factor: $0.000181+0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ (assumes all of PM is PM10)

PM10 EF = only the PM fraction because condensables are not counted

VOC factor: $0.94[0.0172(-V)e^{((0.0251)(T+460)-20.43)}]$ (94% of TOC measured as propane, per AP42, Table 11.1-16)

TOC = $0.0172(-V)e^{((0.0251)(T+460)-20.43)}$ AP42, Table 11.1-16

V = asphalt volatility = -0.5 AP-42 default value

T = HMA mix temperature = 325 ^{O}F, AP-42 default value

b Truck-load emissions (while in plant for approximately 8 minutes)

Emission factors from AP42, 11.1.2.5

TOC = 0.0011 lb/ton

CO factor: (32% of TOC measured as propane)

VOC factor: (94% of TOC measured as propane per AP42, Table 11.1-16)

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Criteria Air Pollutant Emission Inventory

Emission Unit: **#7 Vehicle Traffic**

Description: Road dust caused by vehicle traffic
a. Truck for loading and delivery of HMA product:
b. Loader for delivering aggregate and RAP to drum dryer loading bins:
c. Truck for delivering gravel and RAP to plant
d. Asphalt truck delivering asphalt to plant

Control: none

Capacity: 400 tons per hour HMA (plant)
44,991,360 gal/yr liquid asphalt
5,506,286 gal/yr RFO
631,971 gal/yr diesel
51,129,617 gal/yr total liquid deliveries

Operation: 8760 hours/year

Potential to Emit, (tons per year)

	HMA Truck PTE TPY	Loaders PTE TPY	Gravel/RAP Truck PTE TPY	Liquid Truck PTE TPY	Total PTE TPY
CO					
Lead					
NOx					
PM	116.31	36.31	116.31	6.40	275.3
PM10	29.64	10.01	29.64	1.63	70.9
SO2					
VOC					

Estimation Explanations

Emission factor (EF) units are lb/vehicle mile traveled
Assumes that 100% of trip distance is on unpaved surface for all vehicles
Liquid asphalt/fuel delivery truck size = 8168 gallons
Spokane data from: http://www.nrcc.cornell.edu/ccd/prge0198.html
Predictive Emission Equations used to calculate Emission Factors from AP-42 12/03, Section 13.2.2, Equation 1a and 2
E = EF x VMT / 2000
PM EF: k*(s/12)^a*(W/3)^b*(1-P/N), from 11/06 AP-42 13.2.2, Equation 1a and 2, see below for parameters
PM10 factor: Same equation as for PM emission factor except some different parameters, see below

Road Data:

	PM	PM10	
empirical constant (k) =	4.9	1.5	PM data for particles <30 microns
material handling silt content (s), % =	7.1	7.1	silt from AP-42 Table 13.2.2-1 (sand and gravel - for loader)
road surface silt content (s), % =	4.8	4.8	silt from AP-42 Table 13.2.2-1 (sand and gravel - for roads)
empirical constant (a) =	0.7	0.9	PM data for particles <30 microns
empirical constant (b) =	0.45	0.45	PM data for particles <30 microns

Vehicle Data: (from company except asphalt delivery truck wt from EPA experience)

	HMA Truck	Loader	Gravel/RAP Truck	Liquid Truck
empty weight, tons =	20.00	15	20	18
loaded weight, tons =	51.00	20	51	52
mean vehicle weight (W), tons =	35.50	17.50	35.50	35.00
tons per trip, tons =	31.00	5.00	31.00	34.00
trips per day =	309.68	1920.00	309.68	17.15
round trip distance, miles =	0.38	0.020	0.38	0.38
unpaved VMT, miles/year =	42952	14016	42952	2379

Weather Data:

# of days with > 0.01 inch of precipitation (P) =	113	For Spokane, WA: http://www.nrcc.cornell.edu/ccd/prge0198.html
# of days in averaging period (N) =	365	based on need for annual PTE

Emission factors:

	HMA Truck	Loader	Gravel/RAP Truck	Liquid Truck
PM EF, lb/VMT =	5.42	5.18	5.42	5.38
PM10 EF, lb/VMT =	1.38	1.43	1.38	1.37

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Criteria Air Pollutant Emission Inventory

Emission Unit: **#8 Wind Erosion**

Description:	Wind erosion of all exposed areas including piles	
Control:	none	
Capacity:	400	tons/hour HMA
Operation:	8760	hours/year
	3504000	tons/yr (tons/hr x hours/yr)
	67384.6154	tons/pile (assumes a 1 week supply is available on site so divide total yearly amount by 52)
		ft3 per pile, assumes aggregate density is 105 lb/cu ft (Weights of
	1283516.48	Materials, page 393)
Pile height:	50	feet, assumed
Pile width:	200	feet, assumed
Pile length:	128.4	feet
Pile Footprint:	25,670	ft2
	0.59	acres, assumes 43560 ft2/acre
Open Area:	2.00	acres, assumed conservative sized (disturbed) site - unvegetated area

Potential to Emit, (tons per year)

	Pile Wind Erosion		Open Area Wind Erosion		Total
	EF	PTE TPY	EF	PTE TPY	PTE TPY
CO					
Lead					
NOx					
PM	0.38	0.22	0.38	0.76	0.98
PM10	0.18	0.11	0.18	0.36	0.46
SO2					
VOC					

