Statement of Basis

Permit to Construct No. P-2012.0004
Project ID 60986

Western Construction, Inc.
Boise, Idaho

Facility ID 777-00518

EC **Final**

April 27, 2012
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Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
BMP	best management practices
Btu	British thermal units
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HMA	hot mix asphalt
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
O_2	oxygen
PAH	polyaromatic hydrocarbons
PC	permit condition
PCB	polychlorinated biphenyl
PERF	Portable Equipment Relocation Form
PM	particulate matter

$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
RAP	recycled asphalt pavement
RFO	reprocessed fuel oil
RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SCL	significant contribution limits
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd^3	cubic yards
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Western Construction, Inc. has proposed a new portable drum-mix asphalt plant. The asphalt plant consists of a counter-flow asphalt drum mixer equipped with a with a bag house to control particulate matter, an asphaltic oil storage tank with a heater, and materials transfer equipment. Materials transfer equipment at the facility will include front end loaders, feed bins, storage silos, conveyors, stock piles, and haul trucks.

Asphalt is made at the facility as follows. First, stockpiled aggregate is transferred to feed bins. The Applicant has also requested that recycled asphalt pavement (RAP) be used in the aggregate (up to 50% can be allowed). Aggregate is then dispensed from the feed bins onto feeder conveyors, which transfer the aggregate to the asphalt drum mixer. The Applicant has requested that the asphalt drum mixer be fired on natural gas, LPG/propane, #2 diesel fuel, reprocessed fuel oil, and used oil (RFO). Next, aggregate travels through the rotating drum mixer, and when dried and heated, it is mixed with hot liquid asphaltic oil. The asphaltic oil is heated by the asphalt tank heater to allow it to flow and be mixed with the hot, dry aggregate. The resulting asphalt is conveyed to hot storage bins until it can be loaded into trucks for transport off-site or transferred to silos for temporary storage prior to transport off-site. As part of the operation, the Applicant has proposed that a portable rock crusher be allowed to be collocated at the facility.

The Applicant has proposed that line power and portable electrical generators will be used at the facility. Therefore, IC engines powering electrical generators were included in the application.

Permitting History

This is the initial PTC for a new facility thus there is no permitting history.

Application Scope

This is the initial PTC for a new facility.

The asphalt plant will be fed a mixture of crushed fines and aggregates from imported aggregate or a collocated crusher. The rock crusher will be permitted independently from the asphalt plant. In the case of collocation of an asphalt plant with an additional rock crushing plant (secondary to the one rock crushing plant allowed by the permit), the modeling completed requires a minimum separation distance of 1,000 ft.

The process begins with materials being fed via front end loader to a compartment bin feeder system and then dispensed in metered proportions to a collecting conveyor. The material will pass over a scalping screen before being conveyed into the drum mixer via a scalping screen.

Inside the drum mixer the aggregates will be heated to specification temperature and then asphaltic oil is added. In some instances up to 50% RAP may be substituted for virgin aggregate.

The mixed asphalt is dispensed to a slat conveyor and then lifted up to a hot storage silo for intermediate storage. Trucks are then loaded by driving under the hot storage silo.

The silo loading process will be enclosed and vented back to the drum via suction induced either through the conveyor or via a separate duct line. The unloading process will be uncontrolled.

Particulate emissions will be controlled by maintaining the moisture content at 3% by weight for all ¼ in and smaller aggregate feed materials via water sprays. In addition, all particulate emissions from the asphalt drum mixer will be collected and vented to a high efficiency baghouse with a minimum control efficiency of 99.4% as proposed by the Applicant.

The asphalt plant will include a hot oil heating system designed to keep asphaltic oil at specification temperature. Heat will be provided via a fuel oil, natural gas/LPG-fired or RFO external combustion burner. This burner will operate intermittently during 24-hours per day much the way a hot water heater cycles. Typical burner operation during any 24-hour period is less than 8 hours. However, the emission estimates assume continuous operartion.

The Applicant has also proposed asphalt production throughput limits at four specific hourly, daily and annual rates. The throughput varies depending on the available size of the location the plant is located. Hourly throughput ranges from 350 T/yr to 500 T/yr. Daily throughputs assumes 12.5 operational hours. Therefore, the throughput ranges from 4,375 to 6,250 T/day. Annual limits assume a total operational time equivalent to 191 days. The annual throughput ranges 835,625 T to 1,193,750 T.

The Applicant has also proposed that two compression ignition IC engines powering electrical generators, a primary and a secondary, will be used to provide electricity for the facility when line power is not available.

Application Chronology

February 1, 2012	DEQ received an application and an application fee.
Feb. 9 – Feb. 24, 2012	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
February 27, 2012	DEQ received supplemental information from the applicant.
February 29, 2012	DEQ determined that the application was complete.
March 19, 2012	DEQ made available the draft permit and statement of basis for peer and regional office review.
March 23, 2012	DEQ made available the draft permit and statement of basis for applicant review.
April 20, 2012	DEQ received the permit processing fee.
April 27, 2012	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

The asphalt production facility utilizes a baghouse for control of particulate matter emissions from the asphalt drum mixer. In addition, the Applicant will maintain the moisture content in ¼" or smaller aggregate material at 3% by weight, using water sprays, using shrouds, or will use other emissions controls to minimize $PM_{2.5}/_{10}$ emissions from aggregate handling.

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
Hot Mix Asphalt Drum Mixer	Asphalt Drum Mixer: Manufacturer: Gencor Industries Model: 400 Ultradrum Type: Counter-flow Manufacture Date: 2011 Max. production: 500 T/hr, 6,250 T/day, and 1,193,750 T/yr Fuel(s): Natural gas, LPG/propane, #2 fuel oil, and used oil Sulfur content: 0.5% (RFO) or 0.0015% (#2 Diesel) by weight Fuel consumption: 679.92 gal/hr	Asphalt Drum Mixer Baghouse: Manufacturer: Gencor Industries Model: CFP-182 Type: Reverse pulse-jet Flow rate: 38,548 dscf PM_{10} control efficiency: 99.4%	Exit height: 41.5 ft Exit diameter: 52 in Exit flow rate: 21,906 acfm Exit temperature: 275 °F
Asphaltic Oil Tank Heater	Asphaltic Oil Tank Heater: Heat input rating: 0.5 MMBtu/hr Fuel(s): Natural gas, LPG/propane, #2 fuel oil, and used oil Sulfur content: 0.0015% by weight Fuel consumption: 3.57 gal/hr	N/A	Exit height: 11 ft Exit diameter: 13.5 in Exit flow rate: 69.4 acfm Exit temperature: 460 °F
Primary IC Engine	Primary IC Engine: Manufacturer: Gencor Industries Model: QST30-G2 Manufacture Date: 2006 Max. power rating: 1,200 bhp Fuel: ULSD diesel Sulfur content: 0.0015% by weight Fuel consumption: 57.8 gal/hr Annual use limit: 2,387.5 hrs/yr	N/A	Exit height: 32.8 ft Exit diameter: 9 in Exit flow rate: 6,603 acfm Exit temperature: 924 °F
Secondary IC Engine	Secondary IC Engine: Manufacturer: John Deere Model: PowerTech 4045D Manufacture Date: 2007 Max. power rating: 67 bhp Fuel: ULSD diesel Sulfur content: 0.0015% by weight Fuel consumption: 4.9 gal/hr	N/A	Exit height: 6 ft Exit diameter: 3 in Exit flow rate: 348.5 acfm Exit temperature: 1000 °F
Materials Handling	Material Transfer Points: Materials handling Asphalt aggregate transfers Truck unloading of aggregate Aggregate conveyor transfers Aggregate handling	Water sprays (or equivalent)	N/A

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the asphalt production operations at the facility associated with this proposed project using a permittee-developed HMA EI spreadsheet (see Appendix A). Emissions estimates of criteria pollutant PTE were based on the following assumptions:

- Depending on the site location, the maximum asphalt throughput does not exceed 500 ton HMA/hour, 4,375-6,250 ton HMA/day, and 1,193,750 ton HMA/year (per the Applicant).
- Emissions from the asphalt drum dryer were based on the maximum emissions from using any of the proposed fuels for combustion in the drum dryer.
- Emissions from a portable rock crusher were included in the emissions modeling analysis with the assumption that when the collocated rock crusher is operating, the asphalt plant is operating at half its maximum capacity.
- Any emissions unit outside a 1,000 ft radius from the asphalt plant was not included in the emissions modeling analysis for this project.
- The primary IC engine powering a generator has a maximum brake-horsepower rating of less than less than or equal to 1,200 bhp, and proposed operation of up to 13.5 hour/day and 2,578.5 hour/year (per the Applicant).
- The secondary IC engine powering a generator has a maximum brake-horsepower rating of less than less than or equal to 67 bhp and has proposed continual operation (per the Applicant).

Uncontrolled Potential to Emit

Using the definition of Potential to Emit, uncontrolled Potential to Emit is then defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall **not** be treated as part of its design **since** the limitation or the effect it would have on emissions **is not** state or federally enforceable.

The uncontrolled Potential to Emit is used to determine if a facility is a "Synthetic Minor" source of emissions. Synthetic Minor sources are facilities that have an uncontrolled Potential to Emit for regulated air pollutants or HAP above the applicable Major Source threshold without permit limits.

The following table presents the post project uncontrolled emissions for regulated air pollutants as submitted by the Applicant and verified by DEQ staff. Uncontrolled emissions were determined as follows:

- For the asphalt drum mixer controlled emissions were scaled up from 2,387.5 hours per year of permitted operation (as proposed by the Applicant) to 8,760 hours per year for full-time operation.
- For the asphaltic oil tank heater controlled/uncontrolled emissions were assumed to be equal (as proposed by the Applicant) to 8,760 hours per year for full-time operation.
- For the materials handling operation controlled and uncontrolled emissions were assumed to be equal.
- For the primary IC engine controlled emissions were scaled up from 2,578.5 hours per year of permitted operation (as proposed by the Applicant) to 8,760 hours per year for full-time operation.

- For the secondary IC engine controlled/uncontrolled emissions were assumed to be equal (as proposed by the Applicant) to 8,760 hours per year for full-time operation.

See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions Unit	$PM_{2.5}$	PM_{10}	SO_2	NOx	CO	VOC	CO_2e
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Point Sources							
Asphalt drum mixer	20,149	24,528	118.26	120.45	284.70	70.08	74,624.86
Asphaltic oil tank heater	0.03	0.76	0.84	0.31	0.18	0.02	439.33
Primary IC engine	1.73	1.73	0.06	55.19	30.24	11.22	6,076.94
Secondary IC engine	0.19	0.19	0.002	3.62	2.41	0.74	336.89
Load-out and silo filling	2.42	2.42	0.00	0.00	5.54	35.28	13.9
Storage Tanks	0.00	0.00	0.00	0.00	0.12	1.52	0.00
Scalping screen and transfer points	0.24	1.61	0.00	0.00	0.00	0.00	0.00
Total, Point Sources	**20,153.61**	**24,534.71**	**119.16**	**179.57**	**323.19**	**118.86**	**81,491.92**

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

This is a new facility. Therefore, pre-project emissions are set to zero for all criteria pollutants.

Post Project Potential to Emit

The following table presents the post project Potential to Emit for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions Unit	$PM_{2.5}$		SO_2		NO_x		CO		VOC		CO_2e	
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]
Asphalt drum mixer & silo filling[c]	5.79	6.91	27.04	32.28	27.50	32.83	65.59	78.30	22.10	26.38	16,912	20,339
Asphaltic oil tank heater	0.01	0.03	0.19	0.84	0.07	0.31	0.04	0.18	0.01	0.03	100.30	439.33
Primary IC engine	0.47	0.61	0.01	0.02	12.60	16.24	6.90	8.90	2.56	3.30	1,387	1,788
Secondary IC engine	0.04	0.19	0.0004	0.002	0.83	3.62	0.55	2.41	0.17	0.74	76.92	336.89
Load-out	0.26	0.31	0.00	0.00	0.00	0.00	0.68	0.81	1.96	2.33	2.84	3.39
Storage Tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.35	0.42	0.00	0.00
Scalping screen & transfer points	0.10	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post Project Totals	**6.67**	**8.18**	**27.24**	**33.14**	**41.00**	**53.00**	**73.79**	**90.63**	**27.15**	**33.20**	**18,479**	**22,906**

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
c) The silo filling emissions are being routed back through the same baghouse stack as the drum dryer emissions.

As demonstrated in Tables 2 and 3, this facility has uncontrolled potential to emit for $PM_{2.5}/PM_{10}$, NO_X, SO2, CO and VOC emissions greater than the Major Source threshold of 100 T/yr and a controlled potential to emit for $PM_{2.5}/PM_{10}$, SO_2, NO_X, CO, and VOC emissions less than the Major Source threshold of 100 T/yr. Therefore, this facility is designated as a Synthetic Minor facility. As demonstrated in Table 3 the facility's PTE for CO is greater than 80% of the Major Source thresholds of 100 T/yr. Therefore, this facility will be designated as a SM-80 facility.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions	$PM_{2.5}$		SO_2		NO_x		CO		VOC		CO_2e	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project Potential to Emit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post Project Potential to Emit	6.67	8.18	27.24	33.14	41.00	53.00	73.79	90.63	27.15	33.20	18,479	22,906
Changes in Potential to Emit	**6.67**	**8.18**	**27.24**	**33.14**	**41.00**	**53.00**	**73.79**	**90.63**	**27.15**	**33.20**	**18,479**	**22,906**

Non-Carcinogenic TAP Emissions

A summary of the estimated PTE emissions increase of non-carcinogenic toxic air pollutants (TAPs) is provided in the following table.

Table 5 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acetone	0.00E-03	1.14E-01	**0.1140**	**119**	**No**
Acrolein	0.00E-03	3.61E-03	**0.0036**	**0.017**	**No**
Antimony	0.00E-03	4.06E-05	**4.06E-05**	**0.033**	**No**
Barium	0.00E-03	7.93E-04	**0.0008**	**0.033**	**No**
Bromomethane (Methyl bromide)	0.00E-03	1.40E-04	**1.40E-04**	**1.27**	**No**
Carbon disulfide	0.00E-03	3.52E-04	**3.52E-04**	**2**	**No**
Chromium metal (II and III)	0.00E-03	1.39E-03	**1.39E-03**	**0.033**	**No**
Cobalt metal dust, and fume	0.00E-03	2.21E-05	**2.21E-05**	**0.0033**	**No**
Copper (fume)	0.00E-03	4.25E-04	**4.25E-04**	**0.013**	**No**
Crotonaldehyde	0.00E-03	1.17E-02	**1.17E-02**	**0.38**	**No**
Cumene	0.00E-03	6.24E-04	**6.24E-04**	**16.3**	**No**
Ethyl benzene	0.00E-03	3.50E-02	**3.50E-02**	**29**	**No**
Ethyl chloride (Chloroethane)	0.00E-03	7.07E-05	**7.07E-05**	**176**	**No**
Heptane	0.00E-03	1.28	**1.28**	**109**	**No**
Hexane	0.00E-03	1.29E-01	**1.29E-01**	**12**	**No**
Hydrochloric Acid	0.00E-03	5.22E-02	**5.22E-02**	**0.05**	**Yes**
Manganese as Mn (fume)	0.00E-03	1.23E-03	**1.23E-03**	**0.333**	**No**
Methyl chloride (Chloromethane)	0.00E-03	4.85E-04	**4.85E-04**	**6.867**	**No**
Methyl chloroform	0.00E-03	6.54E-03	**6.54E-03**	**127**	**No**
Methyl ethyl ketone (MEK)	0.00E-03	3.68E-03	**3.68E-03**	**39.3**	**No**
Molybdenum (soluble)	0.00E-03	5.39E-07	**5.39E-07**	**0.667**	**No**
Naphthalene	0.00E-03	9.02E-02	**9.02E-02**	**3.33**	**No**
Pentane	0.00E-03	2.99E-02	**2.99E-02**	**118**	**No**
Phenol	0.00E-03	5.48E-04	**5.48E-04**	**1.27**	**No**
Phosphorous	0.00E-03	3.82E-03	**3.82E-03**	**0.007**	**Yes**
Propionaldehyde	0.00E-03	1.77E-02	**1.77E-02**	**0.0287**	**Yes**
Quinone	0.00E-03	2.18E-02	**2.18E-02**	**0.027**	**Yes**
Selenium	0.00E-03	5.52E-05	**5.52E-05**	**0.013**	**No**
Silver as Ag (soluble)	0.00E-03	6.54E-05	**6.54E-05**	**0.007**	**No**
Styrene monomer	0.00E-03	1.35E-04	**1.35E-04**	**6.67**	**No**
Thallium	0.00E-03	5.59E-07	**5.59E-07**	**0.007**	**No**
Toluene	0.00E-03	3.98E-01	**3.98E-01**	**25**	**No**
Valeraldehyde	0.00E-03	9.13E-03	**9.13E-03**	**11.7**	**No**
Vanadium as V_2O_5, (respirable dust and fume)	0.00E-03	1.13E-06	**1.13E-06**	**0.003**	**No**
Xylene	0.00E-03	3.51E-02	**3.51E-02**	**29**	**No**
Zinc metal	0.00E-03	8.33E-03	**8.33E-03**	**0.667**	**No**

Some of the PTEs for non-carcinogenic TAPs were exceeded as a result of this project. Therefore, modeling is required for hydrochloric acid, phosphorous, propionaldehyde and quinone because the 24-hour average non-carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of carcinogenic TAPs is provided in the following table.

Table 6 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR CARCINOGENIC TOXIC AIR POLLUTANTS

Carcinogenic Toxic Air Pollutants	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acetaldehyde	0.00E-03	1.78E-01	**3.00E-03**	**3.0E-03**	**Yes**
Arsenic	0.00E-03	2.91E-04	**2.91E-04**	**1.5E-06**	**Yes**
Benzene	0.00E-03	5.64E-02	**5.64E-02**	**8.0E-04**	**Yes**
Beryllium and compounds	0.00E-03	6.43E-06	**6.43E-06**	**2.8E-05**	**No**
Bis(2-ethylhexyl)phthalate	0.00E-03	7.86E-06	**7.86E-06**	**2.80E-02**	**No**
1,3-Butadiene	0.00E-03	1.83E-05	**1.83E-05**	**2.40E-05**	**No**
Cadmium and compounds	0.00E-03	9.87E-05	**9.87E-05**	**3.7E-06**	**Yes**
Chloromethane	0.00E-03	4.85E-04	**4.85E-04**	**1.90E-03**	**No**
Chromium (VI)	0.00E-03	6.13E-05	**6.13E-05**	**5.6E-07**	**Yes**
Total Dioxin/Furans	0.00E-03	4.60E-10	**4.60E-10**	**1.5E-10**	**Yes**
Fluorene	0.00E-03	2.25E-03	**2.25E-03**	**9.10E-05**	**Yes**
Formaldehyde	0.00E-03	4.36E-01	**4.36E-01**	**5.1E-04**	**Yes**
3-Methylchloranthrene	0.00E-03	8.82E-10	**8.82E-10**	**2.50E-06**	**No**
Methylene Chloride	0.00E-03	4.69E-06	**4.69E-06**	**1.60E-03**	**No**
2-Methylnaphthalene	0.00E-03	2.61E-02	**2.61E-02**	**9.10E-05**	**Yes**
Naphthalene	0.00E-03	9.02E-02	**9.02E-02**	**9.10E-05**	**Yes**
Nickel	0.00E-03	9.16E-03	**9.16E-03**	**2.7E-05**	**Yes**
Perylene	0.00E-03	2.18E-05	**2.18E-05**	**9.10E-05**	**No**
Phenanthrene	0.00E-03	4.27E-03	**4.27E-03**	**9.10E-05**	**Yes**
Pyrene	0.00E-03	6.42E-04	**6.42E-04**	**9.10E-05**	**Yes**
POM Total	0.00E-03	2.85E-04	**2.85E-04**	**2.0E-06**	**Yes**
Tetrachloroethylene	0.00E-03	4.37E-05	**4.37E-05**	**1.3E-02**	**No**

d) Polycyclic Organic Matter (POM) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

Some of the PTEs for carcinogenic TAPs were exceeded as a result of this project. However, when determining standards for the NSPS, Subpart IIII, seven urban HAPs were evaluated. These seven include: 7 PAH, acetaldehyde, arsenic, benzene, beryllium, cadmium and formaldehyde. According to the final rule of the subpart promulgated in the Federal Register on July 11, 2006, if a compression-ignition meets the standards set forth in the subpart these specified urban HAPs are being controlled to a satisfactory level. Additionally, IDAPA 58.01.01.20.a states: if the owner or operator demonstrates that the toxic air pollutant from the source or modification is regulated by the Department at the time of permit issuance under 40 CFR Part 60, 40 CFR Part 61 or 40 CFR Part 63, no further procedures for demonstrating preconstruction compliance will be required under Section 210 for that toxic air pollutant as part of the application process. Therefore, although acetaldehyde, arsenic, benzene, cadmium and formaldehyde emissions exceed the EL, they are regulated by 40 CFR 60, Subpart IIII and do not need to be modeled to demonstrate compliance. All other TAPs that exceed the EL were modeled to demonstrate compliance. See the attached modeling memorandum for further details.