Estimation Explanations

Emission factor (EF) units are tons/acre per year

Stockpile size calculated based on maximum capacity, operating 8760 hr/yr

PM factor: AP-42, 10/98, Section 11.9, Table 11.9-4 for wind erosion of exposed areas

PM10 factor: Engineering estimate - 47% of PM factor from ratio of transfer particle size multipliers (0.35/0.74) in AP-42 1/95 13.2.4

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Hazardous Air Pollutant Emission Inventory

Emission Unit: **#1 Drum Dryer**
Description: Hot Mix Asphalt Plant Drum Dryer - counter flow drum mix design, CMI Model PTD 400, manufactured 1996
Control: Roto-Aire Model RA-418PTD Baghouse
Fuel: RF0, #2 diesel, propane or natural gas (RF0, reprocessed fuel oil is called waste oil by AP-42)
Capacity: 400 tph hot mix asphalt Burner: 88 mmBtu/hr capacity
Operation: 8760 hours/year

Potential to Emit, (tons per year)

	RF0		#2 diesel		Natural Gas		Max
Inorganics	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	PTE TPY
Antimony Compounds	1.80E-07	3.15E-04	1.80E-07	3.15E-04	1.80E-07	3.15E-04	3.15E-04
Arsenic Compounds (incl arsine)	5.60E-07	9.81E-04	5.60E-07	9.81E-04	5.60E-07	9.81E-04	9.81E-04
Beryllium Compounds	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium Compounds	4.10E-07	7.18E-04	4.10E-07	7.18E-04	4.10E-07	7.18E-04	7.18E-04
Chromium Compounds (incl hexavalent)	5.50E-06	9.64E-03	5.50E-06	9.64E-03	5.50E-06	9.64E-03	9.64E-03
Cobalt Compounds	2.60E-08	4.56E-05	2.60E-08	4.56E-05	2.60E-08	4.56E-05	4.56E-05
Lead Compounds (not elemental lead)	1.50E-05	2.63E-02	1.50E-05	2.63E-02	6.20E-07	1.09E-03	2.63E-02
Manganese Compounds	7.70E-06	1.35E-02	7.70E-06	1.35E-02	7.70E-06	1.35E-02	1.35E-02
Mercury Compounds	2.60E-06	4.56E-03	2.60E-06	4.56E-03	2.40E-07	4.20E-04	4.56E-03
Nickel Compounds	6.30E-05	1.10E-01	6.30E-05	1.10E-01	6.30E-05	1.10E-01	1.10E-01
Phophorus Compounds	2.80E-05	4.91E-02	2.80E-05	4.91E-02	2.80E-05	4.91E-02	4.91E-02
Selenium Compounds	3.50E-07	6.13E-04	3.50E-07	6.13E-04	3.50E-07	6.13E-04	6.13E-04
Organics							
Acetaldehyde	1.30E-03	2.28E+00	-		-		2.28E+00
Acrolein	2.60E-05	4.56E-02	-		-		4.56E-02
Benzene	3.90E-04	6.83E-01	3.90E-04	6.83E-01	3.90E-04	6.83E-01	6.83E-01
Bromomethane (methyl bromide)	-		-		-		
1,3-Butadiene	-		-		-		
Carbon Disulfide	-		-		-		
Chloroethane (ethyl chloride)	-		-		-		
Chloromethane (methyl chloride)	-		-		-		
Dichlorobenzene	-		-		-		
Cumene	-		-		-		
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)	2.10E-13	3.68E-10	2.10E-13	3.68E-10		0.00E+00	3.68E-10
Ethyl Benzene	2.40E-04	4.20E-01	2.40E-04	4.20E-01	2.40E-04	4.20E-01	4.20E-01
Formaldehyde	3.10E-03	5.43E+00	3.10E-03	5.43E+00	3.10E-03	5.43E+00	5.43E+00
Furans (all PCDF)	4.00E-11	7.01E-08	4.00E-11	7.01E-08		0.00E+00	7.01E-08
Hexane (includes n-Hexane)	9.20E-04	1.61E+00	9.20E-04	1.61E+00	9.20E-04	1.61E+00	1.61E+00
Hydrochloric Acid (hydrogen chloride)	2.10E-04	3.68E-01	-		-		3.68E-01
Isooctane (2,2,4-trimethylpentane)	4.00E-05	7.01E-02	4.00E-05	7.01E-02	4.00E-05	7.01E-02	7.01E-02
Methyl Chloride (chloromethane)	-		-		-		
Methyl Chloroform (1,1,1-trichloroethane)	4.80E-05	8.41E-02	4.80E-05	8.41E-02	4.80E-05	8.41E-02	8.41E-02
Methyl tert-Butyl Ether (MTBE)	-		-		-		
Naphthalene (also a POM)	6.50E-04	1.14E+00	8.80E-09	1.54E-05	9.00E-05	1.58E-01	1.14E+00
Phenol	-		-		-		
Polycyclic Organic Matter* (incl naphthalene)	8.85E-04	1.55E+00	8.85E-04	1.55E+00	1.87E-04	3.28E-01	1.55E+00
Propionaldehyde	1.30E-04	2.28E-01	-		-		2.28E-01
Quinone	1.60E-04	2.80E-01	-		-		2.80E-01
Styrene	-		-		-		
Tetrachloroethane	-		-		-		
Toluene	2.90E-03	5.08E+00	2.90E-03	5.08E+00	1.50E-04	2.63E-01	5.08E+00
Xylenes (inlc isomers and mixtures)	2.00E-04	3.50E-01	2.00E-03	3.50E+00	2.00E-04	3.50E-01	3.50E+00
HAP Total		1.87E+01		1.87E+01		9.43E+00	1.87E+01