Post Project HAP Emissions

The following table presents the post project potential to emit for hazardous air pollutants (HAPs) pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 7 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

IDAPA Listing	Hazardous Air Pollutants	PTE (T/yr)
585	Manganese	0.0054
	Acrolein	0.0158
	Carbon Disulfide	0.0015
	Ethyl benzene	0.1531
	Ethyl Chloride	3.10E-04
	Antimony	2.0E-04
	Hexane	0.5643
	Bromomethane	6.0E-04
	Methyl chloroform	0.0287
	Methyl chloride	0.0021
	Chromium	0.0061
	Cobalt	9.69E-05
	Propionaldehyde	0.0776
	Cumene	0.0027
	Dichlorobenzene	2.58E-06
	Quinone	0.0955
	Phenol	0.0024
	Toluene	1.7448
	Selenium	2.42E-04
	Styrene	5.92E-04
	Xylene	0.1538
586	Acetaldehyde	0.7778
	Methylene Chloride	2.05E-05
	Benzene	0.2468
	Arsenic	0.0013
	POM	0.5607
	Cadmium	4.32E-04
	Beryllium	2.82E-05
	1,3-Butadiene	8.03E-05
	Hex Chromium	2.69E-04
	Formaldehyde	1.9092
	Naphthalene	0.3951
	Nickel	0.0401
	Phosphorus	0.0167
	Bis(2-ethylhexyl)phthalate	3.44E-05
Not listed	Dibutylphthalate	5.32E-07
	Hydrochloric Acid	0.2286
	Lead	0.0168
	Mercury	0.0016
	Total	**6.68**

The estimated PTE for all federally listed HAPs combined is below 25 T/yr and no PTE for a federally listed HAP exceeds 10 T/yr. Therefore, this facility is not a Major Source for HAPs.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, and TAP from this project were exceeded applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline[1]. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAP is provided in Appendix B.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

T-RACT Analysis

DEQ is satisfied that an asphalt plant adhering to the conditions of this permit will not exceed any applicable acceptable ambient concentration (AAC) or AAC for carcinogens (AACC) for TAPs, except those TAPs using T-RACT analysis to demonstrate pre-construction compliance. As described in the Emissions Inventories Section previously, most of the uncontrolled TAP emission rate estimates were found to be less than their corresponding emission screening level (EL) listed in Section 585-586 of IDAPA 58.01.01. For those TAPs, the requirements under Section 210.05 are met and no further procedures for demonstrating preconstruction compliance are required.

For the TAPs that exceed the EL in Section 585-586 of IDAPA 58.01.01, preconstruction compliance was demonstrated under the rules for toxic air pollutant reasonably available control technology (T-RACT) as specified in Sections 210.12-14 of IDAPA 58.01.01.

In accordance with IDAPA 58.01.01.210.12, the proposed T-RACT ambient concentrations at the point of compliance for each applicable TAP are less than, or equal to, the T-RACT ambient concentration (i.e., less than 10 times the applicable AACC listed in IDAPA 58.01.01.586).

In accordance with IDAPA 58.01.01.210.14, this T-RACT analysis included consideration of available control technologies and/or "The application of a design, equipment, work practice or operational requirement, or combination thereof", for compliance with the T-RACT requirements. This included a search of EPA's RACT, BACT, LAER Clearinghouse to identify available control technologies. To meet the T-RACT requirements, the permit requires the control measures determined to meet T-RACT as summarized in the following table. These control measure were selected based upon consideration of the technological feasibility for this process/operation, the economic feasibility, energy requirements, and environmental impacts.

For control technologies, the TAPs from this operation are categorized as follows:

- Metals: Arsenic; Cadmium, Chromium VI, and Nickel
- Organics and acids: PAHs, POM, dioxins/furans, hydrochloric acid, quinone, and acetaldehyde

[1] Criteria pollutant thresholds in Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002.

Table 8 T-RACT CONTROL MEASURES

TAP	Proposed T-RACT Control Measures	Permit Conditions
Organics	Good maintenance practices for the control equipment (baghouse)	32
Metals	Fuel specifications	22/33-34
	Baghouse control of HMA drum mixer emissions	15
	Recycling of collected particulate back to the asphalt drum mixer	4
Formaldehyde	Use of a covered conveyor from the HMA drum mixer to the silo/load out to minimize off-gassing emissions	4

In accordance with IDAPA 58.01.01.210.12.d and 58.01.01.210.14.e, emission limits and other permit conditions for each T-RACT pollutant have been incorporated into the permit as summarized in the table above to assure that the facility will be operated in the manner described in the preconstruction compliance demonstration. A detailed T-RACT analysis is provided on the DEQ website.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

This modeling analysis for this facility demonstrates compliance with applicable standards in attainment areas. However, because a separate modeling analysis was not provided to demonstrate compliance with applicable standards in non-attainment areas, this portable facility is not permitted for operation in non-attainment areas. This requirement is assured by Permit Condition 9.

Facility Classification

"Synthetic Minor" classification for criteria pollutants is defined as the uncontrolled Potential to Emit for criteria pollutants are above the applicable major source thresholds and the Potential to Emit for criteria pollutants fall below the applicable major source thresholds. Therefore, the following table compares the uncontrolled Potential to Emit and the Potential to Emit for criteria pollutants to the Major Source thresholds to determine if the facility will be "Synthetic Minor."

Table 9 UNCONTROLLED PTE AND PTE FOR REGULATED AIR POLLUTANTS COMPARED TO THE MAJOR SOURCE THRESHOLDS

Pollutant	Uncontrolled PTE (T/yr)	PTE (T/yr)	Major Source Thresholds (T/yr)	Uncontrolled PTE Exceeds the Major Source Threshold and PTE Exceeds the Major Source Threshold?
PM_{10}	14,240.11	15.85	100	No
$PM_{2.5}$	14,239.38	8.05	100	No
SO_2	127.91	33.09	100	No
NO_x	179.57	53.00	100	No
CO	323.19	90.63	100	No
VOC	118.87	33.20	100	No
CO_2e	81,491.92	22,907.45	100,000	No

"Synthetic Minor" classification for HAP pollutants is defined as the uncontrolled Potential to Emit for HAP pollutants are above the applicable major source thresholds and the Potential to Emit for HAP pollutants fall below the applicable major source thresholds. Therefore, the following table compares the uncontrolled Potential to Emit and the Potential to Emit for HAP pollutants to the Major Source thresholds to determine if the facility will be "Synthetic Minor."

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the proposed new emissions source. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM_{10} emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 17 and 42.

Fugitive Emissions (IDAPA 58.01.01.650)

IDAPA 58.01.01.650 Rules for the Control of Fugitive Emissions

The sources of fugitive emissions at this facility are subject to the State of Idaho fugitive emissions standards. These requirements are assured by Permit Conditions 3, 4 and 9.

Particulate Matter – New Equipment Process Weight Limitations (IDAPA 58.01.01.701)

IDAPA 58.01.01.701 Particulate Matter – New Equipment Process Weight Limitations

IDAPA 58.01.01.700 through 703 set PM emission limits for process equipment based on when the piece of equipment commenced operation and the piece of equipment's process weight (PW) in pounds per hour (lb/hr). IDAPA 58.01.01.701 and IDAPA 58.01.01.702 establish PM emission limits for equipment that commenced operation on or after October 1, 1979 and for equipment operating prior to October 1, 1979, respectively.

For equipment that commenced operation on or after October 1, 1979, the PM allowable emission rate (E) is based on one of the following four equations:

IDAPA 58.01.01.701.01.a: If PW is $< 9{,}250$ lb/hr; $E = 0.045\ (PW)^{0.60}$

IDAPA 58.01.01.701.01.b: If PW is $\geq 9{,}250$ lb/hr; $E = 1.10\ (PW)^{0.25}$

For equipment that commenced prior to October 1, 1979, the PM allowable emission rate is based on one of the following equations:

IDAPA 58.01.01.702.01.a: If PW is $< 17{,}000$ lb/hr; $E = 0.045\ (PW)^{0.60}$

IDAPA 58.01.01.702.01.b: If PW is $\geq 17{,}000$ lb/hr; $E = 1.12\ (PW)^{0.27}$

For the new asphalt drum mixer emissions unit proposed to be installed as a result of this project with a proposed throughput of 500 T/hr, E is calculated as follows:

Proposed throughput = 500 T/hr x 2,000 lb/1 T = 1,000,000 lb/hr

Therefore, E is calculated as:

$E = 0.045 \times PW^{0.60} = 0.045 \times (1{,}000{,}000)^{0.60} = 179.15$ lb-PM/hr

As presented previously in the Emissions Inventories Section of this evaluation the post project PTE for this emissions unit is 6.67 lb-$PM_{2.5}$ per hour. Assuming PM is 50% $PM_{2.5}$ means that PM emissions will be 13.34 lb-PM/hr (6.67 lb-$PM_{2.5}$ per hour ÷ 0.5 lb-$PM_{2.5}$ per lb-PM). This is less than the calculated Rule requirement PM emissions rate of 179.15 lb-PM/hr. Therefore, compliance with this requirement has been demonstrated.

Rules for Control of Odors (IDAPA 58.01.01.775)

IDAPA 58.01.01.750 Rules for Control of Odors

Section 776.01 states that no person shall allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids into the atmosphere in such quantities as to cause air pollution. These requirements are assured by Permit Conditions 8 and 11.

Rules for Control of Hot-Mix Asphalt Plants (IDAPA 58.01.01.805)

IDAPA 58.01.01.805 Rules for Control of Hot-Mix Asphalt Plants

The purpose of Sections 805 through 808 is to establish for hot-mix asphalt plants restrictions on the emission of particulate matter.

Section 806 states that no person shall cause, allow or permit a hot-mix asphalt plant to have particulate emissions which exceed the limits specified in Sections 700 through 703. As demonstrated previously, these requirements have been met by the proposed PM_{10} emissions rate (see Section on Particulate Matter – New Equipment Process Weight Limitations).

Section 807 states that in the case of more than one stack to a hot-mix asphalt plant, the emission limitation will be based on the total emission from all stacks. The proposed facility only has one stack for emissions from the asphalt drum dryer so there is no need to combine emissions limits from multiple stacks into one stack as required.

Section 808.01 requires fugitive emission controls as follows: No person shall cause, allow or permit a plant to operate that is not equipped with an efficient fugitive dust control system. The system shall be operated and maintained in such a manner as to satisfactorily control the emission of particulate material from any point other than the stack outlet.

Section 808.02 requires plant property dust controls as follows: The owner or operator of the plant shall maintain fugitive dust control of the plant premises and plant owned, leased or controlled access roads by paving, oil treatment or other suitable measures. Good operating practices, including water spraying or other suitable measures, shall be employed to prevent dust generation and atmospheric entrainment during operations such as stockpiling, screen changing and general maintenance.

These requirements are assured by Permit Conditions 3 and 4.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for all criteria pollutants or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is/is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

Because the facility produces asphalt and has two compression ignition IC engines the following NSPS Subparts are applicable:

- 40 CFR 60, Subpart I - National Standards of Performance for Hot Mix Asphalt Plants
- 40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR 60, Subpart I **National Standards of Performance for Hot Mix Asphalt Plants**

This permitting action is for a new asphalt plant. Therefore, the requirements of this subpart may apply.

§ 60.90 Applicability and designation of affected facility

In accordance with §60.90(a), each hot mix asphalt facility is an affected facility. In accordance with §60.90(b), any hot mix asphalt facility that commences construction or modification after June 11, 1973 is subject to the requirements of Subpart I.

The affected facility includes: the dryer; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems.

§ 60.91 Definitions

This section contains the definitions of this subpart.

§ 60.92 Standard for particulate matter

In accordance with §60.92, no owner or operator shall discharge or cause the discharge into the atmosphere from any affected facility any gases which contain particulate matter in excess of 0.04 gr/dscf or exhibit 20% opacity or greater. Permit Condition 16 includes the requirements of this section.

§ 60.93 Test methods and procedures

In accordance with §60.93(a), performance tests shall use as reference methods and procedures the test methods in Appendix A of 40 CFR 60.

In accordance with §60.93(b), compliance with the particulate matter standards shall be determined by EPA Reference Method 5, and opacity shall be determined by EPA Reference Method 9. Permit Conditions 23 and 24 includes the requirements of this section.

40 CFR 60, Subpart IIII **Standards of Performance for Stationary Compression Ignition Internal Combustion Engines**

This permitting action is for a new asphalt plant. Included in the proposed permitted equipment are two diesel-fired IC engines, the Primary IC Engine and the Secondary IC Engine. Therefore, the requirements of this subpart may apply.

§ 60.4200 Am I subject to this subpart?

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (3) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is:

(i) 2007 or later, for engines that are not fire pump engines,

(ii) The model year listed in table 3 to this subpart or later model year, for fire pump engines.

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005 where the stationary CI ICE are:

(i) Manufactured after April 1, 2006 and are not fire pump engines, or

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

(3) Owners and operators of stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005.

(4) The provisions of §60.4208 of this subpart are applicable to all owners and operators of stationary CI ICE that commence construction after July 11, 2005.

(b) The provisions of this subpart are not applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand.

(c) If you are an owner or operator of an area source subject to this subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart applicable to area sources.

(d) Stationary CI ICE may be eligible for exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C (or the exemptions described in 40 CFR part 89, subpart J and 40 CFR part 94, subpart J, for engines that would need to be certified to standards in those parts), except that owners and operators, as well as manufacturers, may be eligible to request an exemption for national security.

(e) Owners and operators of facilities with CI ICE that are acting as temporary replacement units and that are located at a stationary source for less than 1 year and that have been properly certified as meeting the standards that would be applicable to such engine under the appropriate nonroad engine provisions, are not required to meet any other provisions under this subpart with regard to such engines.

This facility includes the installation of two CI stationary at a facility that will be constructed after July 11, 2005, that were manufactured after April 1, 2006, and that are not fire pump engines.

§ 60.4201 Emissions Standards for Manufacturers

This Section of the Subpart applies to manufacturers of IC engines. However, the Applicant is not a manufacturer of the IC engines proposed for this project. Therefore, the requirements of this Section of the Subpart are not applicable.

§ 60.4202 What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

This Section of the Subpart applies to manufacturers of IC engines. However, as discussed previously, the Applicant is not a manufacturer of the IC engines proposed for this project. Therefore, the requirements of this Section of the Subpart are not applicable.

§ 60.4203 How long must my engines meet the emission standards if I am a manufacturer of stationary CI internal combustion engines?

Engines manufactured by stationary CI internal combustion engine manufacturers must meet the emission standards as required in §§60.4201 and 60.4202 during the certified emissions life of the engines.

This Section of the Subpart applies to manufacturers of IC engines. However, as discussed previously, the Applicant is not a manufacturer of the IC engines proposed for this project. Therefore, the requirements of this Section of the Subpart are not applicable.

§ 60.4204 What emission standards must I meet for non-emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of less than 10 liters per cylinder must comply with the emission standards in table 1 to this subpart. Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder must comply with the emission standards in 40 CFR 94.8(a)(1).

(b) Owners and operators of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.

The Subpart requires that the Permittee comply with Table 1 of IIII if the engine is pre-2007 and has a displacement of less than 10 liters/cylinder. By installing Tier certified 2007 or later model year IC engine, as proposed by the Applicant, the emissions requirements of this Section of the Subpart have been met for the Secondary Engine. The Primary Engine is Tier certified 2006 model year. It must meet standards described in Table 1 of this Subpart. The engine must meet NO_x, CO and PM standards. The standards are 9.2 g/KW-hr, 11.4 g/KW-hr and 0.54 g/KW-hr, respectively. The test results and California Air Resources Board certify below these standards. 6.2 g/KW-hr for $NMHC+NO_x$, 0.7 g/KW-hr for CO and 0.11 g/KW-hr for PM. Therefore, by being Tier certified the Primary engine meets the standards for IIII. These requirements are assured by Permit Conditions 43 and 44.

§ 60.4205 What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

Emergency stationary CI internal combustion engines must meet the emission standards as required in §§60.4205.

This Section of the Subpart applies to emergency IC engines. However, this application if for full-time IC engines, not emergency IC engines. Therefore, the requirements of this Section of the Subpart are not applicable.

§ 60.4206 How long must my engines meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 over the entire life of the engine.

This requirement is assured by Permit Condition 47.

§ 60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

(c) [Reserved]

(d) Beginning June 1, 2012, owners and operators of stationary CI ICE subject to this subpart with a displacement of greater than or equal to 30 liters per cylinder are no longer subject to the requirements of paragraph (a) of this section, and must use fuel that meets a maximum per-gallon sulfur content of 1,000 parts per million (ppm).

(e) Stationary CI ICE that have a national security exemption under §60.4200(d) are also exempt from the fuel requirements in this section.

The Applicant has stated that they will furl the IC engines with diesel fuel with a maximum sulfur content of 15 ppm or 0.0015% by weight which meets the requirements of this Section of the Subpart. This requirement is assured by Permit Condition 46.

§ 60.4208 What is the deadline for importing or installing stationary CI ICE produced in previous model years?

(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.

(c) After December 31, 2014, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 19 KW (25 HP) and less than 56 KW (75 HP) that do not meet the applicable requirements for 2013 model year non-emergency engines.

(d) After December 31, 2013, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 56 KW (75 HP) and less than 130 KW (175 HP) that do not meet the applicable requirements for 2012 model year non-emergency engines.

(e) After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 KW (175 HP), including those above 560 KW (750 HP), that do not meet the applicable requirements for 2011 model year non-emergency engines.

(f) After December 31, 2016, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 560 KW (750 HP) that do not meet the applicable requirements for 2015 model year non-emergency engines.

(g) After December 31, 2018, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power greater than or equal to 600 KW (804 HP) and less than 2,000 KW (2,680 HP) and a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that do not meet the applicable requirements for 2017 model year non-emergency engines.

(h) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (g) of this section after the dates specified in paragraphs (a) through (g) of this section.

(i) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

For the Primary IC Engine (1,200 bhp Cummins, model QST30-G2) the Applicant has proposed to install a 2006 model Tier certified 2 engine that meets the applicable requirements of this Section of the Subpart for that model year IC engine. In addition, for the Secondary IC Engine (67 bhp John Deere, model PowerTech 4045D) the Applicant has proposed to install a 2007 model Tier certified 2 engine that meets the applicable requirements of this Section of the Subpart for that model year IC engine. These requirements are assured by Permit Condition 43 and 44.

§ 60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine.

(b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

The Applicant has not proposed an emergency IC engine. Therefore, the hour meter is not required. In addition, the Applicant has not proposed to install an IC engine with a diesel particulate filter. Therefore, the back pressure monitor is not required.

§ 60.4210 What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer?

This Section of the Subpart applies to manufacturers of IC engines. However, as discussed previously, the Applicant is not a manufacturer of the IC engines proposed for this project. Therefore, the requirements of this Section of the Subpart are not applicable.

§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section:

(1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions;

(2) Change only those emission-related settings that are permitted by the manufacturer; and

(3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

(1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

(2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

(3) Keeping records of engine manufacturer data indicating compliance with the standards.

(4) Keeping records of control device vendor data indicating compliance with the standards.

(5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in paragraph (g) of this section.

(d) If you are an owner or operator and must comply with the emission standards specified in §60.4204(c) or §60.4205(d), you must demonstrate compliance according to the requirements specified in paragraphs (d)(1) through (3) of this section.

(1) Conducting an initial performance test to demonstrate initial compliance with the emission standards as specified in §60.4213.

(2) Establishing operating parameters to be monitored continuously to ensure the stationary internal combustion engine continues to meet the emission standards. The owner or operator must petition the Administrator for approval of operating parameters to be monitored continuously. The petition must include the information described in paragraphs (d)(2)(i) through (v) of this section.

(i) Identification of the specific parameters you propose to monitor continuously;

(ii) A discussion of the relationship between these parameters and NO_X and PM emissions, identifying how the emissions of these pollutants change with changes in these parameters, and how limitations on these parameters will serve to limit NO_X and PM emissions;

(iii) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;

(iv) A discussion identifying the methods and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and

(v) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

(3) For non-emergency engines with a displacement of greater than or equal to 30 liters per cylinder, conducting annual performance tests to demonstrate continuous compliance with the emission standards as specified in §60.4213.

(e) If you are an owner or operator of a modified or reconstructed stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(e) or §60.4205(f), you must demonstrate compliance according to one of the methods specified in paragraphs (e)(1) or (2) of this section.

(1) Purchasing, or otherwise owning or operating, an engine certified to the emission standards in §60.4204(e) or §60.4205(f), as applicable.

(2) Conducting a performance test to demonstrate initial compliance with the emission standards according to the requirements specified in §60.4212 or §60.4213, as appropriate. The test must be conducted within 60 days after the engine commences operation after the modification or reconstruction.

(f) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section, is prohibited.

(g) If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows:

(1) If you are an owner or operator of a stationary CI internal combustion engine with maximum engine power less than 100 HP, you must keep a maintenance plan and records of conducted maintenance to demonstrate compliance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, if you do not install and configure the engine and control device according to the manufacturer's emission-related written instructions, or you change the emission-related settings in a way that is not permitted by the manufacturer, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of such action.

(2) If you are an owner or operator of a stationary CI internal combustion engine greater than or equal to 100 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer.

(3) If you are an owner or operator of a stationary CI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer. You must conduct subsequent performance testing every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards.

By installing a Tier certified 2007 or later model year IC engine, as proposed by the Applicant, the emissions requirements of this Section of the Subpart have been met for the Secondary Engine. The Primary Engine, in accordance with 40 CFR 60.4211(b), also is Tier certified according to the requirements of 40 CFR part 89 or part 94. These requirements are assured by Permit Conditions 44 and 45.

§ 60.4212 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?

Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (e) of this section.

However, the Applicant is not required to source test the IC engines proposed for this project because they are Tier certified. Therefore, the requirements of this Section of the Subpart are not applicable.

§ 60.4213 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of greater than or equal to 30 liters per cylinder?

Owners and operators of stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder must conduct performance tests according to paragraphs (a) through (f) of this section.

However, as discussed previously the Applicant is not required to source test the IC engines proposed for this project because they are Tier certified. Therefore, the requirements of this Section of the Subpart are not applicable.

§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section.

(1) Submit an initial notification as required in §60.7(a)(1). The notification must include the information in paragraphs (a)(1)(i) through (v) of this section.

(i) Name and address of the owner or operator;

(ii) The address of the affected source;

(iii) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

(iv) Emission control equipment; and

(v) Fuel used.

(2) Keep records of the information in paragraphs (a)(2)(i) through (iv) of this section.

(i) All notifications submitted to comply with this subpart and all documentation supporting any notification.

(ii) Maintenance conducted on the engine.

(iii) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards.

(iv) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards.

(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached

The IC engines proposed to be installed by the Applicant are Tier certified 2007 or later model year IC engines or are pre-2007 but certified. Therefore, the requirements of this Section of the Subpart are not applicable.

§ 60.4218 What parts of the General Provisions apply to me?