	RF0		#2 diesel		Natural Gas	
***Polycyclic Organic Matter**	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY
Acenaphthene	1.40E-06	2.45E-03	1.40E-06	2.45E-03	1.40E-06	2.45E-03
Acenaphthylene	2.20E-05	3.85E-02	2.20E-05	3.85E-02	8.60E-06	1.51E-02
Anthracene	3.10E-06	5.43E-03	3.10E-06	5.43E-03	2.20E-07	3.85E-04
Benzo(a)anthracene	2.10E-07	3.68E-04	2.10E-07	3.68E-04	2.10E-07	3.68E-04
Benzo(b)fluoranthene	1.00E-07	1.75E-04	1.00E-07	1.75E-04	1.00E-07	1.75E-04
Benzo(k)fluoranthene	4.10E-08	7.18E-05	4.10E-08	7.18E-05	4.10E-08	7.18E-05
Benzo(g,h,i)perylene	4.00E-08	7.01E-05	4.00E-08	7.01E-05	4.00E-08	7.01E-05
Benzo(a)pyrene	9.80E-09	1.72E-05	9.80E-09	1.72E-05	9.80E-09	1.72E-05
Benzo(e)pyrene	1.10E-07	1.93E-04	1.10E-07	1.93E-04	1.10E-07	1.93E-04
Chrysene	1.80E-07	3.15E-04	1.80E-07	3.15E-04	1.80E-07	3.15E-04
Dioxins (Total PCDD; incl 2,3,7,8 TCDD)	7.90E-11	1.38E-07	2.10E-13	3.68E-10	-	
Fluoranthene	6.10E-07	1.07E-03	6.10E-07	1.07E-03	6.10E-07	1.07E-03
Fluorene	1.10E-05	1.93E-02	1.10E-05	1.93E-02	3.80E-06	6.66E-03
Furans (all PCDF)	4.00E-11	7.01E-08	4.00E-11	7.01E-08	-	
Indeno(1,2,3-cd)pyrene	7.00E-09	1.23E-05	7.00E-09	1.23E-05	7.00E-09	1.23E-05
2-Methylnaphthalene	1.70E-04	2.98E-01	1.70E-04	2.98E-01	7.40E-05	1.30E-01
Naphthalene (also individual HAP)	6.50E-04	1.14E+00	6.50E-04	1.14E+00	9.00E-05	1.58E-01
Perylene	8.80E-09	1.54E-05	8.80E-09	1.54E-05	8.80E-09	1.54E-05
Phenanthrene	2.30E-05	4.03E-02	2.30E-05	4.03E-02	7.60E-06	1.33E-02
Pyrene	3.00E-06	5.26E-03	3.00E-06	5.26E-03	5.40E-07	9.46E-04
POM Subtotal	8.85E-04	1.55E+00	8.85E-04	1.55E+00	1.87E-04	3.28E-01

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Estimation Explanations

Emission factor (EF) units are lb/ton HMA

Worst-case PTE is the higher emitting of the fuel options taking into consideration the most stringent emission limits that exist

To avoid double-counting, "HAP Total" does not count naphthalene, dioxin (HAP) or furans separately because they are accounted for in "POM Subtotal"

Chromium EF:	Chromium EF is assumed to included separately reported hexavalent chromium EF in AP-42
Hydrogen chloride EF:	AP-42, Table 11.1-8 for RF0
All other inorganics EF:	AP-42, 3/04, Table 11.1-12 for fuel oil and RF0 with fabric filter
Dioxin EF:	AP-42, 3/04, Table 11.1-10 for fuel oil & RF0 with fabric filter - all dioxins are POM; only 2,3,7,8 TCDD is a HAP
Furans EF:	AP-42, 3/04, Table 11.1-10 for fuel oil & RF0 with fabric filter - total of all furans (is a HAP & POM)
Naphthalene EF:	AP-42, 3/04, Table 11.1-10 for fuel oil & RF0 with fabric filter (is a HAP & POM)
POM EF:	AP-42, 3/04, Table 11.1-10 for fuel oil & RF0 with fabric filter (includes naphthalene, dioxin & furans)
All other organics EF:	AP-42, 3/04, Table 11.1-10 for fuel oil & RF0 with fabric filter

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Hazardous Air Pollutant Emission Inventory

Emission Unit: **#2 Diesel Generators**
Description: Caterpillar brand, model 3508TA, 820 kW (7.9 mmBtu/hr - application), manufactured in 1999
Caterpillar brand, model 3306, 205 kW (2.2 mmBtu/hr - application), manufactured in 1996
Control: none
Fuel: #2 diesel

	Caterpillar 3508TA	Caterpillar 3306	
Capacity:	7.900	2.2	mmbtu/hr
Operation:	8760	8760	hours/year

Potential to Emit, (tons per year)

	Caterpillar 3508TA		Caterpillar 3306		Total
Inorganics	EF	PTE TPY	EF	PTE TPY	PTE TPY
Antimony Compounds	-		-		
Arsenic Compounds (incl arsine)	4.00E-06	1.38E-04	4.00E-06	3.85E-05	1.77E-04
Beryllium Compounds	3.00E-06	1.04E-04	3.00E-06	2.89E-05	1.33E-04
Cadmium Compounds	3.00E-06	1.04E-04	3.00E-06	2.89E-05	1.33E-04
Chromium Compounds (incl hexavalent)	3.00E-06	1.04E-04	3.00E-06	2.89E-05	1.33E-04
Cobalt Compounds	-		-		
Lead Compounds (not elemental lead)	9.00E-06	3.11E-04	9.00E-06	8.67E-05	3.98E-04
Manganese Compounds	6.00E-06	2.08E-04	6.00E-06	5.78E-05	2.65E-04
Mercury Compounds	3.00E-06	1.04E-04	3.00E-06	2.89E-05	1.33E-04
Nickel Compounds	3.00E-06	1.04E-04	3.00E-06	2.89E-05	1.33E-04
Phophorus Compounds	-		-		
Selenium Compounds	1.50E-05	5.19E-04	1.50E-05	1.45E-04	6.64E-04
Organics					
Acetaldehyde	2.52E-05	8.72E-04	7.67E-04	7.39E-03	8.26E-03
Acrolein	7.88E-06	2.73E-04	9.25E-05	8.91E-04	1.16E-03
Benzene	7.76E-04	2.69E-02	9.33E-04	8.99E-03	3.58E-02
Bromomethane (methyl bromide)	-		-		
1,3-Butadiene	-		3.91E-05	3.77E-04	3.77E-04
Carbon Disulfide	-		-		
Chloroethane (ethyl chloride)	-		-		
Chloromethane (methyl chloride)	-		-		
Dichlorobenzene	-		-		
Cumene	-		-		
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)	-		-		
Ethyl Benzene	-		-		
Formaldehyde	7.89E-05	2.73E-03	1.18E-03	1.14E-02	1.41E-02
Furans (all PCDF)	-		-		
Hexane (incl n-Hexane)	-		-		
Hydrochloric Acid (hydrogen chloride)	-		-		
Isooctane (2,2,4-trimethylpentane)	-		-		
Methyl Chloride (chloromethane)	-		-		
Methyl Chloroform (1,1,1-trichloroethane)	-		-		
Methyl tert-Butyl Ether (MTBE)	-		-		
Naphthalene[1] (also a POM)	1.30E-04	4.50E-03	8.48E-05	8.17E-04	5.32E-03
Phenol	-		-		
Polycyclic Organic Matter* (incl naphthalene)	2.12E-04	7.32E-03	1.68E-04	1.62E-03	8.94E-03
Propionaldehyde	-		-		
Quinone	-		-		
Styrene	-		-		
Tetrachloroethane	-		-		
Toluene	2.81E-04	9.72E-03	4.09E-04	3.94E-03	1.37E-02
Xylene (incl isomers and mixtures)	1.93E-04	6.68E-03	2.85E-04	2.75E-03	9.42E-03
HAP Total		5.61E-02		3.78E-02	9.39E-02

	Caterpillar 3508TA		Caterpillar 3306		Total
***Polycyclic Organic Matter**	EF	PTE TPY	EF	PTE TPY	PTE TPY
Acenaphthylene	9.23E-06	3.19E-04	5.06E-06	4.88E-05	3.68E-04
Acenaphthene	4.68E-06	1.62E-04	1.42E-06	1.37E-05	1.76E-04
Anthracene	1.23E-06	4.26E-05	1.87E-06	1.80E-05	6.06E-05
Benzo(a)athracene	6.22E-07	2.15E-05	1.68E-06	1.62E-05	3.77E-05
Benzo(b)fluoranthene	1.11E-06	3.84E-05	9.91E-08	9.55E-07	3.94E-05
Benzo(k)fluoranthene	2.18E-07	7.54E-06	1.55E-07	1.49E-06	9.04E-06
Benzo(g,h,I)perylene	5.56E-07	1.92E-05	4.89E-07	4.71E-06	2.40E-05
Benzo(a)pyrene	2.57E-07	8.89E-06	1.88E-07	1.81E-06	1.07E-05
Chrysene	1.53E-06	5.29E-05	3.53E-07	3.40E-06	5.63E-05
Dibenz(a,h)anthracene	3.46E-07	1.20E-05	5.83E-07	5.62E-06	1.76E-05
Fluoranthene	4.03E-06	1.39E-04	7.61E-06	7.33E-05	2.13E-04
Fluorene	1.28E-05	4.43E-04	2.92E-05	2.81E-04	7.24E-04
Indeno(1,2,3-cd)pyrene	4.14E-07	1.43E-05	3.75E-07	3.61E-06	1.79E-05
Napthalene (also individual HAP)	1.30E-04	4.50E-03	8.48E-05	8.17E-04	5.32E-03
Phenanthrene	4.08E-05	1.41E-03	2.94E-05	2.83E-04	1.70E-03
Pyrene	3.71E-06	1.28E-04	4.78E-06	4.61E-05	1.74E-04
POM Subtotal	2.12E-04	7.32E-03	1.68E-04	1.62E-03	8.94E-03

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Estimation Explanations

Emission factor (EF) units are lb/mmbtu

Note that EU#2 PTE only counts in MACT applicability if the plant stays in one location for more than one year; otherwise it is considered a non-road engine

To avoid double-counting, "HAP Total" does not count naphthalene separately because naphthalene is accounted for in "POM Subtotal"

AP-42 Section 3.3 applies to stationary diesel engines with power output less than 450 kW while Section 3.4 applies to engines with power output greater than 450 kW.