Table 8 to this subpart shows which parts of the General Provisions in §§60.1 through 60.19 apply to you.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT Applicability (40 CFR 63)

Because the facility has two compression ignition IC engines the following NESHAP Subpart may be applicable:

- 40 CFR 60, Subpart ZZZZ - National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

40 CFR 63, Subpart ZZZZ **National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines**

§ 63.6580 What is the purpose of subpart ZZZZ?

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. As demonstrated previously in the Emissions Inventories Section of this analysis this facility is an area source for HAPs as the potential to emit for HAPs is 0.72 T/yr. Therefore, the engines at this facility may be subject to the requirements of Subpart ZZZZ.

§ 63.6585 What is the purpose of subpart ZZZZ?

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) An area source of HAP emissions is a source that is not a major source.

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C.

§ 63.6590 What parts of my plant does this subpart cover?

This subpart applies to each affected source.

Section (a) defines an affected source as any **existing, new, or reconstructed stationary** RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

Sections (1)(i) through (1)(iv) defines **existing** stationary RICE as the following:

For stationary RICE with a site rating of more than 500 brake horsepower (bhp) located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before December 19, 2002.

For stationary RICE with a site rating of less than or equal to 500 brake bhp located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

A change in ownership of an existing stationary RICE does not make that stationary RICE a new or reconstructed stationary RICE.

Sections (2)(i) through (2)(iii) defines **new** stationary RICE as the following:

A stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after December 19, 2002.

A stationary RICE with a site rating of equal to or less than 500 bhp located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

Section (3)(i) through (2)(iii) defines **reconstructed** stationary RICE as the following:

A stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after December 19, 2002.

A stationary RICE with a site rating of equal to or less than 500 bhp located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

A stationary RICE located at an area source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

Section (b) specifies which stationary RICE are subject to limited requirements of this subpart. An affected source which meets either of the criteria in paragraphs (b)(1)(i) through (ii) of this section does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of §63.6645(f). The requirements of (b)(1)(i) through (ii) are as follows:

The stationary RICE is a new or reconstructed emergency stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions.

The stationary RICE is a new or reconstructed limited use stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions.

Section (2) specifies that a new or reconstructed stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10% or more of the gross heat input on an annual basis must meet the initial notification requirements of §63.6645(f) and the requirements of §§63.6625(c), 63.6650(g), and 63.6655(c). These stationary RICE do not have to meet the emission limitations and operating limitations of this subpart.

Section (3) allows that the following stationary RICE do not have to meet the requirements of this subpart and of subpart A of this part, including initial notification requirements:

Existing spark ignition 2-stroke lean-burn (2SLB) stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions;

Existing spark ignition 4-stroke lean burn (4SLB) stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions;

Existing emergency stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions;

Existing limited use stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions;

Existing stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions that combusts landfill gas or digester gas equivalent to 10% or more of the gross heat input on an annual basis;

Existing residential emergency stationary RICE located at an area source of HAP emissions;

Existing commercial emergency stationary RICE located at an area source of HAP emissions; or

Existing institutional emergency stationary RICE located at an area source of HAP emissions.

(c) Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

(1) A new or reconstructed stationary RICE located at an area source;

As presented previously in the Emissions Units and Control Devices Section previously, the two IC engines at this facility are compression ignition stationary RICE. The Primary IC Engine has a site rating of more than 500 bhp and is located at an area of HAP emissions (see the Emissions Inventories Section). The Secondary IC Engine has a site rating of less than 500 bhp and is located at an area of HAP emissions (see the Emissions Inventories Section). Therefore, the Primary IC Engine and the Secondary IC Engine are subject to the requirements of Subpart ZZZZ. However, because the two engines are subject to 40 CFR 60, Subpart IIII, all ZZZZ requirements are met by complying with IIII.

Permit Conditions Review

This section describes the permit conditions for this initial permit or only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Permit condition 1 establishes the permit to construct scope.

Permit condition 2 provides a description of the purpose of the permit and the regulated sources, the process, and the control devices used at the facility.

FACILITY-WIDE CONDITIONS

As discussed previously, Permit Condition 3 establishes that the permittee shall take all reasonable precautions to prevent fugitive particulate matter (PM) from becoming airborne and provides examples of the controls in accordance with IDAPA 58.01.01.650-651.

As discussed previously, Permit Condition 4 establishes that the asphalt plant shall employ efficient fugitive dust controls and provides examples of the controls in accordance with IDAPA 58.01.01.808.01 and 808.02.

Permit Condition 5 establishes that the asphalt plant may collocate with one rock crushing plant and shall not locate with 1,000 ft. of another rock crushing plant, any other asphalt plant, or a concrete batch plant as requested by the Applicant.

Permit Condition 6 establishes that the permittee notify DEQ when the permitted portable equipment is relocated. This requirement is based upon imposing reasonable permit conditions for portable asphalt plants.

Permit Condition 7 establishes a restriction on locating the portable asphalt plant to non-attainment areas. The location restrictions are based upon parameters used during the ambient air quality modeling analysis performed for this project.

Permit Condition 8 establishes that there are to be no emissions of odorous gases, liquids, or solids from the permit equipment into the atmosphere in such quantities that cause air pollution.

As discussed previously, Permit Condition 9 establishes that the permittee shall monitor fugitive dust emissions on a daily basis to demonstrate compliance with other permit requirements.

Permit Condition 10 establishes that the permittee monitor and record the distances to equipment that will be collocated with the asphalt plant to demonstrate compliance with permit condition 5.

Permit Condition 11 establishes that the permittee monitor and record odor complaints to demonstrate compliance with other permit requirements.

Permit Condition 12 establishes that the permittee shall maintain records as required by the Recordkeeping General Provision.

ASPHALT PRODUCTION EQUIPMENT

Permit Condition 13 provides a process description of the asphalt production process at this facility.

Permit Condition 14 provides a description of the control devices used on the asphalt production equipment at this facility.

Permit Condition 15 establishes hourly and annual emissions limits for $PM_{2.5}$, SO_2, NO_X, CO, and VOC emissions from the asphalt production operation at this facility.

As discussed previously Permit Condition 16 incorporates the particulate matter and opacity standards of 40 CFR 60, Subpart I – Standards of Performance for Hot Mix Asphalt Plants.

As discussed previously, Permit Condition 17 establishes a 20% opacity limit for the asphalt drum mixer baghouse stack, the asphaltic oil tank heater stack, the load-out station stack(s), and the silo filling slat conveyor stacks or functionally equivalent openings associated with the asphalt production operation.

Permit Condition 18 establishes an hourly, a daily, and an annual asphalt production limit for the asphalt production operation as proposed by the Applicant. The setback distances that correspond to daily production are also included in this condition. Note that there is only a maximum hourly throughput limit. The pollutant that drove the setback distances was $PM_{2.5}$ with has a 24-hr NAAQS standard. Therefore, daily production may fluctuate from site to site. See the modeling memorandum (Appendix B) for further details.

Permit Condition 19 establishes a daily asphalt production limit for the asphalt production operation when operated on days when a collocated portable rock crusher is operated. This requirement was based upon the air quality modeling analysis performed for this application.

Permit Condition 20 establishes limits for the raw materials used in the asphalt production operation as proposed by the Applicant.

Permit Condition 21 establishes that a baghouse be used to control emissions from the asphalt drum mixer as proposed by the Applicant.

Permit Condition 22 establishes fuel use restrictions for combustion in the asphalt drum mixer based upon 40 CFR 279.11. These fuel use restrictions were based on the fuels proposed by the Applicant to be combusted in the asphalt drum mixer. Used oil limitations are based on 40 CFR 279.11 specifications.

Permit Condition 23 establishes PM performance testing requirements as required by 40 CFR 60, Subpart I for Hot Mix Asphalt Plants.

Permit Condition 24 establishes PM testing methods and procedures as required by 40 CFR 60, Subpart I for Hot Mix Asphalt Plants.

Permit Condition 25 establishes $PM_{2.5}$ performance testing requirements required by DEQ on asphalt plants located in the state of Idaho.

Permit Condition 26 establishes $PM_{2.5}$ performance testing methods and procedures required by DEQ on asphalt plants located in the state of Idaho.

Permit Condition 27 establishes SO_2 performance test methods and procedures. The SO_2 test is a one-time requirement to demonstrate compliance with the SO_2 lb/hr limit. This test is necessary because the permittee has elected to base SO_2 emission estimates that are considerably lower than what DEQ considers more representative. However, there is validity to the fuel consumption method used by Western Construction. Thus, the emission estimates are assumed to be accurate, but will need to be validated via a performance test.

Permit Condition 28 establishes SO_2 performance testing method and procedures.

Permit Condition 29 establishes that the permittee monitor asphalt production, visible emissions, RAP percentage usage, the fuel combusted in the asphalt drum mixer and the sulfur content of the fuel for the SO_2 during the performance tests to establish the validity of the performance tests.

Permit Condition 30 establishes that the Permittee monitor and record hourly and daily asphalt production to demonstrate compliance with the Asphalt Production Limits permit condition.

Permit Condition 31 establishes that the Permittee calculate and record RAP use to demonstrate compliance with the Allowable Raw Materials permit condition.

Permit Condition 32 establishes that the Permittee measure and record asphalt production equipment setback distances to demonstrate compliance with other permit requirements.

Permit Condition 33 establishes that the Permittee shall establish procedures for operating the baghouse. This is a DEQ imposed standard requirement for operations using baghouses to control particulate emissions.

Permit Condition 34 establishes that the permittee monitor distillate fuel oil shipments to demonstrate compliance with other permit requirements.

Permit Condition 35 establishes that the permittee monitor used oil fuel shipments to demonstrate compliance with the used oil fuel requirements of the permit.

Permit Condition 36 establishes that the permittee shall maintain records as required by the Recordkeeping General Provision.

Permit Condition 37 establishes that the permittee shall submit the results of the performance tests to the appropriate DEQ office.

Permit Condition 38 establishes that the federal requirements of 40 CFR Part 60, Subpart I – Standards of Performance for Hot Mix Asphalt Plants, are incorporated by reference into the requirements of this permit per current DEQ guidance.

Permit Condition 39 incorporates 40 CFR 60, Subpart A – General Provisions.

INTERNAL COMBUSTION ENGINES

Permit Condition 40 provides a process description of the IC engines process at this facility.

Permit Condition 41 provides a description of the control devices used on the IC engines at this facility.

Permit Condition 42 establishes hourly and annual emissions limits for $PM_{2.5}$, SO_2, NO_X, CO, and VOC emissions from the IC engines at this facility. The Primary engine is limited by operation hours, is limited to ultra-low sulfur diesel and must be certified. The associated emissions are indirectly limited by other permit conditions, thus there is no need to include a numerical limit. The only NAAQs standards that have the potential for concern are the 24-hr $PM_{2.5}$ and 1-hr SO_2. However, these are specific to the drum dryer, not the engines. Secondly, the setback distance conditions ensure the $PM_{2.5}$ standard is met and performance testing will verify the 1-hr SO_2 standard will be met.

As discussed previously, Permit Condition 43 establishes a 20% opacity limit for the Primary IC Engine and the Secondary IC Engine exhaust stacks or functionally equivalent openings associated with the asphalt production operation.

Permit Condition 44 establishes that the Primary IC engine shall be EPA Tier certified to the certification proposed by the Applicant.

Permit Condition 45 establishes that the Secondary IC engine shall be EPA Tier certified to the certification proposed by the Applicant.

Permit Condition 46 establishes a daily and an annual operation limit for the Primary IC Engine as proposed by the Applicant. The Secondary engine does not need any limits as the assumed emissions were calculated based on 8,760 hours of operation per year.

Permit Condition 47 establishes fuel use restrictions for combustion in the Primary IC Engine and the Secondary IC Engine. These fuel use restrictions were based on the fuel proposed by the Applicant to be combusted in the Primary IC Engine and the Secondary IC Engine.

As discussed previously, Permit Condition 48 establishes operation and maintenance requirements for the Primary and Secondary IC engines as required by 40 CFR 60, Subpart IIII for Stationary Compression Ignition Internal Combustion Engines.

As discussed previously, Permit Condition 49 establishes where the notifications for the Primary and Secondary IC engines as required by 40 CFR 60, Subpart IIII for Stationary Compression Ignition Internal Combustion Engines should be sent.

Permit Condition 50 establishes that the federal requirements of 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines are incorporated by reference into the requirements of this permit per current DEQ guidance.

Permit Condition 51 incorporates 40 CFR 60, Subpart A – General Provisions as required by 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Permit Condition 52 establishes that the permittee monitor and record daily operation of the Primary IC Engine to demonstrate compliance with the Primary IC Engine Operating Limits permit condition.

Permit Condition 53 establishes that the permittee monitor distillate fuel oil shipments to demonstrate compliance with the distillate fuel oil requirements of the permit.

Permit Condition 54 establishes that the permittee shall maintain records as required by the Recordkeeping General Provision.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

APPENDIX A – EMISSIONS INVENTORIES

Uncontrolled Calculations for the Western Construction, Inc. HMA Plant

Drum Dryer

The maximum potential hourly throughput of the GENCOR 400 Ultra Plant is 500 T/hr. The following calculations were derived using emission factors from AP-42 Section 11-1(CO, NO_x, VOC and lead), fuel consumption and fuel sulfur content (SO_2), particulate emissions with CARB speciation factors applied and assuming operations of 8,760 hr/yr. Please note that the particulate emissions also assume the baghouse is not installed.

Uncontrolled Emissions (T-$PM_{2.5}$/yr) = EF lb-PM/ton x Speciation factor x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

$PM_{2.5}$ emissions = 28 lb/ton x 0.333 x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **20,149 T-$PM_{2.5}$/yr**

Uncontrolled Emissions (T-PM_{10}/yr) = EF lb-PM_{10}/ton x Speciation factor x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

PM_{10} emissions = 28 lb/ton x0.4 x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **24,528 T-PM_{10}/yr**

Uncontrolled Emissions (T-SO_2/yr) = Fuel consumption gal/ton x density of fuel lb/gal x Production Rate (tons/hr) x sulfur content x 8,760 hr/yr ÷ 2,000 lb/ton

SO_2 emissions = 1.48 gal/ton x 7.309 lb/gal x 500 tons/hr x 0.5% x 8,760 hr/yr ÷ 2,000 lb/ton = **118.26 T-SO_2/yr**

Note that the conversion from S to SO2 doubles the emissions, but an assumed 50% scavenging percentage cuts the emissions in half.

Uncontrolled Emissions (T-NO_x/yr) = EF lb-NO_x/ton x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

NO_x emissions = 0.055 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **120.45 T-NO_x/yr**

Uncontrolled Emissions (T-CO/yr) = EF lb-CO/ton x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

CO emissions = 0.13 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **284.70 T-CO/yr**

Uncontrolled Emissions (T-VOC/yr) = EF lb-VOC/ton x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

VOC emissions = 0.032 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **70.08 T-VOC/yr**

Uncontrolled Emissions (T-Pb/yr) = EF lb-Pb/ton x Production Rate (tons/hr) x 8,760 hr/yr ÷ 4 qtr/yr

Pb emissions = 1.5E-05 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 4 qtr/yr = **16.43 lb-Pb/qtr**

Uncontrolled Emissions (T-CO_2e/yr) = (EF lb-CO_2/ton x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton) + GWP x (EF lb-CH_4/ton x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton) + GWP x (EF lb N_2O/1000 gal x Burner Capacity (MMBtu/hr) ÷ heating value (MMBtu/1000 gal) x 8,760 hr/yr ÷ 2,000 lb/ton)

CO2e emissions = (33 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton) + 21 x (0.012 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton) + 310 x (0.9 lb/1000 gal x 135 MMBtu/hr ÷ 91.5 MMBtu/1000 gal x 8,760 hr/yr ÷ 2,000 lb/ton) = **74,624.86 T-CO_2e/yr**

Asphalt Tank Heater

The tank heater is uncontrolled. Therefore, both uncontrolled and "controlled" emissions are identical. Emission factors used in the following equations were derived from AP-42, Section 1.3 and 1.11, Fuel Oil Combustion. All factors are in units of lb/gal and the maximum fuel usage rate is 3.57 gal/hr. The rate is calculated based on the heat input rating of the unit in MMBtu/hr and the fuel heating value in MMBtu/1,000 gal. Operations were assumed to be 8,760 hr/yr.

Maximum fuel usage rate = 0.5 MMBtu/hr ÷ 140 MMBtu/1,000 gal = 3.57 gal/hr

Uncontrolled Emissions (T-$PM_{2.5}$/yr) = EF lb-PM_{10}/1000 gal x Fuel Usage Rate (gal/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

$PM_{2.5}$ emissions = 1.79 lb/1000 gal x 3.57 gal/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.03 T-$PM_{2.5}$/yr**

Uncontrolled Emissions (T-PM_{10}/yr) = EF lb-PM_{10}/1000 gal x Fuel Usage Rate (gal/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

PM_{10} emissions = 48.45 lb/1000 gal x 3.57 gal/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.76 T-PM_{10}/yr**

Uncontrolled Emissions (T-SO_2/yr) = EF lb-SO_2/1000 gal x Fuel Usage Rate (gal/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

SO_2 emissions = 53.50 lb/1000 gal x 3.57 gal/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.84 T-SO_2/yr**

Uncontrolled Emissions (T-NO_x/yr) = EF lb-NO_x/1000 gal x Fuel Usage Rate (gal/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

NO_x emissions = 16 lb/1000 gal x 3.57 gal/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.25 T-NO_x/yr**

Uncontrolled Emissions (T-CO/yr) = EF lb-CO/1000 gal x Fuel Usage Rate (gal/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

CO emissions = 2.10 lb/1000 gal x 3.57 gal/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.03 T-CO/yr**

Uncontrolled Emissions (T-VOC/yr) = EF lb-VOC/1000 gal x Fuel Usage Rate (gal/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

VOC emissions = 1.0 lb/1000 gal x 3.57 gal/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.02 T-VOC/yr**

Uncontrolled Emissions (T-Pb/yr) = EF lb-Pb/1000 gal x Fuel Usage Rate (gal/hr) x 8,760 hr/yr ÷ 4 qtr/yr

Pb emissions = 0.50 lb/1000 gal x 3.57 gal/hr x 8,760 hr/yr ÷ 4 qtr/yr = **3.91 lb-Pb/qtr**

<u>1,200 hp Engine</u>

This engine applied emissions factors for VOC, NO_x, CO, $PM_{2.5}$ and PM_{10} from 40 CFR 89.112 Table 1. The SO_2 factor is from AP-42, Section 3.4-1. All 89.112 are in units of g/kW-hr while SO_2 is in units of lb/MMBtu. A sulfur content of 0.0015% was assumed and applied to the emission factor for SO_2. Also, a fuel usage rate was applied in MMBtu/hr. Operations were assumed to be 8,760 hr/yr.

Maximum Fuel Usage Rate = 1,200 hp x 7,000 Btu/hp-hr ÷ 137,030 Btu/gal = 61.30 gal/hr

Converting to MMBtu/hr = 61.30 gal/hr x 137,030 Btu/gal ÷ 1E6 Btu/MMBtu = 8.4 MMBtu/hr

Uncontrolled Emissions (T-$PM_{2.5}$/yr) = EF g-$PM_{2.5}$/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8,760 hr/yr ÷ 2,000 lb/ton x Fuel Usage Rate (MMBtu/hr)

$PM_{2.5}$ emissions = 0.2 g/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8.4 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **1.73 T-$PM_{2.5}$/yr**

Uncontrolled Emissions (T-PM_{10}/yr) = EF g-PM_{10}/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8,760 hr/yr ÷ 2,000 lb/ton x Fuel Usage Rate (MMBtu/hr)

PM_{10} emissions = 0.2 g/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8.4 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **1.73 T-PM_{10}/yr**

Uncontrolled Emissions (T-SO_2/yr) = EF lb-SO_2/MMBtu x Sulfur Content x Fuel Usage Rate (MMBtu/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

SO_2 emissions = 1.01 lb/MMBtu x 0.0015 x 8.4 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.056 T-SO_2/yr**

Uncontrolled Emissions (T-NO_x/yr) = EF g-NO_x/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8,760 hr/yr ÷ 2,000 lb/ton x Fuel Usage Rate (MMBtu/hr)

NO_x emissions = 6.4 g/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8.4 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **55.19 T-NO_x/yr**

Uncontrolled Emissions (T-CO/yr) = EF g-CO/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8,760 hr/yr ÷ 2,000 lb/ton x Fuel Usage Rate (MMBtu/hr)

CO emissions = 3.5 g/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8.4 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **30.24 T-CO/yr**

Uncontrolled Emissions (T-VOC/yr) = EF g-VOC/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8,760 hr/yr ÷ 2,000 lb/ton x Fuel Usage Rate (MMBtu/hr)

VOC emissions = 1.3 g/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8.4 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **11.23 T-VOC/yr**

Uncontrolled Emissions (T-CO_2e/yr) =EF lb-CO_2/MMBtu x Fuel Use Rate (MMBtu/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

CO_2e emissions (T-CO_2e/yr) = (165 lb/MMBtu x 8.4 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton) + 21(0.008 lb/MMBtu x 8.4 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton) = **6,076.9 T-CO_2e/yr**

<u>67 hp Engine</u>

This engine applied emissions factors for NO_x, CO, $PM_{2.5}$ and PM_{10} from 40 CFR 89.112 Table 1 for an engine 37≤kW<75. The SO_2 and VOC factors are from AP-42, Section 3.3-1. All 89.112 are in units of g/kW-hr except for VOC and SO_2 are in units of lb/MMBtu. A sulfur content of 0.0015% was assumed and applied to the emission factor for SO_2. Also, a fuel usage rate was applied in MMBtu/hr. Operations were assumed to be 8,760 hr/yr.