Inorganic EF for both generators:	AP-42 9/98, Table 1.3-10 - this assumes that metal emissions from internal and external combustion are similar
Organics EF for Caterpillar 3508TA generator:	AP42, 10/96, Tbl 3.4-3 EF for Organic Compounds from Uncontrolled Diesel Engines
Organics EF for Caterpillar 3306 generator:	AP42, 10/96, Tbl 3.3-2 EF for Organic Compounds from Uncontrolled Diesel Engines

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Hazardous Air Pollutant Emission Inventory

Emission Unit: **#3 Storage Tanks**

Description: Four tanks are used to store petroleum liquids
(Tank 1) Storage of liquid asphalt
(Tank 2) Storage of #2 diesel fuel for combustion in drum dryer
(Tank 3) Storage of #2 diesel in portable tank trailer which supplies generators
(Tank 4) Storage of undefined liquid

Parameter	Tank 1	Tank 2	Tank 3	Units
Liquid:	Asphalt	#2 Diesel	#2 Diesel	
Control:	none	none	none	
Capacity:	30,000	12,000	4,000	gallons (EPA estimate for Tanks No. 2 and 3)
Operation:	44,991,360	5,506,286	631,971	EPA-calculated gallons per year throughput
TOC Emissions	1479.48	25.69	5.10	lbs/yr TOC - value based upon Tanks Program 4.0.9d and adjusted for EPA-calculated throughput

Potential to Emit, (tons per year)

	(Tank 1) Asphalt		(Tank 2) #2 diesel		(Tank 3) #2 diesel		Total
Organics	EF	PTE TPY	EF	PTE TPY	EF	PTE TPY	PTE TPY
Acetaldehyde							
Acrolein							
Benzene	0.032	2.37E-02		0.00E+00		0.00E+00	2.37E-02
Bromomethane (methyl bromide)	0.0049	3.62E-03		0.00E+00		0.00E+00	3.62E-03
1,3-Butadiene							
Carbon Disulfide	0.016	1.18E-02		0.00E+00		0.00E+00	1.18E-02
Chloroethane (ethyl chloride)	0.004	2.96E-03		0.00E+00		0.00E+00	2.96E-03
Chloromethane (methyl chloride)	0.023	1.70E-02		0.00E+00		0.00E+00	1.70E-02
Cumene							
Dichlorobenzene							
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)							
Ethyl Benzene	0.038	2.81E-02		0.00E+00		0.00E+00	2.81E-02
Formaldehyde	0.69	5.10E-01		0.00E+00		0.00E+00	5.10E-01
Furans (all PCDF)							
Hexane (incl n-Hexane)	0.1	7.40E-02		0.00E+00		0.00E+00	7.40E-02
Hydrochloric Acid (hydrogen chloride)							
Isooctane (2,2,4-trimethylpentane)	0.00031	2.29E-04		0.00E+00		0.00E+00	2.29E-04
Methyl Chloride (chloromethane)	0.00027	2.00E-04		0.00E+00		0.00E+00	2.00E-04
Methyl Chloroform (1,1,1-trichloroethane)							
Methyl tert-Butyl Ether (MTBE)							
Naphthalene[1] (also a POM)							
Phenol							
Polycyclic Organic Matter* (incl naphthalene)							
Propionaldehyde							
Quinone							
Styrene	0.0054	3.99E-03		0.00E+00		0.00E+00	3.99E-03
Tetrachloroethane							
Toluene	0.062	4.59E-02		0.00E+00		0.00E+00	4.59E-02
Xylene (incl isomers and mixtures)	0.257	1.90E-01		0.00E+00		0.00E+00	1.90E-01
HAP Total		9.12E-01		0.00E+00		0.00E+00	9.12E-01

Estimation Explanations

Emission factor (EF) units are % of organic PM for POM and phenol and fraction (%/100) of TOC for all other organics

TOC Emissions: Tanks Computer Program (see AP-42, 7.1 (11/06)), lbs/yr; see application for computer program input details
EPA adjusted Tanks Computer Program output to reflect EPA-calculated annual liquid throughput as reflected in table below:

Parameter	Tank 1	Tank 2	Tank 3	Units
Modeled Operation:	2,313,000	5,506,286	631,971	gallons per year throughput. Applicant modeled emissions for Tank No. 1 while EPA modeled emissions for Tanks No. 2 and 3.
PTE Operation:	44,991,360	5,506,286	631,971	gallons per year throughput as calculated by EPA and presented below
Ratio of PTE Operation to Modeled Operation:	19.45	1.00	1.00	
Modeled TOC	76.06	25.69	5.10	lbs/yr TOC - calculated with Tanks Program 4.0.9d
PTE TOC Emissions:	1479.48	25.69	5.10	lbs/yr TOC - calculated by adjusting applicant's modeled value for Tank No. 1 by ratio of PTE/modeled annual tank throughput