Maximum Fuel Usage Rate = 67 hp x 7,000 Btu/hp-hr ÷ 137,030 Btu/gal = 3.42 gal/hr

Converting to MMBtu/hr = 3.42 gal/hr x 137,030 Btu/gal ÷ 1E6 Btu/MMBtu = 0.469 MMBtu/hr

Uncontrolled Emissions (T-$PM_{2.5}$/yr) = EF g-$PM_{2.5}$/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8,760 hr/yr ÷ 2,000 lb/ton x Fuel Usage Rate (MMBtu/hr)

$PM_{2.5}$ emissions = 0.4 g/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 0.469 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.19 T-$PM_{2.5}$/yr**

Uncontrolled Emissions (T-PM_{10}/yr) = EF g-PM_{10}/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8,760 hr/yr ÷ 2,000 lb/ton x Fuel Usage Rate (MMBtu/hr)

PM_{10} emissions = 0.4 g/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 0.469 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.19 T-PM_{10}/yr**

Uncontrolled Emissions (T-SO_2/yr) = EF lb-SO_2/MMBtu x Fuel Use Rate (MMBtu/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

SO_2 emissions = 0.29 lb/MMBtu x 0.469 MMBtu/hr x (0.0015/0.05) x 8,760 hr/yr ÷ 2,000 lb/ton = **0.002 T-SO_2/yr**

Uncontrolled Emissions (T-NO_x/yr) = EF g-NO_x/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8,760 hr/yr ÷ 2,000 lb/ton x Fuel Usage Rate (MMBtu/hr)

NO_x emissions = 7.5 g/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 0.469 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **3.62 T-NO_x/yr**

Uncontrolled Emissions (T-CO/yr) = EF g-CO/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 8,760 hr/yr ÷ 2,000 lb/ton x Fuel Usage Rate (MMBtu/hr)

CO emissions 5.0 g/kW-hr ÷ 1.341 hp/kW ÷ 453.6 g/lb ÷ 7000 Btu/-hp-hr x 1E6 Btu/MMBtu x 0.469 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **2.41 T-CO/yr**

Uncontrolled Emissions (T-VOC/yr) = EF lb-VOC/MMBtu x Fuel Use Rate (MMBtu/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

VOC emissions = 0.36 lb/MMBtu x 0.469 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **0.74 T-VOC/yr**

Uncontrolled Emissions (T-CO_2e/yr) =EF lb-CO_2/MMBtu x Fuel Use Rate (MMBtu/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

CO_2e emissions (T-CO_2e/yr) = 164 lb/MMBtu x 0.469 MMBtu/hr x 8,760 hr/yr ÷ 2,000 lb/ton = **336.9 T-CO_2e/yr**

Loadout and Silo Filling

All emissions were derived from AP-42, Section 11.1-14. The maximum potential hourly throughput of the GENCOR 400 Ultra Plant is 500 T/hr and operations were assumed to be 8,760 hr/yr.

Uncontrolled Emissions (T-$PM_{2.5/10}$/yr) = EF lb-PM_{10}/ton x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

Loadout

PM_{10} emissions = 5.22E-04 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 1.14 T-PM_{10}/yr

Silo-filling

PM_{10} emissions = 5.86E-04 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 1.28 T-PM_{10}/yr

Total Uncontrolled Emissions

1.14 T-PM_{10}/yr + 1.28 T-PM_{10}/yr = **2.42 T-PM_{10}/yr**

Uncontrolled Emissions (T-CO/yr) = EF lb-CO/ton x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

Loadout

CO emissions = 1.35E-03 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 2.96 T-CO/yr

Silo-filling

CO emissions = 1.18E-03 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 2.58 T-CO/yr

Total Uncontrolled Emissions

2.96 T-CO/yr + 2.58 T-CO/yr = **5.54 T-CO/yr**

Uncontrolled Emissions (T-VOC/yr) = EF lb-VOC/ton x Production Rate (tons/hr) x 8,760 hr/yr ÷ 2,000 lb/ton

Loadout

VOC emissions = 3.91E-03 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 8.56 T-VOC/yr

Silo-filling

VOC emissions = 1.22E-02 lb/ton x 500 tons/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 26.72 T-VOC/yr

Total Uncontrolled Emissions

8.56 T-VOC/yr + 26.72 T-VOC/yr = **35.28 T-VOC/yr**

Storage Tanks

Emissions were developed using AP-42, Section 11.1 and TANKS 4.0.9d (AP-42 7.1). 0.097 is the TANKS ratio of silo filling CO emissions to silo filling TOC emissions. There are three storage tanks.

Tank1:

500 T/hr * 8,760 hr/yr =4,380,000 T/yr

Liquid % of asphalt = 4%

Density of liquid asphalt = 8.69 lb/gal

0.04 ÷ 8.69 lb/gal * 2,000 lb/T = 9.21 T/gal

4,380,000 * 9.21 = 40,339,800 gal/yr

Tanks determined EF = 17.97 lb/yr per 300,000 gal

4,380,000 * 17.97 ÷ 300,000 = 2,416.35 lb/yr

CO Emissions: 2,416.35 lb/yr * 0.097 ÷ 2,000 lb/T = **0.117 T-CO/yr**

VOC Emissions: 2,416.35 lb/yr ÷ 2,000 lb/T **= 1.208 T-VOC/yr**

Tank2:

RFO Heating Value: 140 MMBtu/1000 gal

Total Plant Capacity: (Drum dryer + Asphalt tank heater): 135.5 MMBtu/hr

135.5 MMBtu/hr ÷ 140 MMBtu/1000 gal = 967.86 gal/hr * 8,760 hr/yr = 8,478,428.57 gal/yr

Tanks determined EF = 0.10 lb/yr per 150,000 gal

8,478,428.57 gal/yr * 0.10 lb/yr ÷ 150,000 = 5.65 lb/yr

VOC Emissions: 5.65 lb/yr ÷ 2,000 lb/T = **0.003 T-VOC/yr**

Tank3:

Diesel Heating Value: 140 MMBtu/1000 gal

Total Plant Capacity: (Drum dryer + Asphalt tank heater): 135.5 MMBtu/hr

135.5 MMBtu/hr ÷ 140 MMBtu/1000 gal = 967.86 gal/hr * 8,760 hr/yr = 8,478,428.57 gal/yr

Tanks determined EF = 4.45 lb/yr per 60,000 gal

8,478,428.57 gal/yr * 4.45 lb/yr ÷ 60,000 = 628.82 lb/yr

VOC Emissions: 628.82 lb/yr ÷ 2,000 lb/T **= 0.314 T-VOC/yr**

Potential To Emit - Criteria Pollutants

Criteria Pollutant	HMA Drum Dryer		Asphalt Heater		Operations Generator		Night Generator		Storage Tanks		Silo Filling		Loadout		TOTAL	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
CO	65.59	78.30	0.04	0.18	6.90	8.90	0.55	2.41	0.03	0.03	0.00	0.00	0.68	0.81	73.79	90.63
CO2e	16912.22	20339.08	100.30	439.33	1387.43	1788.74	76.92	336.89	0.02	0.02	0.00	0.00	2.84	3.39	18479.73	22907.45
NOx	27.50	32.83	0.07	0.31	12.60	16.24	0.83	3.62	0.00	0.00	0.00	0.00	0.00	0.00	41.00	53.00
SO2	27.00	32.23	0.19	0.84	0.01	0.02	0.0004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.20	33.09
PM	16.79	20.05	0.20	0.88	0.39	0.51	0.04	0.19	0.00	0.00	0.00	0.00	0.26	0.31	17.69	21.94
PM10	11.79	14.08	0.17	0.76	0.39	0.51	0.04	0.19	0.00	0.00	0.00	0.00	0.26	0.31	12.67	15.85
PM2.5	5.79	6.91	0.01	0.03	0.47	0.61	0.04	0.19	0.00	0.00	0.00	0.00	0.26	0.31	6.57	8.05
VOC	22.10	26.38	0.01	0.02	2.56	3.30	0.17	0.74	0.35	0.42	0.00	0.00	1.96	2.33	27.14	33.20
Lead	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02

Potential To Emit - Non-carcinogen Toxic Air Pollutants

Non-carcinogen TAP	HMA Drum Dryer		Asphalt Heater		Operations Generator		Night Generator		Asphalt Storage Tank		Silo Filling		Loadout		TOTAL	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Acetone	1.14E-01	4.99E-01							4.13E-05	1.81E-04	0.00E+00	0.00E+00	2.61E-04	1.14E-03	1.14E-01	5.01E-01
Acrolein	3.54E-03	1.55E-02			1.95E-05	8.53E-05	4.34E-05	1.90E-04							3.61E-03	1.58E-02
Antimony	2.45E-05	1.07E-04	1.61E-05	7.04E-05											4.06E-05	1.78E-04
Barium	7.90E-04	3.46E-03	2.16E-06	9.45E-06											7.93E-04	3.47E-03
Bromomethane	8.15E-05	3.57E-04							3.68E-06	1.61E-05	0.00E+00	0.00E+00	5.44E-05	2.38E-04	1.40E-04	6.11E-04
Carbon Disulfide	2.66E-04	1.17E-03							1.20E-05	5.27E-05	0.00E+00	0.00E+00	7.37E-05	3.23E-04	3.52E-04	1.54E-03
Chloroethane/Ethyl chloride	6.65E-05	2.91E-04							3.01E-06	1.32E-05	0.00E+00	0.00E+00	1.19E-06	5.21E-06	7.07E-05	3.10E-04
Chloromethane/Methyl chloride	3.82E-04	1.67E-03							1.73E-05	7.57E-05	0.00E+00	0.00E+00	8.50E-05	3.72E-04	4.85E-04	2.12E-03
Chromium	7.50E-04	3.28E-03	6.43E-04	2.82E-03											1.39E-03	6.10E-03
Cobalt	3.54E-06	1.55E-05	1.86E-05	8.13E-05											2.21E-05	9.69E-05
Copper	4.22E-04	1.85E-03	3.00E-06	1.31E-05											4.25E-04	1.86E-03
Crotonaldehyde	1.17E-02	5.13E-02													1.17E-02	5.13E-02
Cumene													6.24E-04	2.73E-03	6.24E-04	2.73E-03
Dichlorobenzene			5.88E-07	2.58E-06											5.88E-07	2.58E-06
Ethyl Benzene	3.33E-02	1.46E-01							2.86E-05	1.25E-04	0.00E+00	0.00E+00	1.59E-03	6.95E-03	3.50E-02	1.53E-01
Heptane	1.28E+00	5.61E+00													1.28E+00	5.61E+00
Hexane	1.27E-01	5.56E-01	8.82E-04	3.86E-03					7.51E-05	3.29E-04	0.00E+00	0.00E+00	8.50E-04	3.72E-03	1.29E-01	5.64E-01
Hydrochloric Acid	2.86E-02	1.25E-01	2.36E-02	1.03E-01											5.22E-02	2.29E-01
Manganese	1.05E-03	4.60E-03	1.79E-04	7.82E-04											1.23E-03	5.38E-03
Mercury	3.54E-04	1.55E-03	1.50E-06	6.57E-06											3.56E-04	1.56E-03
Methyl Chloroform	6.54E-03	2.87E-02													6.54E-03	2.87E-02
Methyl Ethyl Ketone	3.37E-03	1.48E-02							2.93E-05	1.28E-04	0.00E+00	0.00E+00	2.78E-04	1.22E-03	3.68E-03	1.61E-02
Molybdenum			5.39E-07	2.36E-06											5.39E-07	2.36E-06
Naphthalene	8.92E-02	3.91E-01	6.07E-05	2.66E-04	3.21E-04	1.41E-03	3.98E-05	1.74E-04			0.00E+00	0.00E+00	5.81E-04	2.54E-03	9.02E-02	3.95E-01
n-Pentane	2.86E-02	1.25E-01	1.27E-03	5.58E-03											2.99E-02	1.31E-01
Phenol	0.00E+00	0.00E+00	1.00E-07	4.38E-07							0.00E+00	0.00E+00	5.48E-04	2.40E-03	5.48E-04	2.40E-03
Phosphorus	3.82E-03	1.67E-02													3.82E-03	1.67E-02
Propionaldehyde	1.77E-02	7.76E-02													1.77E-02	7.76E-02
Quinone	2.18E-02	9.55E-02													2.18E-02	9.55E-02
Selenium	4.77E-05	2.09E-04	7.50E-06	3.29E-05											5.52E-05	2.42E-04
Silver	6.54E-05	2.87E-04													6.54E-05	2.87E-04
Styrene	8.98E-05	3.93E-04							4.06E-06	1.78E-05	0.00E+00	0.00E+00	4.14E-05	1.81E-04	1.35E-04	5.92E-04
Thallium	5.59E-07	2.45E-06													5.59E-07	2.45E-06
Toluene	3.96E-01	1.74E+00	1.67E-06	7.30E-06	6.95E-04	3.04E-03	1.92E-04	8.40E-04	4.66E-05	2.04E-04	0.00E+00	0.00E+00	1.19E-03	5.21E-03	3.98E-01	1.74E+00
Valeraldehyde	9.13E-03	4.00E-02													9.13E-03	4.00E-02
Vanadium			1.13E-06	4.94E-06											1.13E-06	4.94E-06
Xylenes	3.15E-02	1.38E-01			4.77E-04	2.09E-03	1.34E-04	5.85E-04	1.93E-04	8.46E-04	0.00E+00	0.00E+00	2.78E-03	1.22E-02	3.51E-02	1.54E-01
Zinc	8.31E-03	3.64E-02	1.42E-05	6.23E-05											8.33E-03	3.65E-02

Potential To Emit - Carcinogen Toxic Air Pollutants

Carcinogen TAP	HMA Drum Dryer		Asphalt Heater		Operations Generator		Night Generator		Asphalt Storage Tank		Silo Filling		Loadout		TOTAL	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Acenaphthene	3.53E-04	1.55E-03	1.89E-06	8.29E-06	1.16E-05	5.07E-05	6.66E-07	2.92E-06			0.00E+00	0.00E+00	1.21E-04	5.29E-04	4.88E-04	2.14E-03
Acenaphthylene	3.00E-03	1.32E-02	7.14E-07	3.13E-06	2.28E-05	1.00E-04	2.37E-06	1.04E-05			0.00E+00	0.00E+00	1.30E-05	5.70E-05	3.04E-03	1.33E-02
Acetaldehyde	1.77E-01	7.76E-01			6.23E-05	2.73E-04	3.60E-04	1.58E-03							1.78E-01	7.78E-01
Anthracene	4.67E-04	2.05E-03	6.43E-07	2.82E-06	3.04E-06	1.33E-05	8.77E-07	3.84E-06			0.00E+00	0.00E+00	3.25E-05	1.42E-04	5.05E-04	2.21E-03
Arsenic	7.63E-05	3.34E-04	2.14E-04	9.39E-04											2.91E-04	1.27E-03
Benzene	5.37E-02	2.35E-01	1.03E-06	4.51E-06	1.92E-03	8.40E-03	4.38E-04	1.92E-03	2.40E-05	1.05E-04	0.00E+00	0.00E+00	2.95E-04	1.29E-03	5.64E-02	2.47E-01
Benzo(a)pyrene	1.34E-06	5.85E-06	1.43E-05	6.26E-05	6.35E-07	2.78E-06	8.82E-08	3.86E-07			0.00E+00	0.00E+00	1.07E-06	4.68E-06	1.74E-05	7.63E-05
Benzo(g,h,i)perylene	5.45E-06	2.39E-05	5.88E-10	2.58E-09	1.37E-06	6.02E-06	2.29E-07	1.00E-06			0.00E+00	0.00E+00	8.83E-07	3.87E-06	7.94E-06	3.48E-05
Benzo(e)pyrene	1.83E-05	8.01E-05									0.00E+00	0.00E+00	3.62E-06	1.59E-05	2.19E-05	9.59E-05
Beryllium	0.00E+00	0.00E+00	6.43E-06	2.82E-05											6.43E-06	2.82E-05
Bis(2-ethylhexyl)phthalate			7.86E-06	3.44E-05											7.86E-06	3.44E-05
1,3-Butadiene							1.83E-05	8.03E-05							1.83E-05	8.03E-05
Cadmium	5.59E-05	2.45E-04	4.29E-05	1.88E-04											9.87E-05	4.32E-04
Chloromethane/Methyl chloride	3.82E-04	1.67E-03							1.73E-05	7.57E-05	0.00E+00	0.00E+00	8.50E-05	3.72E-04	4.85E-04	2.12E-03
Hexavalent Chromium	6.13E-05	2.69E-04													6.13E-05	2.69E-04
Total Dioxin/Furans	4.04E-10	7.16E-08	1.36E-12	3.60E-09											4.06E-10	7.52E-08
Fluoranthene	1.35E-04	5.92E-04	1.57E-07	6.88E-07	9.96E-06	4.36E-05	3.57E-06	1.56E-05			0.00E+00	0.00E+00	2.32E-05	1.02E-04	1.72E-04	7.53E-04
Fluorene	1.85E-03	8.10E-03	1.14E-07	5.01E-07	3.16E-05	1.39E-04	1.37E-05	6.00E-05			0.00E+00	0.00E+00	3.58E-04	1.57E-03	2.25E-03	9.86E-03
Formaldehyde	4.34E-01	1.90E+00	2.18E-04	9.54E-04	1.95E-04	8.54E-04	5.53E-04	2.42E-03	5.19E-04	2.27E-03	0.00E+00	0.00E+00	4.99E-04	2.19E-03	4.36E-01	1.91E+00
3-Methylchloranthrene			8.82E-10	3.86E-09											8.82E-10	3.86E-09
Methylene Chloride/Dichloromethane	4.49E-06	1.97E-05							2.03E-07	8.89E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.69E-06	2.05E-05
2-Methylnaphthalene	2.50E-02	1.09E-01	1.18E-08	5.15E-08							0.00E+00	0.00E+00	1.11E-03	4.84E-03	2.61E-02	1.14E-01
Naphthalene	8.92E-02	3.91E-01	6.07E-05	2.66E-04	3.21E-04	1.41E-03	3.98E-05	1.74E-04			0.00E+00	0.00E+00	5.81E-04	2.54E-03	9.02E-02	3.95E-01
Nickel	8.59E-03	3.76E-02	5.71E-04	2.50E-03											9.16E-03	4.01E-02
Perylene	1.16E-05	5.07E-05									0.00E+00	0.00E+00	1.02E-05	4.48E-05	2.18E-05	9.55E-05
Phenanthrene	3.76E-03	1.65E-02	1.75E-05	7.67E-05	1.01E-04	4.42E-04	1.38E-05	6.04E-05			0.00E+00	0.00E+00	3.76E-04	1.65E-03	4.27E-03	1.87E-02
POM	1.67E-04	7.30E-04	4.29E-05	1.88E-04	1.11E-05	4.86E-05	1.61E-06	7.05E-06			0.00E+00	0.00E+00	6.27E-05	2.75E-04	2.85E-04	1.25E-03
Pyrene	5.61E-04	2.46E-03	1.14E-07	5.01E-07	9.17E-06	4.02E-05	2.24E-06	9.82E-06			0.00E+00	0.00E+00	6.97E-05	3.05E-04	6.42E-04	2.81E-03
2,3,7,8-TCDD	2.86E-11	1.25E-10													2.86E-11	1.25E-10
Tetrachloroethene/ Tetrachloroethylene													4.37E-05	1.91E-04	4.37E-05	1.91E-04
Trichloroethene/ Trichloroethylene													0.00E+00	0.00E+00	0.00E+00	0.00E+00

Potential To Emit - CAA Hazardous Air Pollutants

HAP	HMA Drum Dryer		Asphalt Heater		Operations Generator		Night Generator		Asphalt Storage Tank		Silo Filling[2]		Loadout		TOTAL	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Acenaphthene	7.00E-04	8.36E-04	1.89E-06	8.29E-06	3.93E-05	5.07E-05	6.66E-07	2.92E-06			5.97E-04	7.13E-04	4.43E-04	5.29E-04	0.0018	0.0021
Acenaphthylene	1.10E-02	1.31E-02	7.14E-07	3.13E-06	7.75E-05	1.00E-04	2.37E-06	1.04E-05			1.78E-05	2.12E-05	4.77E-05	5.70E-05	0.0111	0.0133
Acetaldehyde	6.50E-01	7.76E-01	0.00E+00	0.00E+00	2.12E-04	2.73E-04	3.60E-04	1.58E-03							0.6506	0.7778
Acrolein	1.30E-02	1.55E-02	0.00E+00	0.00E+00	6.62E-05	8.53E-05	4.34E-05	1.90E-04							0.0131	0.0158
Antimony	9.00E-05	1.07E-04	1.61E-05	7.04E-05											0.0001	0.0002
Anthracene	1.55E-03	1.85E-03	6.43E-07	2.82E-06	1.03E-05	1.33E-05	8.77E-07	3.84E-06			1.65E-04	1.97E-04	1.19E-04	1.42E-04	0.0018	0.0022
Arsenic	2.80E-04	3.34E-04	2.14E-04	9.39E-04											0.0005	0.0013
Benzene	1.95E-01	2.33E-01	1.03E-06	4.51E-06	6.52E-03	8.40E-03	4.38E-04	1.92E-03	8.82E-05	1.05E-04	1.95E-03	2.33E-03	1.08E-03	1.29E-03	0.2051	0.2468
Benzo(a)anthracene	1.05E-04	1.25E-04	1.43E-05	6.26E-05	5.22E-06	6.74E-06	7.88E-07	3.45E-06			7.11E-05	8.49E-05	3.24E-05	3.87E-05	0.0002	0.0003
Benzo(a)pyrene	4.90E-06	5.85E-06	1.43E-05	6.26E-05	2.16E-06	2.78E-06	8.82E-08	3.86E-07			0.00E+00	0.00E+00	3.92E-06	4.68E-06	0.0000	0.0001
Benzo(b)fluoranthene	5.00E-05	5.97E-05	3.57E-07	1.56E-06	9.32E-06	1.20E-05	4.65E-08	2.04E-07			0.00E+00	0.00E+00	1.30E-05	1.55E-05	0.0001	0.0001
Benzo(e)pyrene	5.50E-05	6.57E-05	0.00E+00	0.00E+00							1.21E-05	1.44E-05	1.33E-05	1.59E-05	0.0001	0.0001
Benzo(g,h,i)perylene	2.00E-05	2.39E-05	5.88E-10	2.58E-09	4.67E-06	6.02E-06	2.29E-07	1.00E-06			0.00E+00	0.00E+00	3.24E-06	3.87E-06	0.0000	0.0000
Benzo(k)fluoranthene	2.05E-05	2.45E-05	8.82E-10	3.86E-09	1.83E-06	2.36E-06	7.27E-08	3.18E-07			0.00E+00	0.00E+00	3.75E-06	4.48E-06	0.0000	0.0000
Beryllium	0.00E+00	0.00E+00	6.43E-06	2.82E-05											0.0000	2.82E-05
Bis(2-ethylhexyl)phthalate			7.86E-06	3.44E-05											0.0000	3.44E-05
Bromomethane									1.35E-05	1.61E-05	2.99E-04	3.57E-04	2.00E-04	2.38E-04	0.0005	0.0006
1,3-Butadiene	0.00E+00	0.00E+00	0.00E+00	0.00E+00			1.83E-05	8.03E-05							0.0000	0.0001
Cadmium	2.05E-04	2.45E-04	4.29E-05	1.88E-04											0.0002	0.0004
Carbon Disulfide	0.00E+00	0.00E+00	0.00E+00	0.00E+00					4.41E-05	5.27E-05	9.76E-04	1.17E-03	2.70E-04	3.23E-04	0.0013	0.0015
Chloroethane/Ethyl Chloride									1.10E-05	1.32E-05	2.44E-04	2.91E-04	4.37E-06	5.21E-06	0.0003	3.10E-04
Chloromethane/Methyl chloride									6.34E-05	7.57E-05	1.40E-03	1.67E-03	3.12E-04	3.72E-04	0.0018	0.0021
Chromium	2.75E-03	3.28E-03	6.43E-04	2.82E-03											0.0034	0.0061
Hexavalent Chromium	2.25E-04	2.69E-04	0.00E+00	0.00E+00											0.0002	2.69E-04
Chrysene	9.00E-05	1.07E-04	1.43E-05	6.26E-05	1.28E-05	1.65E-05	1.66E-07	7.25E-07			2.67E-04	3.18E-04	1.76E-04	2.10E-04	0.0006	0.0007
Cobalt	1.30E-05	1.55E-05	1.86E-05	8.13E-05											0.0000	9.69E-05
Cumene	0.00E+00	0.00E+00	0.00E+00	0.00E+00									2.29E-03	2.73E-03	0.0023	0.0027
Dibenzo(a,h)anthracene	0.00E+00	0.00E+00	5.88E-10	2.58E-09	2.91E-06	3.75E-06	2.73E-07	1.20E-06			0.00E+00	0.00E+00	6.31E-07	7.53E-07	0.0000	0.0000
Dibutylphthalate			1.21E-07	5.32E-07											0.0000	5.32E-07
Dichlorobenzene	0.00E+00	0.00E+00	5.88E-07	2.58E-06											0.0000	2.58E-06
Ethyl Benzene	1.20E-01	1.43E-01	0.00E+00	0.00E+00					1.05E-04	1.25E-04	2.32E-03	2.77E-03	5.82E-03	6.95E-03	0.1282	0.1531
Fluoranthene	3.05E-04	3.64E-04	1.57E-07	6.88E-07	3.39E-05	4.36E-05	3.57E-06	1.56E-05			1.91E-04	2.27E-04	8.53E-05	1.02E-04	0.0006	0.0008
Fluorene	5.50E-03	6.57E-03	1.14E-07	5.01E-07	1.08E-04	1.39E-04	1.37E-05	6.00E-05			1.28E-03	1.53E-03	1.31E-03	1.57E-03	0.0082	0.0099
Formaldehyde	1.55E+00	1.85E+00	2.18E-04	9.54E-04	6.63E-04	8.54E-04	5.53E-04	2.42E-03	1.90E-03	2.27E-03	4.21E-02	5.02E-02	1.83E-03	2.19E-03	1.5973	1.9092
Hexane	4.60E-01	5.49E-01	8.82E-04	3.86E-03					2.76E-04	3.29E-04	6.10E-03	7.28E-03	3.12E-03	3.72E-03	0.4704	0.5643
HCl	1.05E-01	1.25E-01	2.36E-02	1.03E-01											0.1286	0.2286
Indeno(1,2,3-cd)pyrene	3.50E-06	4.18E-06	8.82E-10	3.86E-09	3.48E-06	4.48E-06	1.76E-07	7.70E-07			0.00E+00	0.00E+00	8.01E-07	9.57E-07	0.0000	0.0000
Lead	7.50E-03	8.95E-03	1.79E-03	7.82E-03											0.0093	0.0168
Manganese	3.85E-03	4.60E-03	1.79E-04	7.82E-04											0.0040	0.0054
Mercury	1.30E-03	1.55E-03	1.50E-06	6.57E-06											0.0013	0.0016
Methyl Chloroform	2.40E-02	2.87E-02	0.00E+00	0.00E+00									0.00E+00	0.00E+00	0.0240	0.0287
Methyl Ethyl Ketone	1.00E-02	1.19E-02	0.00E+00	0.00E+00					1.08E-04	1.28E-04	2.38E-03	2.84E-03	1.02E-03	1.22E-03	0.0135	0.0161
Methylene Chloride/Dichloromethane									7.44E-07	8.89E-07	1.65E-05	1.97E-05			0.0000	2.05E-05
2-Methylnaphthalene	8.50E-02	1.01E-01	8.82E-10	3.86E-09							6.69E-03	7.99E-03	4.06E-03	4.84E-03	0.0958	0.1143
3-Methylchloranthrene	0.00E+00	0.00E+00	1.18E-08	5.15E-08											0.0000	0.0000
Naphthalene	3.25E-01	3.88E-01	6.07E-05	2.66E-04	1.09E-03	1.41E-03	3.98E-05	1.74E-04			2.31E-03	2.76E-03	2.13E-03	2.54E-03	0.3306	0.3951
Nickel	3.15E-02	3.76E-02	5.71E-04	2.50E-03											0.0321	0.0401
Pentane	0.00E+00	0.00E+00	1.27E-03	5.58E-03											0.0013	0.0056
Perylene	4.40E-06	5.25E-06	0.00E+00	0.00E+00							3.81E-05	4.55E-05	3.75E-05	4.48E-05	0.0001	0.0001
Phenanthrene	1.15E-02	1.37E-02	1.75E-05	7.67E-05	3.43E-04	4.42E-04	1.38E-05	6.04E-05			2.29E-03	2.73E-03	1.38E-03	1.65E-03	0.0155	0.0187
Phenol			1.00E-07	4.38E-07							0.00E+00	0.00E+00	2.01E-03	2.40E-03	0.0020	0.0024
Phosphorus	1.40E-02	1.67E-02	0.00E+00	0.00E+00											0.0140	0.0167
POM	4.42E-01	5.28E-01	1.25E-04	5.48E-04	1.78E-03	2.29E-03	7.88E-05	3.45E-04			1.45E-02	1.73E-02	1.01E-02	1.21E-02	0.4690	0.5607
Propionaldehyde	6.50E-02	7.76E-02	0.00E+00	0.00E+00											0.0650	0.0776
Pyrene	1.50E-03	1.79E-03	1.14E-07	5.01E-07	3.12E-05	4.02E-05	2.24E-06	9.82E-06			5.59E-04	6.67E-04	2.56E-04	3.05E-04	0.0023	0.0028
Quinone	8.00E-02	9.55E-02													0.0800	0.0955
Selenium	1.75E-04	2.09E-04	7.50E-06	3.29E-05											0.0002	2.42E-04
Styrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00					1.49E-05	1.78E-05	3.29E-04	3.93E-04	1.52E-04	1.81E-04	0.0005	5.92E-04
2,3,7,8-TCDD	1.05E-10	1.25E-10	0.00E+00	0.00E+00											0.0000	0.0000

Tetrachloroethene/ Tetrachloroethylene													1.60E-04	1.91E-04	0.0002	0.0002
Toluene	1.45E+00	1.73E+00	1.67E-06	7.30E-06	2.36E-03	3.04E-03	1.92E-04	8.40E-04	1.71E-04	2.04E-04	3.78E-03	4.51E-03	4.37E-03	5.21E-03	1.4609	1.7448
Total PCDD/PCDF	6.00E-08	7.16E-08	8.21E-10	3.60E-09											0.0000	0.0000
Trichloroethene/ Trichloroethylene			0.00E+00	0.00E+00									0.00E+00	0.00E+00	0.0000	0.0000
Xylene	1.00E-01	1.19E-01	0.00E+00	0.00E+00	1.62E-03	2.09E-03	1.34E-04	5.85E-04	7.09E-04	8.46E-04	1.57E-02	1.87E-02	1.02E-02	1.22E-02	0.1283	0.1538
TOTALS:															5.51	6.68

1) POM & Total PCDD/PCDF: Maximum PTE estimates for POM based on polycyclic organic matter mixture as defined by 1900 CAA Amendments. Refer to individual unit emission estimates for compounds included in the mixture. To avoid double counting, the total, maximum PTE estimates do not include POM (i.e., individual compounds are summed separately) or 2, 3, 7, 8-TCDD (included in Total PCDD/PCDF).

2) Note that Silo Filling emissions are actually routed through the Drum Dryer/Baghouse. Presented seperately here for HAP threshold assessment purposes only.

Criteria Pollutants - Max 1-, 3-, and 8-hour averages

Criteria Pollutant	HMA Drum Dryer	Asphalt Heater	Operations Generator	Night Generator	Storage Tanks	Silo Filling	Loadout	Screening & Handling
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
CO	6.56E+01	4.10E-02	6.90E+00	5.51E-01	2.67E-02	0.00E+00	6.75E-01	
CO2e	1.69E+04	1.00E+02	1.39E+03	7.69E+01	1.51E-02	0.00E+00	2.84E+00	
NOx	2.75E+01	7.14E-02	1.26E+01	8.26E-01	0.00E+00	0.00E+00	0.00E+00	
SO2	2.70E+01	1.91E-01	1.26E-02	4.08E-04	0.00E+00	0.00E+00	0.00E+00	
PM	1.68E+01	2.00E-01	3.95E-01	4.41E-02	0.00E+00	0.00E+00	2.61E-01	2.91E+00
PM10	1.18E+01	1.73E-01	3.95E-01	4.41E-02	0.00E+00	0.00E+00	2.61E-01	8.11E-01
PM2.5	5.79E+00	6.38E-03	4.70E-01	4.41E-02	0.00E+00	0.00E+00	2.61E-01	1.05E-01
VOC	2.21E+01	5.46E-03	2.56E+00	1.69E-01	3.48E-01	0.00E+00	1.96E+00	
Lead	7.50E-03	1.79E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

Criteria Pollutants - Max 24-hour averages

Criteria Pollutant	HMA Drum Dryer	Asphalt Heater	Operations Generator	Night Generator	Storage Tanks	Silo Filling	Loadout	Screening & Handling
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
CO	3.42E+01	4.10E-02	3.88E+00	5.51E-01	2.67E-02	0.00E+00	3.52E-01	
CO2e	8.81E+03	1.00E+02	7.80E+02	7.69E+01	1.51E-02	0.00E+00	1.48E+00	
NOx	1.43E+01	7.14E-02	7.09E+00	8.26E-01	0.00E+00	0.00E+00	0.00E+00	
SO2	1.41E+01	1.91E-01	7.09E-03	4.08E-04	0.00E+00	0.00E+00	0.00E+00	
PM	8.75E+00	2.00E-01	2.22E-01	4.41E-02	0.00E+00	0.00E+00	1.36E-01	1.52E+00
PM10	6.14E+00	1.73E-01	2.22E-01	4.41E-02	0.00E+00	0.00E+00	1.36E-01	4.22E-01
PM2.5	3.01E+00	6.38E-03	2.65E-01	4.41E-02	0.00E+00	0.00E+00	1.36E-01	5.44E-02
VOC	1.15E+01	5.46E-03	1.44E+00	1.69E-01	3.48E-01	0.00E+00	1.02E+00	
Lead	3.91E-03	1.79E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

Criteria Pollutants - Max annual averages

Criteria Pollutant	HMA Drum Dryer	Asphalt Heater	Operations Generator	Night Generator	Storage Tanks	Silo Filling	Loadout	Screening & Handling
	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
CO	1.79E+01	4.10E-02	2.03E+00	5.51E-01	2.67E-02	0.00E+00	1.84E-01	
CO2e	4.61E+03	1.00E+02	4.08E+02	7.69E+01	1.51E-02	0.00E+00	7.74E-01	
NOx	7.50E+00	7.14E-02	3.71E+00	8.26E-01	0.00E+00	0.00E+00	0.00E+00	
SO2	7.36E+00	1.91E-01	3.71E-03	4.08E-04	0.00E+00	0.00E+00	0.00E+00	
PM	4.58E+00	2.00E-01	1.16E-01	4.41E-02	0.00E+00	0.00E+00	7.11E-02	7.93E-01
PM10	3.21E+00	1.73E-01	1.16E-01	4.41E-02	0.00E+00	0.00E+00	7.11E-02	2.21E-01
PM2.5	1.58E+00	6.38E-03	1.38E-01	4.41E-02	0.00E+00	0.00E+00	7.11E-02	2.85E-02
VOC	6.02E+00	5.46E-03	7.54E-01	1.69E-01	3.48E-01	0.00E+00	5.33E-01	
Lead	2.04E-03	1.79E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

1) Storage Tank Emissions: Note that the TANKS software used to estimate emissions rates is an annualized value (i.e., pounds per year). Hourly rates are based on hours of operatior each year, assuming 8760 hours of operation per year. Averaging period calculations must be closely assessed to ensure conservative methodologies are used in the event that annual hours of operation are reduced below 8760 hrs/year.

Potential To Emit - Non-carcinogen Toxic Air Pollutants

Non-carcinogen TAP	Total emissions (lb/hr)	Screening ELs (lb/hr)	Exceeds EL?	HMA Drum Dryer	Asphalt Heater	Operations Generator	Night Generator	Storage Tanks	Silo Filling	Loadout
				Max 24hr Ave lb/hr	Max 24hr Ave lb/hr	Max 24hr Ave lb/hr	Max 24hr Ave lb/hr	Max 24hr Ave lb/hr	Max 24hr Ave lb/hr	Max 24hr Ave lb/hr
Acetone	0.1143	119.0000	No	2.18E-01				7.90E-05	0.00E+00	4.98E-04
Acrolein	0.0036	0.0170	No	6.77E-03		3.72E-05	4.34E-05			
Antimony	0.0000	0.0330	No	4.69E-05	1.61E-05					
Barium	0.0008	0.0330	No	1.51E-03	2.16E-06					
Bromomethane	0.0001	1.2700	No	1.56E-04				7.04E-06	0.00E+00	1.04E-04
Carbon Disulfide	0.0004	2.0000	No	5.08E-04				2.30E-05	0.00E+00	1.41E-04
Chloroethane/Ethyl chloride	0.0001	176.0000	No	1.27E-04				5.74E-06	0.00E+00	2.28E-06
Chloromethane/Methyl chloride	0.0005	6.8670	No	7.31E-04				3.30E-05	0.00E+00	1.63E-04
Chromium	0.0014	0.0330	No	1.43E-03	6.43E-04					
Cobalt	0.0000	0.0033	No	6.77E-06	1.86E-05					
Copper	0.0004	0.0130	No	8.07E-04	3.00E-06					
Crotonaldehyde	0.0117	0.3800	No	2.24E-02						
Cumene	0.0006	16.3000	No							1.19E-03
Dichlorobenzene	0.0000	20.0000	No		5.88E-07					
Ethyl Benzene	0.0350	29.0000	No	6.37E-02				5.46E-05	0.00E+00	3.03E-03
Heptane	1.2810	109.0000	No	2.45E+00						
Hexane	0.1288	12.0000	No	2.43E-01	8.82E-04			1.44E-04	0.00E+00	1.63E-03
Hydrochloric Acid	0.0522	0.0500	Yes	5.47E-02	2.36E-02					
Manganese	0.0012	0.0670	No	2.01E-03	1.79E-04					
Mercury	0.0004	0.0030	No	6.77E-04	1.50E-06					
Methyl Chloroform	0.0065	127.0000	No	1.25E-02						
Methyl Ethyl Ketone	0.0037	39.3000	No	6.45E-03				5.60E-05	0.00E+00	5.31E-04
Molybdenum	0.0000	0.3330	No		5.39E-07					
Naphthalene	0.0902	3.3300	No	1.70E-01	6.07E-05	6.14E-04	3.98E-05		0.00E+00	1.11E-03
n-Pentane	0.0299	118.0000	No	5.47E-02	1.27E-03					
Phenol	0.0005	1.2700	No	0.00E+00	1.00E-07				0.00E+00	1.05E-03
Phosphorus	0.0038	0.0070	No	7.29E-03						
Propionaldehyde	0.0177	0.0287	No	3.39E-02						
Quinone	0.0218	0.0270	No	4.17E-02						
Selenium	0.0001	0.0130	No	9.11E-05	7.50E-06					
Silver	0.0001	0.0070	No	1.25E-04						
Styrene	0.0001	6.6700	No	1.72E-04				7.75E-06	0.00E+00	7.91E-05
Thallium	0.0000	0.0070	No	1.07E-06						
Toluene	0.3983	25.0000	No	7.57E-01	1.67E-06	1.33E-03	1.92E-04	8.90E-05	0.00E+00	2.28E-03
Valeraldehyde	0.0091	11.7000	No	1.74E-02						
Vanadium	0.0000	0.0030	No		1.13E-06					
Xylenes	0.0351	29.0000	No	6.02E-02		9.12E-04	1.34E-04	3.69E-04	0.00E+00	5.31E-03
Zinc	0.0083	0.6670	No	1.59E-02	1.42E-05					

Potential To Emit - Carcinogen Toxic Air Pollutants

Carcinogen TAP	Total emissions (lb/hr)	Screening ELs (lb/hr)	Exceeds EL?	HMA Drum Dryer	Asphalt Heater	Operations Generator	Night Generator	Storage Tanks	Silo Filling	Loadout
				Max Annual Ave lb/hr	Max Annual Ave lb/hr	Max Annual Ave lb/hr	Max Annual Ave lb/hr	Max Annual Ave lb/hr	Max Annual Ave lb/hr	Max Annual Ave lb/hr
Acenaphthene	4.88E-04	9.10E-05	Yes	3.53E-04	1.89E-06	1.16E-05	6.66E-07		0.00E+00	1.21E-04
Acenaphthylene	3.04E-03	9.10E-05	Yes	3.00E-03	7.14E-07	2.28E-05	2.37E-06		0.00E+00	1.30E-05
Acetaldehyde	1.78E-01	3.00E-03	Yes	1.77E-01		6.23E-05	3.60E-04			
Anthracene	5.05E-04	9.10E-05	Yes	4.67E-04	6.43E-07	3.04E-06	8.77E-07		0.00E+00	3.25E-05
Arsenic	2.91E-04	1.56E-06	Yes	7.63E-05	2.14E-04					
Benzene	5.64E-02	8.00E-04	Yes	5.37E-02	1.03E-06	1.92E-03	4.38E-04	2.40E-05	0.00E+00	2.95E-04
Benzo(a)pyrene	1.74E-05	2.00E-06	Yes	1.34E-06	1.43E-05	6.35E-07	8.82E-08		0.00E+00	1.07E-06
Benzo(g,h,i)perylene	7.94E-06	9.10E-05	No	5.45E-06	5.88E-10	1.37E-06	2.29E-07		0.00E+00	8.83E-07
Benzo(e)pyrene	2.19E-05	9.10E-05	No	1.83E-05					0.00E+00	3.62E-06
Beryllium	6.43E-06	2.80E-05	No	0.00E+00	6.43E-06					
Bis(2-ethylhexyl)phthalate	7.86E-06	2.80E-02	No		7.86E-06					
1,3-Butadiene	1.83E-05	2.40E-05	No				1.83E-05			
Cadmium	9.87E-05	3.70E-06	Yes	5.59E-05	4.29E-05					
Chloromethane/Methyl chloride	4.85E-04	1.90E-03	No	3.82E-04				1.73E-05	0.00E+00	8.50E-05
Hexavalent Chromium	6.13E-05	5.60E-07	Yes	6.13E-05						
Total Dioxin/Furans	4.06E-10	1.50E-10	Yes	4.04E-10	1.36E-12					
Fluoranthene	1.72E-04	9.10E-05	Yes	1.35E-04	1.57E-07	9.96E-06	3.57E-06		0.00E+00	2.32E-05
Fluorene	2.25E-03	9.10E-05	Yes	1.85E-03	1.14E-07	3.16E-05	1.37E-05		0.00E+00	3.58E-04
Formaldehyde	4.36E-01	5.10E-04	Yes	4.34E-01	2.18E-04	1.95E-04	5.53E-04	5.19E-04	0.00E+00	4.99E-04
3-Methylchloranthrene	8.82E-10	2.50E-06	No		8.82E-10					
Methylene Chloride/Dichloromethane	4.69E-06	1.60E-03	No	4.49E-06				2.03E-07	0.00E+00	0.00E+00
2-Methylnaphthalene	2.61E-02	9.10E-05	Yes	2.50E-02	1.18E-08				0.00E+00	1.11E-03
Naphthalene	9.02E-02	9.10E-05	Yes	8.92E-02	6.07E-05	3.21E-04	3.98E-05		0.00E+00	5.81E-04
Nickel	9.16E-03	2.70E-05	Yes	8.59E-03	5.71E-04					
Perylene	2.18E-05	9.10E-05	No	1.16E-05					0.00E+00	1.02E-05
Phenanthrene	4.27E-03	9.10E-05	Yes	3.76E-03	1.75E-05	1.01E-04	1.38E-05		0.00E+00	3.76E-04
POM	2.85E-04	2.00E-06	Yes	1.67E-04	4.29E-05	1.11E-05	1.61E-06		0.00E+00	6.27E-05
Pyrene	6.42E-04	9.10E-05	Yes	5.61E-04	1.14E-07	9.17E-06	2.24E-06		0.00E+00	6.97E-05
2,3,7,8-TCDD	2.86E-11	1.50E-10	No	2.86E-11						
Tetrachloroethene/ Tetrachloroethylene	4.37E-05	1.30E-02	No							4.37E-05
Trichloroethene/ Trichloroethylene	0.00E+00	5.10E-04	No							0.00E+00