PTE Annual Asphalt Throughput:
Asphalt is assumed to be 5.5% wt of final HMA product and 8.57 lb/gal; so, gallons/ton of asphalt = (5.5/100)/(8.57 lb/gal)*(2000 lb/ton) = 12.84 gal/ton
Maximum HMA production = (400 tph)*(8760 hpy) = 3,504,000 tpy HMA; using (12.84 gpt)*(3,504,000 tpy) = 44,991,360 gal/yr liquid asphalt
PTE Annual Drum Dryer #2 Diesel Usage:[1]
Maximum #2 diesel usage = (88,000,000 Btu/hr)*(gal #2 diesel/140,000 Btu)*(8760 hpy) = 5,506,286 gal/yr #2 diesel
PTE 820 kW and 205 kW Generators Tank #2 Diesel Usage:[2]
Maximum #2 diesel usage = (10,100,000 Btu/hr)*(gal #2 diesel/140,000 Btu)*(8760 hpy) = 631,971 gal/yr #2 diesel

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

To avoid double-counting, "HAP Total" does not count naphthalene separately because naphthalene is accounted for in "POM Subtotal"
Xylenes EF: m-, o- and p- isomers are individually listed as HAPs but for applicability purposes, are grouped as Xylenes
All other organics EF: AP-42, 3/04, Table 11.1-16 - (TOC) organic volatile-based speciation percentages
TOC = VOC/100% (AP-42, 3/04, Table 11.1-16)
For diesel, HAP data is not presented, because HAP emissions are expected to be very low

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[1] Drum dryer firing capacity is 88 mmBtu/hr.
[2] Generators combined firing capacity is 10.10 mmBtu/hr.

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Hazardous Air Pollutant Emission Inventory

Emission Unit: **#5 Silo Filling**
Description: Loading of hot-mix asphalt mix (HMA mix) into silo
Control: Reinjection of gases to dryer
Capacity: 400 tons/hr HMA (from applicant)
Operation: 8,760 hours/yr

Potential to Emit, (tons per year)

Organics	EF	PTE TPY
Acetaldehyde		
Acrolein		
Benzene	0.032	6.83E-03
Bromomethane (methyl bromide)	0.0049	1.05E-03
1,3-Butadiene		
Carbon Disulfide	0.016	3.42E-03
Chloroethane (ethyl chloride)	0.004	8.54E-04
Chloromethane (methyl chloride)	0.023	4.91E-03
Cumene		
Dichlorobenzene		
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)		
Ethyl Benzene	0.038	8.11E-03
Formaldehyde	0.69	1.47E-01
Furans (all PCDF)		
Hexane (incl n-Hexane)	0.1	2.14E-02
Hydrochloric Acid (hydrogen chloride)		
Isooctane (2,2,4-trimethylpentane)	0.00031	6.62E-05
Methyl Chloride (chloromethane)	0.00027	5.76E-05
Methyl Chloroform (1,1,1-trichloroethane)		
Methyl tert-Butyl Ether (MTBE)		
Naphthalene[1] (also a POM)	1.82	8.10E-03
Phenol	1.18	5.25E-03
Polycyclic Organic Matter* (incl naphthalene)	11.41	5.08E-02
Propionaldehyde		
Quinone		
Styrene	0.0054	1.15E-03
Tetrachloroethane		
Toluene	0.062	1.32E-02
Xylene (incl isomers and mixtures)	0.257	5.49E-02
HAP Total		3.19E-01

***Polycyclic Organic Matter**	EF	PTE TPY
Acenaphthene	0.47	2.09E-03
Acenaphthylene	0.014	6.23E-05
Anthracene	0.13	5.78E-04
Benzo(a)athracene	0.056	2.49E-04
Benzo(e)pyrene	0.0095	4.23E-05
Chrysene	0.21	9.34E-04
Fluoranthene	0.15	6.67E-04
Fluorene	1.01	4.49E-03
2-Methylnaphthalene	5.27	2.34E-02
Naphthalene (also individual HAP)	1.82	8.10E-03
Perylene	0.03	1.33E-04
Phenanthrene	1.8	8.01E-03
Pyrene	0.44	1.96E-03
POM Subtotal	11.41	5.08E-02

Estimation Explanations

Emission factor (EF) units are % of organic PM for POM and phenol and % of TOC for all other organics
To avoid double-counting, "HAP Total" does not count naphthalene separately because naphthalene is accounted for in "POM Subtotal"
Predictive emission factors from AP-42 Tbl 11.1-14 for silo filling
Xylenes EF: m-, o- and p- isomers are individually listed as HAPs but for applicability purposes, are grouped as Xylenes
POM, naphthalene and phenol EF: AP-42, 3/04, Table 11.1-15 - organic particulate-based speciation percentages (%/100 x PM)
All other organics EF: AP-42, 3/04, Table 11.1-16 - (TOC) organic volatile-based speciation percentages (%/100 x TOC)

TOC EF: $0.0504(-V)e^{((0.0251)(T+460)-20.43)}$ lb/ton HMA loaded into silo

Organic PM EF: $0.00105(-V)e^{((0.0251)(T+460)-20.43)}$ lb/ton HMA loaded into silo