Emission Unit:	Drum Dryer
Manufacturer /Model:	Gencor, Model 400 Portable Insulated Ultradrum with Ultra II-
Production capacity (T/hr):	500
Burner capacity (MMBTU/hr):	135
Fuel Type(s):	RFO, #2 Diesel, natural gas, or propane
Daily Hours of Operation (hr/d)	12.5
Max Daily Production (T/d)	6250
Annual Hours of Operation (hr/yr):	2387.5
Max Annual Production (T/yr):	1193750

RFO and Diesel (MMBTU/1000 gallons):		140	(AP-42, App A)
Nat. gas (BTU/scf):		1020	(AP-42, Table 1.4-1, footnote (a))
Propane (MMBTU/1000 gallons):		91.5	(AP-42, Table 1.5-1, footnote (a))
Propane (BTU/scf):		2504	(http://www.engineeringtoolbox.com/fuel-gases-combustion-values-d_510.html)

Control Equipment:	Gencor Baghouse, Model CFP-182

Potential To Emit - Criteria Pollutants

Criteria Pollutant	RFO			#2 Diesel			Nat. Gas			Propane			Max lb/hr	Max T/yr	Max 24hr Ave	Max Annual Ave
	EF	lb/hr	T/yr	EF	lb/hr	T/yr	EF	lb/hr	T/yr	EF	lb/hr	T/yr			lb/hr	lb/hr
CO	0.13	65.00	77.59	0.13	65.00	77.59	0.13	65.000	77.59	0.13	65.000	77.59	65.00	77.59	33.85	17.72
CO2e		16703.72	19940.07		16703.72	19940.07		16716.26	19955.04		16911.89	20338.68	16911.89	20338.68	8808.28	4609.26
NOx	0.055	27.50	32.83	0.055	27.50	32.83	0.026	13.000	15.52	0.039	19.500	23.28	27.50	32.83	14.32	7.50
SO2	0.054	27.00	32.23	0.011	5.50	6.57	0.0034	1.700	2.03	0.0034	1.700	2.03	27.00	32.23	14.06	7.36
PM	0.033	16.50	19.70	0.033	16.50	19.70	0.033	16.500	19.70	0.033	16.500	19.70	16.50	19.70	8.59	4.50
PM10	0.023	11.50	13.73	0.023	11.50	13.73	0.023	11.500	13.73	0.023	11.500	13.73	11.50	13.73	5.99	3.13
PM2.5		5.49	6.56		5.49	6.56		5.49	6.56		5.49	6.56	5.49	6.56	2.86	1.50
VOC	0.032	16.00	19.10	0.032	16.00	19.10	0.032	16.000	19.10	0.032	16.000	19.10	16.00	19.10	8.33	4.36
Lead	0.000015	0.01	0.01	0.000015	0.01	0.01	6.2E-07	0.00	0.00	6.2E-07	0.00	0.00	0.01	0.01	0.00	0.00

Emission Factor Information:

1) Carbon Monoxide: Emission factors from AP-42 (3/04), Table 11.1-7. For propane, the EF for natural gas combustion wa: applied. EFs are expressed in pounds of CO per ton of HMA produced.

2) Carbon Dioxide Equivalent: Refer to Greenhouse Gases table for calculation methodology.

3) Nitrogen Oxides: Emission factors from AP-42 (3/04), Table 11.1-7. For propane, the NOx EF for natural gas has beer multiplied by a factor of 1.5, per footnote (a) from Table 1.5-1, Emission Factors for LPG Combustior (i.e., "The NOx emission factors have been multiplied by a factor of 1.5, which is the approximate ratic of propane/butane NOx emissions to natural gas Nox emissions."). EFs expressed in pounds of NOx pe ton of HMA produced.

4) Sulfur Dioxide: Emission factors from AP-42 (3/04), Table 11.1-7. For propane, the EF for natural gas combustion wa: applied. EFs are expressed in pounds of SOx per ton of HMA produced.

5) Particulate Matter: Emission factors based on AP-42 (3/04), Table 11.1-3, for fabric filter and Total PM EFs are expressed in pounds of PM-10 per ton of HMA produced.

6) PM-10: Emission factors based on AP-42 (3/04), Table 11.1-3, for fabric filter and Total PM-10 EFs are expressed in pounds of PM-10 per ton of HMA produced.

7) PM-2.5: Emission factors based on AP-42 (3/04), Table 11.1-3, for fabric filter and Total PM. To derive PM2.5, a speciation factor of 0.333 was applied (California Air Resources Board, 7/2009) EFs are expressed in pounds of PM-2.5 per ton of HMA produced.

8) VOC: Emission factors from AP-42 (3/04), Table 11.1-8. For propane, the EF for natural gas combustion wa: applied. EFs are expressed in pounds of VOC per ton of HMA produced.

9) Lead: Emission factors from AP-42 (3/04), Table 11.1-12, for fabric filter. EFs are expressed in pounds of Pb per ton of HMA produced.

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: March 23, 2012

TO: Eric Clark, Air Program

FROM: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT: P-2012.0004 PROJ60986 PTC Application for the Western Construction, Inc. Hot Mix Asphalt Plant

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs)

1.0 Summary

Western Construction, Inc. (Western) submitted a Permit to Construct (PTC) application for a portable hot mix asphalt (HMA) plant to be operated in Idaho. Non-site-specific air quality impact analyses involving atmospheric dispersion modeling of emissions associated with the HMA plant were submitted to DEQ, and additional verification analyses were performed by DEQ, to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 and 203.03 [Idaho Air Rules Section 203.02 and 203.03]). Western and Centra Consulting, Inc. (Centra), Western's consultant, submitted the analyses and applicable information and data enabling DEQ to perform non-site-specific ambient air impact analyses.

Centra and DEQ performed non-site-specific air quality impact analyses to assure compliance with air quality standards for the proposed HMA plant. Results from DEQ's final verification atmospheric dispersion modeling were used to establish minimum setback distances between emissions points and the property boundary of the site. The submitted information, in combination with DEQ's air quality analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all locations outside of the required setback distance (closest distance from pollutant emissions points to the property boundary). Table 1 presents key assumptions and results to be considered in the development of the permit.

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information, in combination with DEQ's analyses, demonstrated to the satisfaction of the Department that operation of the proposed facility or modification will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

Table 1. KEY CONDITIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Maximum HMA throughput does not exceed 500 ton/hour, 1,193,750 ton/year, and ton/day rates associated with the selected setback distance.	Short-term and annual modeling was performed assuming these rates.
Maintain the following setback distances between the drum dryer stack and the nearest property boundary: 1) 459 feet (140 meters) when processing 6,250 ton HMA/day; 2) 410 feet (125 meters) when processing 5,625 ton HMA/day; 3) 377 feet (115 meters) when processing 5,000 ton HMA/day; 4) 361 feet (110 meters) when processing 4,375 ton HMA/day.	This setback distance is necessary to assure compliance with applicable air quality standards at ambient air locations.
The plant will not operate during the winter season (December 1 through March 31).	Substantially greater setback distances would be needed if production was assumed for the winter season.
Co-contributing emissions sources such as other HMA plants, concrete batch plants, or rock crushing plants will not locate on the plant property and within 1,000 feet of the drum dryer stack of the HMA plant, except as noted below for a rock crushing plant. However, NAAQS compliance is assured for the HMA plant with a co-contributing rock crushing plant, provided it is not operated during any day when the HMA plant is operated and the annual actual throughput of the rock crushing plant is less than 500,000 ton/year.	Emissions are considered co-contributing if they occur within 1,000 feet (305 meters) of each other. Once the HMA plant is established at a specific site, that facility is not responsible for controlling other facilities from moving in nearby, provided they are not on the same property. Neighboring facilities would be required to account for the HMA impacts for their permitting analyses.
The HMA plant will not relocated to a site where there are co-contributing stationary emissions sources within 1,000 feet of the drum dryer stack except as noted for a rock crushing plant above.	After the HMA plant is established at a location, the permittee is not responsible for ensuring neighboring facilities do not move in.
DEQ Modeling staff contend that NAAQS compliance is assured for an HMA plant operating simultaneously (both within a given day) with a crushing plant, provided HMA daily throughput for that day is limited to half that normally allowed.	Decreased HMA throughput will offset potential impacts of a nearby crushing plant.
Fugitive emissions from vehicle traffic are controlled to a high degree.	Emissions from vehicle traffic on unpaved surfaces was assumed to be minimal and accounted for in the background concentrations used in the analyses.
Large diesel engines powering HMA operations generators: powered by engines rated at >175 brake horsepower (bph), have a combined power rating of less than 1,200 bhp, have an EPA Tier 2 certification, and operate less than 13.5 hour/day.	Different combinations can be used if it is demonstrated that total emissions from generators are less than those modeled for these sources.
Small diesel engine powering a generator: powered by an engine having a combined power rating of less than 67 bhp, have an EPA Tier 2 certification, and not operate simultaneously with the large operations generator(s).	Different combinations can be used if it is demonstrated that total emissions from generators are less than those modeled for these sources.
Emissions rates for applicable averaging periods are not greater than those used in the modeling analyses, as listed in this memorandum.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses.
Stack heights for the drum dryer and engines are as listed in this memorandum or higher. Note that stack heights of the drum dryer (41.5 feet) and large generator (32.8 feet) were increased to allow a shorter setback requirement.	NAAQS compliance is still assured if actual stack heights are greater than those listed in this memo.
NAAQS compliance is assured provided stack parameters of exhaust temperature and flow rate are not less than about 75 percent of values listed in this memorandum.	Higher temperatures and flow rates increase plume rise, allowing the plume to disperse to a larger degree before impacting ground level.
T-RACT is used for the drum dryer, silo loadout, and oil heater.	Setback distances would be substantially greater if DEQ does not concur that T-RACT was used to control TAP emissions.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality standards and analyses used to demonstrate compliance.

2.1.1 *Area Classification*

The HMA plant will be a portable facility. The HMA plant will only locate in areas designated as attainment or unclassifiable for all criteria pollutants.

2.1.2 *Significant and Cumulative NAAQS Impact Analyses*

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the proposed facility exceed the significant impact levels (SILs) of Idaho Air Rules Section 006 (referred to as a significant contribution in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions, and emissions from any nearby co-contributing sources, to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled value that must be used for comparison to the NAAQS.

New NO_2 and SO_2 short-term standards have recently been promulgated by EPA. The standards became applicable for permitting purposes in Idaho when they were incorporated by reference *sine die* into Idaho Air Rules (Spring 2011). The analyses performed accounted for the new standards.

DEQ used non-site-specific full impact analyses to demonstrate compliance with Idaho Air Rules Section 203.02. Results of modeling analyses were used to establish setback distances for the facility. Established setback distances are minimal distances between emissions points and the ambient air boundary (usually the property boundary) needed to assure compliance with standards, considering the impact of the HMA, any co-contributing sources, and a conservative background value.

2.1.3 *Toxic Air Pollutant Analyses*

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permit requirements for toxic air pollutants from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

> *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life*

or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.

Per Section 210, if the total project-wide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated. If DEQ determines T-RACT is used to control emissions of carcinogenic TAPs, then modeled concentrations of 10 times the AACC are considered acceptable, as per Idaho Air Rules Section 210.12.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Impact Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	Annual	0.3	15[i]	Mean of maximum 1st highest[j]
	24-hour	1.2	35[k]	Mean of maximum 1st highest[j]
Carbon monoxide (CO)	8-hour	500	10,000[l]	Maximum 2nd highest[m]
	1-hour	2,000	40,000[l]	Maximum 2nd highest[m]
Sulfur Dioxide (SO_2)	Annual	1.0	80[n]	Maximum 1st highest[m]
	24-hour	5	365[l]	Maximum 2nd highest[m]
	3-hour	25	1,300[l]	Maximum 2nd highest[m]
	1-hour	3 ppb[o] (7.8 $\mu g/m^3$)	75 ppb[p] (196 $\mu g/m^3$)	Mean of maximum 4th highest[q]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[n]	Maximum 1st highest[m]
	1-hour	4 ppb[o] (7.5 $\mu g/m^3$)	100 ppb[r] (188 $\mu g/m^3$)	Mean of maximum 8th highest[s]
Lead (Pb)	Quarterly	NA	1.5[n]	Maximum 1st highest[m]
	3-month[t]	NA	0.15[n]	Maximum 1st highest[m]

a. Idaho Air Rules Section 006 (definition for significant contribution).
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers.
f. Never expected to be exceeded more than once in any calendar year.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year average of annual concentration.
j. Mean (of 5 years of data) of the maximum of 1st highest maximum modeled concentrations at any modeled receptor for each year of meteorological data modeled. The monitoring design value is used for background concentrations for $PM_{2.5}$ analyses. This approach is also used for the significant impact analysis.
k. 3-year average of the upper 98th percentile of 24-hour concentrations.
l. Not to be exceeded more than once per year.
m. Concentration at any modeled receptor.
n. Not to be exceeded in any calendar year.
o. Interim SIL established by EPA policy memorandum.
p. 3-year average of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. Mean (of 5 years of data) of the maximum of 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year average of maximum modeled 1-hour impacts for each year is used.
r. 3-year average of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
s. Mean (of 5 years of data) of the maximum of 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year average of maximum modeled 1-hour impacts for each year is used.
t. 3-month rolling average.

2.2 Background Concentrations

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources not explicitly modeled. Table 3 lists appropriate background concentrations for rural Idaho areas for all pollutants except 1-hour NO_2.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	24-hour	73
$PM_{2.5}$[c]	24-hour	21.3
	Annual	7.12
Carbon monoxide (CO)	1-hour	3,600
	8-hour	2,300
Sulfur dioxide (SO_2)	1-hour, 3-hour	50
	24-hour	26
	Annual	8
Nitrogen dioxide (NO_2)	Annual	17
Lead (Pb)	Quarterly	0.03

a. Micrograms per cubic meter.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

Background concentrations, other than $PM_{2.5}$, 1-hour NO_2, and 1-hour SO_2, were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Background concentrations in the DEQ non-site-specific analyses were based on DEQ default values for rural/agricultural areas for all pollutants except for $PM_{2.5}$ and 1-hour averaged NO_2.

Background $PM_{2.5}$ concentrations were based on monitoring performed throughout Idaho. The monitoring 24-hour and annual design values were used for background values. The design value is the 98th percentile of the 24-hour monitored values. The average of design values monitored from areas determined to be reasonably representative of rural or small town areas was used as a background value.

Background concentrations for 1-hour NO_2 were based on monitoring data collected from two locations. Monitoring data from Meridian, Idaho, between January 2009 and February 2011, were used for modeling with Boise meteorological data as a representation of sites within the Treasure Valley. The Treasure Valley is characterized as having uniquely high NO_2 and ozone concentrations as compared to other areas in Idaho. Monitoring data from Coeur d'Alene, Idaho, for October 2006 through September 2011, were used for modeling with all other meteorological data. The Coeur d'Alene data were only collected during the "ozone season" of May through September, except for late 2006 and early 2007.

A separate NO_2 background value was used for each hour of the day. This value for the Meridian data was based on the 98th percentile value monitored for that hour, and the value for the Coeur d'Alene data was based in the 99th percentile. Using the 98th percentile for Meridian data was determined as adequately conservative for the Treasure Valley. The monitor is located in Meridian near the interstate highway and a busy intersection, and values are expected to be considerably higher than most other areas in the Treasure Valley. Hourly 1-hour NO_2 background concentrations are given in Table 4.

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1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

Table 4. BACKGROUND 1-HOUR NO_2 CONCENTRATIONS								
Hour	Concentration ($\mu g/m^3$)[a]		Hour	Concentration ($\mu g/m^3$)[a]		Hour	Concentration ($\mu g/m^3$)[a]	
	Meridian	Coeur d'Alene		Meridian	Coeur d'Alene		Meridian	Coeur d'Alene
1	56.4	37.6	9	60.2	37.6	17	41.4	35.7
2	48.9	28.2	10	52.5	33.8	18	58.8	50.8
3	48.9	28.2	11	46.3	32.6	19	65.5	48.9
4	47.4	28.2	12	37.6	27.5	20	69.6	43.2
5	50.4	32.1	13	33.8	21.7	21	800.8	43.2
6	54.5	37.6	14	33.8	27.4	22	82.2	37.7
7	58.3	37.6	15	33.8	30.1	23	75.2	35.8
8	58.3	39.5	16	35.6	32.0	24	64.5	33.8

a. micrograms per cubic meter.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

This section describes the modeling methods used by the applicant and DEQ to demonstrate compliance with applicable air quality standards.

3.1.1 Overview of Analyses

The applicant and DEQ performed non-site-specific analyses that were determined to be reasonably representative of the proposed HMA plant, and the results demonstrated compliance with applicable air quality standards to DEQ's satisfaction, provided specified setbacks and operational restrictions are maintained.

Because of the portable nature of an HMA plant, the applicant and DEQ performed general non-site-specific modeling analyses to establish setback distances between locations of emissions points and the property boundary of the HMA plant.

Table 5 provides a brief description of general parameters used in the DEQ modeling analyses.

Table 5. MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description**
General Facility Location	Portable	All locations not within non-attainment areas.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 11353
Meteorological Data	Multiple Data Sets	See Section 3.1.5
Terrain	Flat	The analyses assumed flat terrain for the immediate area
Building Downwash	Considered	No substantial structures were identified in the application. Downwash for the enclosure of the large generator was considered in the analyses.
Receptor Grid	Grid 1	Polar grid with 10-meter downwind spacing out 200 meters
	Grid 2	Polar grid with 25-meter downwind spacing out 400 meters
	Grid 3	Polar grid with 50-meter downwind spacing out 700 meters

3.1.2 Modeling protocol and Methodology

A modeling protocol was not submitted to DEQ prior to the application. DEQ met with Centra and discussed modeling data and methods in detail prior to the submission of the PTC application. The uncertainty associated with both the general geographical location and specific locations of equipment at the site of the HMA dictated the general non-site-specific methods, with results used to establish setback distances between locations of emissions points and the ambient air boundary for the site. Non-site-specific modeling was generally conducted using data and methods described in the *State of Idaho Air Quality Modeling Guideline*.

3.1.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD was used for the DEQ analyses to evaluate impacts of the HMA plant.

DEQ set AERMOD to use the Plume Volume Molar Ratio Method (PVMRM) program to better account for NO/NO_2/ozone chemistry. Section 3.1.4 provides a description of parameters and data used for PVMRM.

3.1.4 Data and Parameters used for Modeling 1-Hour NO_2 with PVMRM

PVMRM was used with AERMOD to provide a more refined estimate of 1-hour NO_2 concentrations at specific receptors. Table 6 lists the data and parameters used for PVMRM. Hourly ozone data were used in PVMRM to estimate the conversion of NO to NO_2. Ozone hourly monitoring data were collected from a station just west of Coeur d'Alene, Idaho. These data were collected from May 2007 through September 2011 on a seasonal basis between May and September. These data were sorted by hour and then the 99^{th} percentile value for each hour of the day were calculated across all days. For each hour modeled, a background ozone value equal to the 99^{th} percentile for that hour was used as input to PVMRM. This method is reasonably conservative because it does not account for seasonal variation in ozone concentrations, and the Coeur d'Alene data were collected during the time of year when maximum ozone concentrations are expected.

Coeur d'Alene ozone data are not clearly conservative for a large urban area such as the Boise area and Treasure Valley. For analyses using the Boise meteorological data, DEQ used ozone data collected from Meridian, Idaho, for May 2007 through September 2011. Data after May 2009 were collected on a year-around basis. The 99^{th} percentile monitored value for each hour was calculated and used as input to PVMRM. Table 7 lists hourly ozone concentrations used in PVMRM for the impact analyses.

An NO_2/NOx ratio for NOx emissions is also used in PVMRM.

Table 6. PARAMETERS AND DATA FOR PVMRM		
Parameter	**Value**	**Source/Comments**
NO_2/NOx ratio for Emissions	0.5 for dryer, 0.255 for the large generator, and 0.2 for the small generator	0.5 is an EPA suggested default when source-specific data are not available.
Ambient Equilibrium for NO_2/NOx	0.90	Default value.
Ozone Concentrations	Value specified for each hour modeled	Based on values from Coeur d'Alene, Idaho, and Meridian, Idaho, when using Boise meteorological data.

Table 7. BACKGROUND OZONE CONCENTRATIONS								
Hour	**Concentration (ppb)[a]**		**Hour**	**Concentration (ppb)[a]**		**Hour**	**Concentration (ppb)[a]**	
	Meridian	Coeur d'Alene		Meridian	Coeur d'Alene		Meridian	Coeur d'Alene
1	46.246	44.119	9	42.089	42.607	17	68.779	53.173
2	45.4	41.387	10	47.899	45.5	18	66.04	51.989
3	44.402	39.674	11	54.6	47.956	19	61.278	48.76
4	42.955	40.052	12	60	51.052	20	56.2	46.168
5	40.158	39.44	13	63.26	52.648	21	50.862	45.384
6	39.486	38.176	14	70.891	54.508	22	47	45.104
7	36.2	39.2	15	70.95	54.312	23	48.713	44.815
8	38.256	41.079	16	69.5	52.999	24	47.598	43.76

a. parts per billion by volume.

3.1.5 Meteorological Data

Because of the portable nature of HMA plants, DEQ used seven different meteorological datasets from various locations in Idaho to assure compliance with applicable standards for the non-site-specific analyses. Table 8 lists the meteorological datasets used in the air impact analyses.