V = asphalt volatility = -0.5 AP-42 default value
T = HMA mix temperature = 325 ^{O}F, AP-42 default value
TOC EF = 1.22E-02 lb/ton
TOC emissions = 2.14E+01 tons/year (TOC EF x annual capacity)
Organic PM EF = 2.54E-04 lb/ton
Organic PM emissions = 4.45E-01 tons/year (Organic PM EF x annual capacity)

Emission Inventory
Columbia Ready Mix Inc., Portable Hot Mix Asphalt Plant

Hazardous Air Pollutant Emission Inventory

Emission Unit: **#6 Truck Loading & Fumes**
Description: a Load-out of hot-mix asphalt mix (HMA mix) from silo to asphalt trucks
b Fumes from loaded asphalt trucks while in plant
Control: none
Capacity: 400 tons/hr HMA (from applicant)
Operation: 8,760 hours/yr

Potential to Emit, (tons per year)

	Truck loading		Truck-load fumes		Total
Organics	EF	PTE TPY	EF	PTE TPY	PTE TPY
Acetaldehyde					
Acrolein					
Benzene	0.052	3.79E-03	0.052	1.00E-03	0.005
Bromomethane (methyl bromide)	0.0096	7.00E-04	0.0096	1.85E-04	0.001
1,3-Butadiene					
Carbon Disulfide	0.013	9.47E-04	0.013	2.51E-04	0.001
Chloroethane (ethyl chloride)	0.00021	1.53E-05	0.00021	4.05E-06	0.000
Chloromethane (methyl chloride)	0.015	1.09E-03	0.015	2.89E-04	0.001
Dichlorobenzene					
Cumene	0.11	8.02E-03	0.11	2.12E-03	0.010
Dioxin (2,3,7,8 tetrachlorodibenzo-p-dioxin)					
Ethyl Benzene	0.28	2.04E-02	0.28	5.40E-03	0.026
Formaldehyde	0.088	6.41E-03	0.088	1.70E-03	0.008
Furans (all PCDF)					
Hexane (incl n-Hexane)	0.15	1.09E-02	0.15	2.89E-03	0.014
Hydrochloric Acid (hydrogen chloride)					
Isooctane (2,2,4-trimethylpentane)	0.0018	1.31E-04	0.0018	3.47E-05	0.000
Methyl Chloride (chloromethane)					
Methyl Chloroform (1,1,1-trichloroethane)					
Methyl tert-Butyl Ether (MTBE)					
Naphthalene[1] (also a POM)	1.25	7.47E-03	1.25	2.41E-02	0.032
Phenol	1.18	7.05E-03	1.18	2.27E-02	0.030
Polycyclic Organic Matter* (incl naphthalene)	5.93	3.54E-02	1.25	2.41E-02	0.060
Propionaldehyde					
Quinone					
Styrene	0.00732	5.33E-04	0.00732	1.41E-04	0.001
Tetrachloroethane	0.0077	5.61E-04	0.0077	1.48E-04	0.001
Toluene	0.21	1.53E-02	0.21	4.05E-03	0.019
Xylene (incl isomers and mixtures)	0.49	3.57E-02	0.49	9.44E-03	0.045
HAP Total		1.47E-01		7.45E-02	2.22E-01

***Polycyclic Organic Matter**	EF	PTE TPY	EF	PTE TPY
Acenaphthene	0.26	1.55E-03		
Acenaphthylene	0.028	1.67E-04		
Anthracene	0.07	4.18E-04		
Benzo(a)athracene	0.019	1.13E-04		
Benzo(b)fluoranthene	0.0076	4.54E-05		
Benzo(k)fluoranthene	0.0022	1.31E-05		
Benzo(g,h,I)perylene	0.0019	1.13E-05		
Benzo(a)pyrene	0.0023	1.37E-05		
Benzo(e)pyrene	0.0078	4.66E-05		
Chrysene	0.103	6.15E-04		
Dibenzo(a,h)anthracene	0.00037	2.21E-06		
Fluoranthene	0.05	2.99E-04		
Fluorene	0.77	4.60E-03		
Indeno(1,2,3-cd)pyrene	0.00047	2.81E-06		
2-Methylnaphthalene	2.38	1.42E-02		
Naphthalene (also individual HAP)	1.25	7.47E-03	1.25	2.41E-02
Perylene	0.022	1.31E-04		
Phenanthrene	0.81	4.84E-03		
Pyrene	0.15	8.96E-04		
POM Subtotal	5.93	3.54E-02	1.25	2.41E-02

Estimation Explanations

Emission factor (EF) units are % of organic PM for POM and phenol and % of TOC for all other organics

To avoid double-counting, "HAP Total" does not count naphthalene separately because naphthalene is accounted for in "POM Subtotal"

POM, naphthalene and phenol EF: AP-42, 3/04, Table 11.1-15 - organic particulate-based speciation percentages

All other organics EF: AP-42, 3/04, Table 11.1-16 - (TOC) organic volatile-based speciation percentages

Xylenes EF: m-, o- and p- isomers are individually listed as HAPs but for applicability purposes, are grouped as Xylenes

a. Truck loading predictive emission factors from AP-42 Tbl 11.1-14

TOC EF: $0.0172(-V)e^{((0.0251)(T+460)-20.43)}$ lb/ton HMA loaded out

Organic PM EF: $0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ lb/ton HMA loaded out