Table 8. METEOROLOGICAL DATA SETS USED IN MODELING ANALYSES		
Surface Data	**Upper Air Data**	**Years**
Boise	Boise	2005-2009
Aberdeen	Boise	2001-2005
Idaho Falls	Boise	2000-2004
Minidoka	Boise	2000-2004
Soda Springs	Boise	2004-2008
Twin Falls	Boise	2006-2010
Sandpoint	Spokane, Wa	2002-2006

Use of representative meteorological data is a concern since the HMA plant may locate anywhere in Idaho and seven meteorological datasets may not capture worst-case conditions for all potential sites. To account for this uncertainty, the following measures were taken:

- Use the maximum of 2nd high modeled concentration to evaluate compliance with the 24-hour PM_{10} standard, rather than the maximum of 6th high modeled concentration typically used when modeling a five-year meteorological dataset to demonstrate that the standard will not be exceeded more than once per year on average over a three year period.

- Use the maximum of 1st high modeled concentration to evaluate compliance with all pollutants and averaging times, except for 24-hour PM_{10}, 24-hour $PM_{2.5}$, 1-hour NO_2, and 1-hour SO_2.

- The maximum of 5-year averages of the maximum 1st high modeled 24-hour concentrations were used for 24-hour $PM_{2.5}$. This is in accordance with current EPA guidance. The background concentrations were based on the 98th percentile monitored values.

- The standard design value was used for 1-hour NO_2. The design value is the 5-year average of the 98th percentile of the annual distribution of daily maximum 1-hour modeled concentrations. The background NO_2 concentrations for analyses using the Boise meteorological data were conservatively based on monitoring data collected from Meridian, Idaho, near an interstate highway. For analyses using meteorological data from other areas, background NO_2 concentrations were based on data near Coeur d'Alene, Idaho. Both of these areas likely have NO_2 concentrations substantially higher than rural areas where HMA plants are likely to locate.

- The standard design value was used for 1-hour SO_2. The design value is the 5-year average of the 99th percentile of the annual distribution of daily maximum 1-hour modeled concentrations. The background SO_2 concentrations were based on the conservative rural 3-hour default background concentration that was established in 2003. Because of recent restrictions in fuel sulfur content, background concentrations in most rural areas are expected to be substantially less than the 2003 value.

3.1.6 Terrain Effects

Terrain effects on dispersion were not considered in the non-site-specific analyses. Assuming flat terrain is not a critical limitation of the analyses because most emissions points associated with HMA plants are near ground-level and the immediate surrounding area is typically flat for dispersion modeling purposes. Emissions sources near ground-level typically have maximum pollutant impacts near the source, minimizing the potential affect of surrounding terrain to influence the magnitude of maximum modeled impacts.

3.1.7 Facility Layout

DEQ's analyses used a conservative generic facility layout. This was done because the specific layout will vary depending upon product needs and specific characteristics of the site and equipment. To provide conservative results, DEQ used a tight grouping of emissions sources. Sources were positioned within 7 meters of the center of the facility.

3.1.8 Building Downwash

The housing of the large generator was assessed for potential plume downwash effects, modeled as a 2-meter square structure, 3-meters high. No other substantial structures were identified in the application. Downwash effects from equipment or other minor structures at the site were not accounted for because much of the equipment is porous with regard to wind, thereby minimizing downwash effects

3.1.9 Ambient Air Boundary

DEQ's non-site-specific analysis methods, using a generic facility layout, were used to generate minimum setback distances between emissions points and the property boundary or the established boundary to ambient air (if not the same as the property boundary). Ambient air is any area where the general public (anyone not under direct control of the HMA plant) has access. The issued permit will specify throughput restrictions and an emissions point setback from ambient air.

3.1.10 Receptor Network and Generation of Setback Distances

Setback distances were determined by first modeling the plant using a dense receptor grid. Results were then reviewed to find the receptor furthest from the drum dryer stack at the center of the facility that shows an exceedance of the standard when combined with a background value. The setback distance was calculated as the maximum distance between the next furthest receptor and the dryer stack.

A polar grid with 10-meter receptor spacing extending out to 200 meters, 25-meter spacing extending out to 400 meters, and 50-meter spacing extending out to 700 meters was used in the non-site-specific modeling performed by DEQ. Additional receptors were added in refined modeling to more precisely define the required setback. To establish a setback distance, the following procedure was followed for the requested production level and operational configuration:

1) Trigger values for the modeling analyses were determined. Trigger values are the applicable standards, and the modeled impacts plus the applicable background concentration must be below these values.

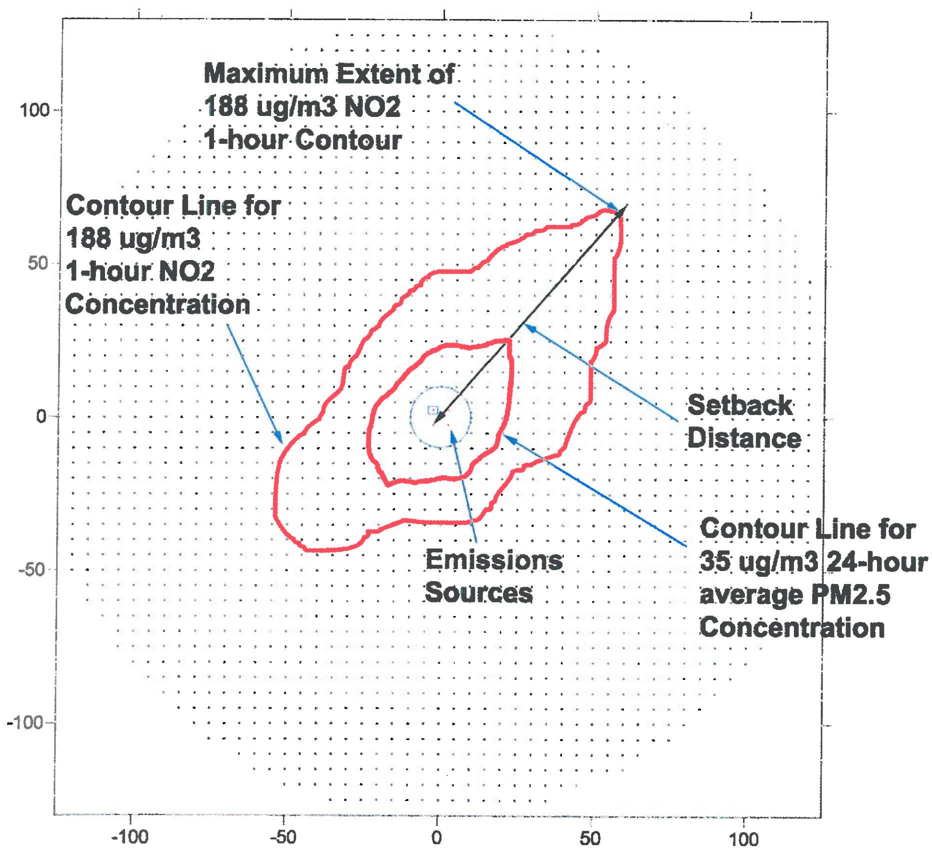
2) For the operational configuration, pollutant, averaging period, and meteorological data set, all receptors with concentrations (modeled value plus background) equal or greater than the trigger value were plotted. This effectively gave a plot of receptors where the standard could be exceeded for that pollutant and averaging period.

3) The controlling receptor for each pollutant, averaging period, and meteorological data set was identified. First, the receptor having a concentration in excess of the trigger value that was the furthest from the drum dryer stack was identified. The controlling receptor was the next furthest downwind receptor from that point.

4) The minimum required setback distance was calculated. This was the furthest distance between the dryer stack and the controlling receptor.

Figure 1 shows an example of how setback distances are determined for a specific modeling run. Emissions points are grouped in a cluster at the center within a 10.0 meter square area. The inner contour line shows the extent of modeled concentrations exceeding the 24-hour $PM_{2.5}$ NAAQS. The outer-most contour line shows modeled 1-hour NO_2 design value concentrations that exceed the NAAQS. The point on the contour line that is the furthest from the drum dryer stack is identified, and then the controlling receptor is identified as the next furthest receptor beyond that point. The setback distance is determined from the coordinates of the controlling receptor.

Figure 1 - Determination of Setback Distance for a Modeling Run



3.2 *Emission Rates*

Emissions rates of criteria pollutants and TAPs were calculated for the HMA plant production rate and operational configuration for various applicable averaging periods.

3.2.1 Criteria Pollutant Emissions Rates

Table 9 lists criteria pollutant emissions rates used in the DEQ non-site-specific modeling analyses for the HMA plant production rate, operational configuration, and for all applicable averaging periods. Attachment 1 provides additional details of DEQ emissions calculations used in the modeling analyses.

Emissions of CO are not listed in the table because facility-wide emissions were below the DEQ Level II Modeling Threshold of 175 pounds/hour, ensuring impacts are less than the SIL. SO_2 24-hour impacts were not modeled because the 365 $\mu g/m^3$ 24-hour standard could not reasonably be exceeded unless the 196 $\mu g/m^3$ 1-hour standard were also exceeded.

Table 9. EMISSIONS USED IN DEQ ANALYSES						
Emissions Point in Model	**Pollutant**	**Averaging Period**	**Emissions Rate (lb/hr)[a]**			
			6,250 TPD	**5,625 TPD**	**5,000 TPD**	**4,375 TPD**
DRYER – drum dryer/mixer - emissions controlled by a baghouse	$PM_{2.5}$	24-hour[b]	2.862	2.576	2.289	2.003
		Annual[c]	2.240			
	PM_{10}	24-hour[b]	5.990	5.391	4.792	4.193
	SO_2	1-hour	27.04[d]			
		Annual[c]	11.82			
	NOx	1-hour	27.50[d]			
		Annual[c]	11.21			
SILO – asphalt storage silo	Emissions captured and routed back to drum dryer					
LOAD – asphalt loadout	$PM_{2.5}$	24-hour[b]	0.1359	0.1223	0.1087	0.09514
		Annual[c]	0.1064			
	PM_{10}	24-hour[b]	0.1359	0.1223	0.1087	0.09514
GEN1 – electrical generator - 1200 hp diesel engine - 13.5 hr/day, 2578.5 hr/yr - 0.0015% sulfur diesel - Tier 2 certified	$PM_{2.5}$	24-hour[b]	0.2627			
		Annual[e]	0.2057			
	PM_{10}	24-hour[b]	0.2627			
	SO_2	1-hour	0.01260[d]			
		Annual[e]	0.005548			
	NOx	1-hour	12.60[d]			
		Annual[e]	5.548			
GEN2 – electrical generator - 67 hp diesel engine - 24 hr/day, 5856 hr/yr - 0.0015% sulfur diesel - Tier 2 certified	$PM_{2.5}$	24-hour[b]	0.01928			
		Annual[f]	0.04406			
	PM_{10}	24-hour[b]	0.01928			
	SO_2	1-hour[g]	0.0			
		Annual[f]	0.0004080			
	NOx	1-hour[g]	0.0			
		Annual[f]	0.8261			
HOTOIL – asphalt oil heater	$PM_{2.5}$	24-hour[b]	0.002126			
		Annual[h]	0.002126			
	PM_{10}	24-hour[b]	0.05767			
	SO_2	1-hour	0.1911[d]			
		Annual[h]	0.06370			
	NOx	1-hour	0.07143[d]			
		Annual[h]	0.02381			
LOADCONV – aggregate handling by frontend loader and conveyor transfers[i]	$PM_{2.5}$	24-hour[b]	0.06947	0.06253	0.05557	0.04863
		Annual	0.05439			
	PM_{10}	24-hour[b]	0.4588	0.4129	0.3670	0.3211
SCREEN – scalping screen	$PM_{2.5}$	24-hour[b]	0.03293	0.02963	0.02634	0.02305
		Annual[c]	0.02577			
	PM_{10}	24-hour[b]	0.2175	0.1958	0.1740	0.1523

a. Pounds per hour emissions rate used in modeling analyses for specified averaging periods. Emissions are listed as a function of various throughputs in ton/hour (TPH) and ton/day (TPD). Annual throughput rates were set at 1,193,750 ton HMA/year.

b. Calculated by multiplying the hourly rate by the hours of operation per day (12.5 for dryer, silo loadout, screen, and material handling; 13.5 for operation generator; 10.5 for night generator; 8 for oil heater) divided by 24.

c. Emissions rate accounts for no operations between December 1 and March 31 (emissions were turned off in the model for this time period).

d. Emissions are only listed for the 500 ton/hour scenario because impacts at this level were less than applicable standards for setback distances greater than 100 meters. Lesser hourly throughputs would not yield greater impacts.

e. Based on emissions from 2,578.5 hour/year operation distributed evenly over 5,856 hours between March 31 and November 31.

f. Based on emissions from continuous operation between March 31 and November 31.

g. Hourly emissions based on operation of only the large generator, oil heater, and the drum dryer. The small generator will not operate when the plant is producing asphalt.

h. Based on emissions from 8 hour/day between March 31 and November 31.

i. Emissions are varied in the model according to wind speed category. Emissions listed are based on a 10 mph wind speed.

The modeling analyses excluded operations from December 1 through March 31 because the application stated the facility would not operate during that time.

Setback distances were calculated for four daily operational scenarios: 1) 6,250 ton HMA/day; 2) 5,625 ton HMA/day; 3) 5,000 ton HMA/day; 4) 4,375 ton HMA/day. An hourly production rate of 500 ton HMA/hour and an annual production rate of 1,193,750 ton HMA/year was used with the four daily production scenarios.

Fugitive particulate emissions from frontend loader handling of aggregate materials and four conveyor transfers for the HMA plant were designated as emissions point LOADCONV in the model. Two transfers were included for the frontend loader source: 1) transfer of aggregate from truck unloading to a storage pile; 2) transfer of aggregate from the storage pile to a hopper. Four transfers were included with this source for aggregate conveyors as indicated in the application. Emissions rates for LOADCONV are a function of wind speed and were varied in the model according to wind speed. Attachment 1 provides details on emissions calculations.

DEQ's air impact analyses assumed that the facility will not operate during the period of December 1 through March 31. Emissions were turned off in the model for this time period for all sources except LOADCONV. Since LOADCONV emissions were varied in the modeled as a function of wind speed, and the model only allows one emissions factor to be applied to any single source, a factor to turn off these emissions for the non-operational period could not be used for this source.

3.2.2 TAP Emissions Rates

The proposed HMA plant will emit TAPs. Table 10 lists the increase in TAPs modeled for the proposed plant. DEQ allows use of a five-year period-averaged impact to demonstrate compliance with AACCs, rather than the maximum annual impact of five years modeled individually. DEQ determined this was adequately protective for carcinogenic risks.

Emissions of all TAPs from the generators are regulated by an NSPS or NESHAP and are excluded from the modeling analyses as per Idaho Air Rules Section 210.20.

Table 11 is a summary of TAP emissions and a comparison to the applicable ELs.

Section 2.1.3 of this memorandum describes how carcinogenic TAP impacts of 10 times the AACC are allowed if the source utilizes T-RACT for controls. DEQ permitting staff determined that T-RACT was demonstrated so modeled impacts must remain below 10 times the AACCs.

Table 10. TAP EMISSIONS USED IN DEQ ANALYSES			
Emissions Point in Model	**Pollutant**	**Averaging Period**	**Emissions Rate for 6,250 ton HMA/day or 1,193,750 ton HMA/year (lb/hr)**
DRYER – drum dryer/mixer - emissions controlled by a baghouse	Propioaldehyde	24-hour	3.385E-2
	Quinone	24-hour	4.167E-2
	Hydrogen Chloride (HCl)	24-hour	5.469E-2
	Phosphorus	24-hour	7.292E-3
	Arsenic	period	1.142E-4
	Cadmium	period	8.358E-5
	Chromium 6+	period	9.173E-5
	Nickel	period	1.284E-2
	Acetaldehyde	period	2.650E-1
	Benzene	period	8.030E-2
	Dioxins/furans	period	2.446E-8
	Formaldehyde	period	6.491E-1
	PAH (naphthalene)	period	1.334E-1
	POM	period	2.494E-4
LOAD – asphalt loadout	Benzene	period	4.410E-4
	Formaldehyde	period	7.463E-4
	PAH(naphthalene)	period	8.689E-4
	POM	period	9.380E-5
HOTOIL – asphalt oil heater	Hydrogen Chloride (HCl)	period	2.357E-2
	Arsenic	period	3.206E-4
	Cadmium	period	6.411E-5
	Nickel	period	8.548E-4
	Benzene	period	1.540E-6
	Dioxins/furans	period	1.229E-9
	Formaldehyde	period	3.259E-4
	PAH (naphthalene)	period	9.082E-5
	POM	period	6.411E-5

Table 11. SUMMARY OF FACILITY-WIDE TAP EMISSIONS USED FOR MODELING				
TAP	**Averaging Period**	**Emissions**	**EL**	**Modeling Required**
Propioaldehyde	24-hour	3.385E-2	2.87 E-2	Yes
Quinone	24-hour	4.167E-2	2.7 E-2	Yes
Hydrogen Chloride (HCl)	24-hour	7.826E-2	5.0 E-2	Yes
Phosphorus	24-hour	7.292E-3	7.0 E-3	Yes
Acetaldehyde	period	2.651E-1	3.0E-3	Yes
Arsenic	period	4.348E-4	1.5E-6	Yes
Benzene	period	8.074E-2	8.0E-4	Yes
Cadmium	period	1.477E-4	3.7E-6	Yes
Chromium 6+	period	9.173E-5	5.6E-7	Yes
Dioxins/furans	period	2.569E-8	1.5E-10	Yes
Formaldehyde	period	6.502E-1	5.1E-4	Yes
Nickel	period	1.370E-2	2.7E-5	Yes
PAH(naphthalene)	period	1.344E-1	9.1E-5	Yes
POM	period	4.073E-4	2.0E-6	Yes

3.3 Emission Release Parameters and Plant Criteria

Table 12 lists the characteristics of the Western HMA plant used in DEQ's non-site-specific air impact analyses.

Table 13 provides emissions release parameters for the analyses including stack height, stack diameter, exhaust temperature, and exhaust velocity. Additional details are provided in Attachment 1.

Asphalt loadout was modeled as a point source, rather than volume sources, to account for thermal buoyancy of the emissions plume. Release parameters for asphalt loadout were based on the following:

- Release point of asphalt loadout operations was set to correspond to the top of a truck bed.
- Stack diameter of 3.0 meters was used to approximately correspond to a typical silo. Model-calculated stack tip downwash will account for downwash affects potentially caused by the silo.
- Stack gas temperature of 346K was calculated by assuming the gas temperature would be half that of the default asphalt temperature of 325°F (1/2 of 325° F = 163° F = 346 K).
- Flow velocity of 0.1 m/sec was used to establish a reasonably conservative total flow from the source of 1,500 actual cubic feet per minute, caused by convection.

Table 12. CHARACTERISTIC OF HMA PLANT USED IN DEQ ANALYSES

Parameter	Value or Description
HMA Throughput Rates	500 ton/hr, 4,375 ton/day, 5,000 ton/day, 5,625 ton/day, or 6,250 ton/day[a], 1,193,750 ton/yr
Co-Contributing Sources	The HMA plant will not move into an area where there is a co-contributing stationary emissions source within 1,000 feet of the drum dryer stack. Also, co-contributing emissions sources will not locate on the plant property and within 1,000 feet of emissions points of the HMA, except as noted below for a rock crushing plant. A rock crushing plant could be operated at the site provided it is not operated during any day when the HMA plant is operated and annual throughput is less than 500,000 ton/yr. Alternatively, a rock crusher could be operated simultaneously (both operating in a given day) with the HMA plant provided the HMA throughput for that day does not exceed a value of half that otherwise allowed.
Drum Dryer	Drum dryer fueled by natural gas, diesel, or RFO, with a baghouse for emissions control.
Electrical Power	Line power or diesel-fired generators with the following characteristics: 1) a large generator powered by a 1,200 bhp, EPA Tier 2 certified engine, burning 0.0015% sultur fuel, operating less than 13.5 hr/day; 2) a small generator powered by a engine of less than 67 bhp, EPA Tier 2 certified engine, burning 0.0015% sulfur fuel, operating up to 24 hr/day. The two engines will not operate simultaneously.
Large Generator Stack Parameters	Stack height ≥33 ft, stack diameter ≈ 1 ft, gas temp ≥1,000 K, flow velocity ≥44.6 m/sec.
Small Generator Stack Parameters	Stack height ≥6 ft, stack diameter ≈ 3 in, gas temp ≥550 K, flow velocity ≥44.6 m/sec.
Dryer Stack Parameters	Stack height ≥41.5 ft, stack diameter ≈4 ft, gas temp ≥ 408 K, flow velocity ≥25 m/sec.
Asphalt Loadout	Model as a point source. Stack height = 3.5 m, stack diameter = 3.0 m, gas temp = 346 K (163° F), flow velocity = 0.1 m/sec. These parameters were developed by the modeling group to represent the nature of released emissions from this source in most all applications.
Conveyor Transfers	≤4 transfers for any given quantity of material processed. Emissions controlled by 90%.
Scalping Screen	≤1 screen for any given quantity of material processed. Emissions controlled by 90%.
Frontend Loader Transfers	≤2 transfers for any given quantity of material processed. Typically involves: 1) aggregate to storage pile; 2) aggregate from pile to hopper.
Seasonal Restriction	The HMA plant will not operate during the period between December 1 and March 31.

[a] Allowable daily throughput will depend on the available setback distance at the site.

Table 13. EMISSIONS RELEASE PARAMETERS					
Release Point /Location	Source Type	Stack Height (m)[a]	Modeled Diameter (m)	Stack Gas Temp. (K)[b]	Stack Gas Flow Velocity (m/sec)[c]
DRYER	Point	12.65	1.32	408	24.8
GEN1	Point	10.0	0.312	1,000	44.6
GEN2	Point	1.83	0.074	550	44.6
HOTOIL	Point	3.35	0.34	511	0.35
LOADOUT	Point	3.5	3.0	346	0.1
Volume Sources					
Release Point /Location	Source Type	Release Height (m)	Initial Horizontal Dispersion Coefficient σ_{y0} (m)	Initial Vertical Dispersion Coefficient σ_{z0} (m)	
LOADCONV	Volume	2.5	4.65	1.16	
SCREEN	Volume	3.0	0.70	0.70	

[a] Meters
[b] Kelvin
[c] Meters per second

3.4 Results for Cumulative NAAQS Impact Analyses and TAPs Analyses

DEQ determined required setback distances from the non-site-specific modeling results for each proposed operating scenario, criteria pollutant and TAP, and averaging period. Table 14 lists controlling setback distances for each operational scenario. Setback distances are the closest distance between the property boundary and the drum dryer stack. Attachment 2 provides calculated setback distances for individual impact analyses.

Table 14. SETBACK DISTANCES AS A FUNCTION OF THROUGHPUT AND OPERATIONAL CONFIGURATION		
HMA Configuration Scenario	Setback (ft (m))	Controlling Pollutant
500 ton HMA/hr, 6,250 ton HMA/dy, 1,193,750 ton HMA/yr operating with two generator engines	459 (140)	24-hr $PM_{2.5}$
500 ton HMA/hr, 5,625 ton HMA/dy, 1,193,750 ton HMA/yr operating with two generator engines	410 (125)	24-hr $PM_{2.5}$
500 ton HMA/hr, 5,000 ton HMA/dy, 1,193,750 ton HMA/yr operating with two generator engines	377 (115)	24-hr $PM_{2.5}$
500 ton HMA/hr, 4,375 ton HMA/dy, 1,193,750 ton HMA/yr operating with two generator engines	361 (110)	24-hr $PM_{2.5}$

3.5 Locating with Other Facilities/Equipment

The air impact analyses performed by DEQ assume there are no other emissions sources in the immediate area that measurably contribute to pollutant concentrations in a way not adequately accounted for by the background concentrations used. Such emissions sources could include a rock crushing plant, another HMA plant, a ready-mix concrete plant, or other permitted facility. DEQ modeling staff established a rule-of-thumb distance of 1,000 feet from emissions sources at the HMA plant where emissions from a nearby source/facility would need to be considered in the air impact analyses for the HMA plant. Emissions sources located beyond 1,000 feet are considered to be too distant to have a measureable impact on receptors substantially impacted by the HMA plant.

HMA plants commonly co-locate with rock crushing plants. Since the 24-hour $PM_{2.5}$ impacts are the governing criteria (governing for criteria pollutants – contributions of TAPs from other facilities are not considered in permitting analyses for the HMA plant), simultaneously operation on an annual basis is not a large concern. DEQ modeling staff determined NAAQS compliance is still assured when a rock crushing plant co-locates with the HMA plant, provided the HMA plant does not operate during any day when the rock crushing plant is operating and the annual actual throughput of the rock crushing plant is not greater than 500,000 tons. DEQ modeling staff also determined NAAQS compliance is assured when operating the HMA plant during the same day as the rock crushing plant, provided the throughput for that day of the HMA plant is half that assumed for the modeling analyses used to generate setback distances for the scenario of no co-location.

Once the HMA plant is established at a site, the plant has no control over other facilities locating on neighboring properties (this does not include facilities co-locating on the same property as the HMA plant). Cumulative impacts would be assessed in the permitting analyses performed for the neighboring facility. The 1,000 foot restriction assumption on off-property co-contributing sources only applies when the HMA plant is relocating to a new site.

4.0 Conclusions

The ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the facility will not cause or significantly contribute to a violation of any ambient air quality standard.

ATTACHMENT 1

EMISSIONS CALCULATIONS AND MODELING PARAMETERS FOR DEQ'S AIR IMPACT ANALYSES

HMA Plant Modeled Emissions Rates

Setback requirements are linked to throughput levels and the equipment configuration.

Drum Dryer Emissions

Western's consultant, Centra Consulting, Inc., calculated emissions for various throughput rates and fuels. Highest emissions of using either RFO, diesel, or natural gas were used in the modeling analyses.

SO_2 emissions were calculated using an AP-42 emissions factor based on throughput. DEQ did not approve the submitted calculations and Centra submitted revised calculations during the DEQ review period. These calculations were based on fuel usage and a 0.5% allowable sulfur content of the fuel.

Asphalt Loadout

The DEQ HMA plant emissions calculation spreadsheet was used to generate emissions quantities for applicable averaging periods.

Asphalt Silo Filling

Emissions from silo-filling are captured and routed back into the drum dryer.

Asphalt Tank Heater Emissions

Centra calculated emissions from the asphalt oil heater based on continuous operation, using the maximum emissions from burning either RFO, diesel, propane, or natural gas. DEQ determined that an asphalt heater will only operate less than 8.0 hours in any day based on climate of the area and design of the operation. Emissions rates for 24-hour averages were calculated by multiplying the hourly rate by a factor of 8 hour/24 hour.

Power Generator

The application indicated two diesel engines may be operated at the HMA plant to power electrical generators: 1) an EPA Tier II certified 1,200 bhp diesel engine operating up to 13.5 hr/day and 2,578.5 hr/year; 2) an EPA Tier II certified 67 bhp diesel engine operating up to 24 hr/day and 8,760 hr/year. Emissions estimates were calculated assuming the engines will combust diesel with a maximum 0.0015% sulfur content.

The two generators will not be operating at the same time. The large generator will operate when the remainder of the HMA plant is operating, and the smaller generator will only operate when the plant is not producing asphalt. Emissions for various standards were calculated as follows:

- 1-hour NO_2, 1-hour SO_2, and CO: Hourly emissions from the larger generator are larger than those from the small generator, and the larger generator operates along with the drum dryer; therefore, maximum impacts will occur when the larger generator is operating and the smaller generator is not operating.
- 24-hour $PM_{2.5}$, 24-hour PM_{10}: daily emissions are a mix of both the large and small generator operations. The application states the operations generator may operate up to 13.5 hr/day. Therefore maximum daily generator PM emissions associated with operation of the HMA plant would be from 13.5 hours operation of the large generator and 10.5 hours operation of the small generator.
- Annual emissions: Calculated using specified annual operating hours of 2,578.5 hour/year for the large generator and 5,856 hour/year for the small generator (continuous operation from April 1 through November 31.

Aggregate Handling Emissions

Emissions from aggregate handling were calculated for the following transfers: 1) aggregate to a storage pile by frontend loader; 2) aggregate from a pile to a hopper by frontend loader; 3) three conveyor transfers.

PM_{10} emissions associated with the handling of aggregate materials were calculated using emissions factors from AP42 Section 13.2.4.

Emissions were calculated using the following emissions equation:

$$E = k(0.0032)\left[\frac{(U/5)^{1.3}}{(M/2)^{1.4}}\right] \quad \text{lb/ton}$$

Where:

k	=	0.053 for $PM_{2.5}$, 0.35 for PM_{10}
M	=	5% for aggregate
U	=	wind speed (mph)

A moisture content of 3% to 7% was estimated as a typical moisture content of aggregate entering the dryer, per STAPPA-ALAPCO-EPA, Emission Inventory Improvement Program, Volume II, Chapter 3, Preferred and Alternative Methods for Estimating Air Emissions from Hot Mix Asphalt Plants, Final Report, July 1996. An additional 90% emissions control was applied to calculated emissions from the conveyor transfers to account for additional emissions control measures required by Idaho regulations and the permit.

In the model, emissions are varied as a function of windspeed, with the base emissions entered for a windspeed of 10 mph.

upper windspeeds for 6 categories: 1.54, 3.09, 5.14, 8.23, 10.8 m/sec

Median windspeed for each category (1 m/sec = 2.237 mph)

Cat 1: (0 + 1.54)/2 = 0.77 m/sec ➢ 1.72 mph
Cat 2: (1.54 + 3.09)/2 = 2.32 m/sec ➢ 5.18 mph
Cat 3: (3.09 + 5.14)/2 = 4.12 m/sec ➢ 9.20 mph
Cat 4: (5.14 + 8.23)/2 = 6.69 m/sec ➢ 14.95 mph
Cat 5: (8.23 + 10.8)/2 = 9.52 m/sec ➢ 21.28 mph
Cat 6: (10.8 + 14)/2 = 12.4 m/sec ➢ 27.74 mph

Base $PM_{2.5}$ factor – use 10 mph wind: $0.053(0.0032)\frac{(10/5)^{1.3}}{(5/2)^{1.4}} = 1.158\text{ E}-4$ lb/ton

Adjustment factors to put in the model:

Cat 1: $(1.72/5)^{1.3}$ (4.702 E-5) = 1.174 E-5 lb/ton
Factor = 1.174 E-5/1.158 E-4 = 0.1014

Cat 2: $(5.18/5)^{1.3}$ (4.702 E-5) = 4.924 E-5 lb/ton
Factor = 4.924 E-5/1.158 E-4 = 0.4253

Cat 3: $(9.20/5)^{1.3}$ (4.702 E-5) = 1.039 E-4 lb/ton
Factor = 1.039 E-4/1.158 E-4 = 0.8974

Cat 4: $(14.95/5)^{1.3}$ (4.702 E-5) = 1.953 E-4 lb/ton
Factor = 1.953 E-4/1.158 E-4 = 1.687

Cat 5: $(21.28/5)^{1.3}$ (4.702 E-5) = 3.090 E-4 lb/ton
Factor = 3.090 E-4/1.158 E-4 = 2.669

Cat 6: $(27.74/5)^{1.3}$ (4.702 E-5) = 4.362 E-4 lb/ton
Factor = 4.362 E-4/1.158 E-4 = 3.768

For the operational scenario for 6,250 ton/day HMA and 1,193,750 ton/year HMA, emissions from the loader are as follows:

Daily $PM_{2.5}$:

1.158 E-4 lb $PM_{2.5}$	6,000 ton	day	2 transfers	=	0.05790 lb
ton	day	24 hr			hr

Annual $PM_{2.5}$:

1.158 E-4 lb $PM_{2.5}$	1,146,000 ton	yr	2 transfers	=	0.04532 lb
ton	yr	5,856 hour			hr

Emissions from the four conveyor transfers are as follows:

Daily $PM_{2.5}$:

1.158 E-4 lb $PM_{2.5}$	6,000 ton	day	4 transfers	(1-0.90)	=	0.01158 lb
ton	day	24 hr				hr

Annual $PM_{2.5}$:

1.158 E-4 lb $PM_{2.5}$	1,146,000 ton	yr	3 transfers	(1-0.90)	=	0.009065 lb
ton	yr	5,856 hour				hr

Total aggregate handling emissions:

Daily $PM_{2.5}$: 0.05790 lb/hr + 0.01158 lb/hr = 0.06948 lb/hr
Annual $PM_{2.5}$: 0.04532 lb/hr + 0.009065 lb/hr = 0.05439 lb/hr

Daily and annual throughputs were based on aggregate being 96% of the total HMA production.

These sources were modeled as a single volume source with a 20-meter square area, 5.0 meters thick, with a release height of 2.5 meters. The initial dispersion coefficients were calculated as follows:

σ_{yo} = 20 m / 4.3 = 4.65 m

σ_{zo} = 5 m / 4.3 = 1.16 m

Screening Emissions

This source includes one scalping screen. A $PM_{2.5}$ factor was not available in AP42. A $PM_{2.5}$ factor was calculated from the PM_{10} factor by multiplying the factor by a ratio of the $PM_{2.5}/PM_{10}$ particle size multipliers used for the aggregate handling emissions factor. The uncontrolled emissions factor was used and a 90% reduction applied to calculated emissions to account for additional emissions control measures required by Idaho regulations and the permit.

Daily and annual throughputs were based on aggregate being 96% of the total HMA production.

For the operational scenario for 6,250 ton/day HMA and 1,193,750 ton/year HMA, emissions are as follows:

Scalping Screen (controlled emissions):

Daily $PM_{2.5}$:

0.0087 lb PM_{10}	0.053 $PM_{2.5}$	6,000 ton	day	(1-0.90)	=	0.03294 lb
ton	0.35 PM_{10}	day	24 hour			hr

Annual $PM_{2.5}$:

0.0087 lb PM_{10}	0.053 $PM_{2.5}$	1,146,000 ton	yr	(1-0.90)	=	0.02578 lb
ton	0.35 PM_{10}	yr	5,856 hour			hr

This source was modeled as a single volume source on or adjacent to a structure 5 m X 4 m, 5.0 meters thick, with a release height of 3.0 meters. The initial dispersion coefficients are calculated as follows:

$\sigma_{yo} = 3\ m / 4.3 = 0.70\ m$

$\sigma_{zo} = 3\ m / 4.3 = 0.70\ m$

HMA Plant Modeling Parameters

Dryer baghouse Stack

To obtain a shorter setback distance, Western elected to raise the baghouse stack to 41.5 ft (12.65 m).

Release height = 12.65 meters; effective diameter of release area = 1.32 meters;
typical stack gas temperature = 408 K; typical flow velocity = 24.75 meters/second

Asphalt Silo Filling

Emissions are captured and routed back to the drum dryer.

Asphalt Loadout

DEQ modeled this source as a point source.
- release height of 3.5 meters
- stack diameter of 3 meters, corresponding to the approximate diameter of the silo
- gas temperature was estimated at half the AP42 default asphalt temperature: 325° F / 2 = 163° F
- stack velocity of 0.1 m/sec to account for convective air flow.

Aggregate to and from Storage and Conveyor Transfers

Release emissions in model from a 20 m X 20 m area 5 m high, released at 2.5 m

Initial dispersion coefficients:

σ_{y0} = 20 m / 4.3 = 4.65 m

σ_{z0} = 5 m / 4.3 = 1.16 m

Sources include: five transfers, equivalent in emissions to that of a frontend loader, from the point of aggregate delivery to transfer to the HMA plant hopper, and three conveyor transfers.

Asphalt Oil Heater

Parameters were provided by Western. Release height = 3.35 meters; effective diameter of release area = 0.344 meters; typical stack gas temperature = 511 K; typical flow velocity = 0.35 meters/second.

Power Generator

To obtain a shorter setback distance, Western elected to raise stack height of the large operations generator (GEN1) to 32.8 ft (10.0 m). The stack height of the small generator (GEN2) was 6.0 ft (1.8 m).

Stack gas temperatures and flow rates are often overestimated by permit applicants, likely because values reported by manufacturers are often based on values measured at the exhaust manifold rather than at the point of release to the atmosphere.

DEQ modeled the operations generator emissions at an exit gas temperature of 1,000 K and the smaller generator emissions at 550 K. Exhaust flows were calculated using the following formula from the State of Washington Department of Ecology (Washington State Department of Ecology. *Suitability of Diesel-Powered Emergency Generators for Air Quality General Order of Approval: Evaluation of Control Technology, Ambient Impacts, and Potential Approval Criteria*. June 23, 2006):

$$\text{Flow} = 0.284\ m^3/(\text{sec}\cdot 100\ \text{hp})$$

The stack diameter was set such that the flow velocity was 44.6 meters/second (as per WA guidance).

The final point source parameters for the1200 hp engine (GEN1) were as follows:

Stack height = 10 m; stack diameter = 0.312 meters; stack gas temperature = 1000K; flow velocity = 44.6 meters/second.

The final point source parameters for the 67 hp engine (GEN2) were as follows:

Stack height = 1.83 m; stack diameter = 0.074 meters; stack gas temperature = 550 K; flow velocity = 44.6 meters/second.

ATTACHMENT 2

CALCULATED SETBACK DISTANCES FOR

DEQ'S AIR IMPACT ANALYSES

Setback Distances for Specific Pollutants, Averaging Periods, and Meteorological Datasets		
Meteorological Data	**Setback (m)**	**Setback (m)**
	1-Hour NO2: 500 ton/hr throughput	**1-Hour SO2: 500 ton/hr throughput**
Minidoka	<100 m (max 181 µg/m^3)	<100 m (max 186 µg/m^3)
Sandpoint	<100 m (max 110 µg/m^3)	<100 m (max 119 µg/m^3)
Idaho Falls	<100 m (max 100 µg/m^3)	<100 m (max 104 µg/m^3)
Boise	<100 m (max 152 µg/m^3)	<100 m (max 121 µg/m^3)
Soda Springs	<100 m (max 178 µg/m^3)	<100 m (max 185 µg/m^3)
Aberdeen	<100 m (max 133 µg/m^3)	
Twin Falls	<100 m (max 126 µg/m^3)	
$PM_{2.5}$ 24-hour Modeling Results	**6,250 ton/day throughput**	**5,625 ton/day throughput**
Minidoka	140	125
Sandpoint	120	
Idaho Falls	<100 m (max 34.4 µg/m^3)	
Boise	120	
Soda Springs	120	
Aberdeen	110	
Twin Falls	<100 m (max 32.8 µg/m^3)	
$PM_{2.5}$ 24-hour Modeling Results	**5,000 ton/day throughput**	**4,375 ton/day throughput**
Minidoka	115	110
Sandpoint		<100 m (max 33.2 µg/m^3)
Idaho Falls		
Boise		<100 m (max 32.2 µg/m^3)
Soda Springs		<100 m (max 32.8 µg/m^3)
Twin Falls		<100 m (max 29.6 µg/m^3)
PM_{10} 24-hour Modeling Results	**6,250 ton/day throughput**	**5,625 ton/day throughput**
Minidoka	120	110
Sandpoint	120	
Idaho Falls	<100 m (max 147 µg/m^3)	
Boise	130	
Soda Springs	110	<100 m (max 146 µg/m^3)
Aberdeen	120	
Twin Falls	130	
PM_{10} 24-hour Modeling Results	**5,000 ton/day throughput**	**4,375 ton/day throughput**
Minidoka	<100 m (max 147 µg/m^3)	<100 m (max 138 µg/m^3)
Sandpoint		<100 m (max 136 µg/m^3)
Boise		<100 m (max 142 µg/m^3)
Soda Springs		<100 m (max 131 µg/m^3)
Twin Falls		<100 m (max 119 µg/m^3)
$PM_{2.5}$ Annual Modeling Results for 1,193,750 ton/yr throughput		
Minidoka	<100 m (max 9.22 µg/m^3)	
Soda Springs	<100 m (max 9.81 µg/m^3)	
Boise	<100 m (max 10.29 µg/m^3)	
TAPs Modeling Results for 6,250 ton/day, 1,193,750 ton/yr throughput		
	no T-RACT Setback	**T-RACT Setback**
Minidoka Met		
POM AACC = 3.0 E-4	250	<100
PAH AACC = 1.4 E-2	375	<100
formaldehyde AACC = 7.7 E-2	300	<100

arsenic AACC = 2.3 E-4	>550	<100
Chromium 6+ AACC = 8.3 E-5	<100	<100
nickel AACC = 4.2 E-3	160	<100
benzene AACC = 1.2 E-1	<100	<100
acetaldehyde AACC = 4.5 E-1		<100
Dioxins/furans AACC = 2.2E-8	<100	<100
Propionaldehyde AAC = 2.15E+1	<100	<100
Quinone AAC = 2.0E+1	<100	<100
HCl AAC = 3.75E+1	<100	<100
Phosphorus AAC = 5.0 E+0	<100	<100

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on April 2, 2012:

Facility Comment #1: Table 1, Page 3

Under the maximum production rates listed for the Asphalt Drum Dryer, the draft states "6,250 T/yr". This should be revised to read "6,250 T/day".

Under the fuels listed for the Asphalt Drum Dryer and Asphaltic Oil Tank Heater, please add "reprocessed fuel oil". Reprocessed fuel oil is listed as an allowable fuel in Permit Condition 22, but has been omitted from Table 1.

DEQ Response #1: The typographical error of T/yr has been updated to T/day as was intended. Reprocessed fuel oil was also added to Table 1 for the drum dryer and asphaltic tank heater.

Facility Comment #2: Permit Condition 9, Page 6. Please revise the frequency specified for facility inspections from daily to weekly, to maintain consistency with the weekly inspection frequency specified in Permit Condition 3, Page 4.

DEQ Response #2: The condition was updated to weekly as requested.

Facility Comment #3: Permit Condition 7, Page 5. Please insert the word "existing" immediately before the term "air quality non-attainment area".

DEQ Response #3: This requested change has not been made. The current language is: "The permittee shall not move and operate any equipment authorized by this permit to any air quality non-attainment area in the State of Idaho". The intent of that language is to prohibit the relocation of a HMA plant into a non-attainment area following the site being designated as such. The current language does not prohibit a plant from locating in an attainment area, having that location become non-attainment and continuing to operate at that location. The key verbiage is "move" and "operate". If the plant is already located and a site becomes non-attainment, the plant is not "moving into" a non-attainment area and can continue to operate accordingly. The addition of the word "existing" could be interpreted as being tied to the issuance date of the permit, not at the time of relocation. Therefore, to avoid any confusion this requested change has not been made. Additionally, keeping the current language maintains consistency between other HMA permits issued by Idaho DEQ.

Facility Comment #4: Permit Condition 13, Page 7. Please include "reprocessed fuel oil" in the fuel types listed for use in the asphalt drum mixer. Reprocessed fuel oil is listed as an allowable fuel in Permit Condition 22, but has been omitted from Permit Condition 13.

DEQ Response #4: This requested change has been made to remain consistency amongst the two permit conditions.

Facility Comment #5: Permit Condition 22, Pages 8 and 9. Please revise "Used Oil" to state "Used or Recycled Oil" for completeness and clarity.

DEQ Response #5: This requested change was made.

Facility Comment #6: Permit Condition 63, Page 19. Please revise the "30 day" deadline for submission of the performance test report to "60 days" to allow for sufficient time to prepare the report after the source test has been completed.

DEQ Response #6: This requested change was made.

APPENDIX D – PROCESSING FEE

PTC Fee Calculation

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company:	**Western Construction, Inc.**
Address:	**PO Box 15569**
City:	**Boise**
State:	**Idaho**
Zip Code:	**83715**
Facility Contact:	**Jason Jones**
Title:	**Estimator**
AIRS No.:	**777-00518**

N	Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N
Y	Did this permit require engineering analysis? Y/N
N	Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	53.0	0	53.0
SO_2	33.1	0	33.1
CO	90.6	0	90.6
PM2.5	8.2	0	8.2
VOC	33.2	0	33.2
TAPS/HAPS	6.7	0	6.7
Total:	224.8	0	**224.8**
Fee Due	**$ 7,500.00**		

Comments: The processing fee of $7500 is in accordance with IDAPA 58.01.01.225 as the increase in total annual emissions is greater than 100 T/yr.