V = asphalt volatility = -0.5 AP-42 default value

T = HMA mix temperature = 325 ^{O}F, AP-42 default value

TOC EF = 4.16E-03 lb/ton

TOC emissions =	7.29E+00	tons/year (TOC EF x annual capacity)
Organic PM EF =	3.41E-04	lb/ton
Organic PM emissions =	5.97E-01	tons/year (Organic PM EF x annual capacity)

b. Truck-load emission factors from AP42, 11.1.2.5

TOC EF:	1.10E-03	lb/ton HMA hauled by trucks
TOC emissions =	1.93	tons/year (TOC EF x annual capacity)

Appendix B

EPA TANKS 4.0.9d Software Printouts

Columbia Ready Mix Incorporated
Portable Hot Mix Asphalt Plant

Technical Support Document
Non-Title V Air Quality Operating Permit
R10NT501800

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank No. 2
City:	Spokane
State:	Washington
Company:	Columbia Ready Mix
Type of Tank:	Horizontal Tank
Description:	No. 2 Diesel

Tank Dimensions

Shell Length (ft):	20.00
Diameter (ft):	10.00
Volume (gallons):	12,000.00
Turnovers:	458.86
Net Throughput(gal/yr):	5,506,286.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meterological Data used in Emissions Calculations: Spokane, Washington (Avg Atmospheric Pressure = 13.51 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank No. 2 - Horizontal Tank
Spokane, Washington

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	55.49	45.99	64.99	50.31	0.0056	0.0039	0.0077	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank No. 2 - Horizontal Tank
Spokane, Washington

Annual Emission Calcaulations

Standing Losses (lb):	3.5543
Vapor Space Volume (cu ft):	1,000.5072
Vapor Density (lb/cu ft):	0.0001
Vapor Space Expansion Factor:	0.0740
Vented Vapor Saturation Factor:	0.9985
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,000.5072
Tank Diameter (ft):	10.0000
Effective Diameter (ft):	15.9617
Vapor Space Outage (ft):	5.0000
Tank Shell Length (ft):	20.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0056
Daily Avg. Liquid Surface Temp. (deg. R):	515.1591
Daily Average Ambient Temp. (deg. F):	47.2292
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	509.9792
Tank Paint Solar Absorptance (Shell):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,216.5189
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0740
Daily Vapor Temperature Range (deg. R):	38.0005
Daily Vapor Pressure Range (psia):	0.0038
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0056
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0039
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0077
Daily Avg. Liquid Surface Temp. (deg R):	515.1591
Daily Min. Liquid Surface Temp. (deg R):	505.6590
Daily Max. Liquid Surface Temp. (deg R):	524.6592
Daily Ambient Temp. Range (deg. R):	20.6083
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9985
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0056
Vapor Space Outage (ft):	5.0000
Working Losses (lb):	22.1384
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0056
Annual Net Throughput (gal/yr.):	5,506,286.0000
Annual Turnovers:	458.8572
Turnover Factor:	0.2320
Tank Diameter (ft):	10.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	25.6927

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank No. 2 - Horizontal Tank
Spokane, Washington

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	22.14	3.55	25.69

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank No. 3
City:	Spokane
State:	Washington
Company:	Columbia Ready Mix
Type of Tank:	Horizontal Tank
Description:	No. 2 Diesel

Tank Dimensions

Shell Length (ft):	12.00
Diameter (ft):	7.50
Volume (gallons):	4,000.00
Turnovers:	157.99
Net Throughput(gal/yr):	631,971.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meterological Data used in Emissions Calculations: Spokane, Washington (Avg Atmospheric Pressure = 13.51 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank No. 3 - Horizontal Tank
Spokane, Washington

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	55.49	45.99	64.99	50.31	0.0056	0.0039	0.0077	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank No. 3 - Horizontal Tank
Spokane, Washington

Annual Emission Calcaulations

Standing Losses (lb):	1.2000
Vapor Space Volume (cu ft):	337.6712
Vapor Density (lb/cu ft):	0.0001
Vapor Space Expansion Factor:	0.0740
Vented Vapor Saturation Factor:	0.9989
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	337.6712
Tank Diameter (ft):	7.5000
Effective Diameter (ft):	10.7075
Vapor Space Outage (ft):	3.7500
Tank Shell Length (ft):	12.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0056
Daily Avg. Liquid Surface Temp. (deg. R):	515.1591
Daily Average Ambient Temp. (deg. F):	47.2292
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	509.9792
Tank Paint Solar Absorptance (Shell):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,216.5189
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0740
Daily Vapor Temperature Range (deg. R):	38.0005
Daily Vapor Pressure Range (psia):	0.0038
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0056
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0039
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0077
Daily Avg. Liquid Surface Temp. (deg R):	515.1591
Daily Min. Liquid Surface Temp. (deg R):	505.6590
Daily Max. Liquid Surface Temp. (deg R):	524.6592
Daily Ambient Temp. Range (deg. R):	20.6083
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9989
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0056
Vapor Space Outage (ft):	3.7500
Working Losses (lb):	3.9042
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0056
Annual Net Throughput (gal/yr.):	631,971.0000
Annual Turnovers:	157.9928
Turnover Factor:	0.3565
Tank Diameter (ft):	7.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	5.1042

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank No. 3 - Horizontal Tank
Spokane, Washington

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	3.90	1.20	5.10