Statement of Basis
Hot Mix Asphalt Plant General Permit

Permit to Construct No. P-2020.0002
Project ID 62362

POE Asphalt Paving, Inc. - 00611
Lewiston, Idaho

Facility ID 777-00611

Facility Review

March 26, 2020
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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.

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
BACT	Best Available Control Technology
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
mg/dscm	milligrams per dry standard cubic meter
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
PW	process weight rate
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
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
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
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

POE Asphalt Paving, 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, 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.

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.

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 1.5% 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% 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 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.

The Applicant has also proposed asphalt production rate throughput limits of 450 tons per hour, 6,300 tons per day, and 400,000 tons per year.

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

January 8, 2020	DEQ received an application and an application fee.
January 8, 2020	DEQ received the permit processing fee.
January 13 – February 12, 2020	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
February 6, 2020	DEQ received supplemental information from the applicant.
February 7, 2020	DEQ determined that the application was complete.
March 10, 2020	DEQ made available the draft permit and statement of basis for peer and regional office review.
March 13, 2020	DEQ made available the draft permit and statement of basis for applicant review.
March 26, 2020	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 1.5% by weight, using water sprays, using shrouds, or will use other emissions controls to minimize PM_{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.
Materials Handling	Material Transfer Points: Materials handling Asphalt aggregate transfers Truck unloading of aggregate Aggregate conveyor transfers Aggregate handling	Maintaining the moisture content in ¼" or smaller aggregate material at 1.5% by weight, using water sprays, using shrouds, or other emissions controls	N/A
Hot Mix Asphalt Drum Mixer	Asphalt Drum Mixer: Manufacturer: GenCor Model: UltraDrum - 400 Type: Counter-flow Manufacture Date: 2020 Max. production: 450 T/hr, 6,300 T/day, and 400,000 T/yr Fuel(s): Natural gas, LPG/propane, #2 fuel oil, and used oil (RFO) Sulfur content: 0.05% by weight	Asphalt Drum Mixer Baghouse: Manufacturer: GenCor Model: CFP-182 Flow rate: 35,851 dscf PM_{10} control efficiency: 99.93%	Exit height: 31.73 ft Exit diameter: 4.66 ft Exit flow rate: 89,217 acfm Exit temperature: 277°F
Asphaltic Oil Tank Heater	Asphaltic Oil Tank Heater: Heat input rating: 2.0 MMBtu/hr Fuel(s): #2 fuel oil Sulfur content: 0.05% by weight	N/A	Exit Height: 11.75 ft
Primary IC Engine	Primary IC Engine: Manufacturer: CAT or equivalent Model: XQ 1500 or equivalent Manufacture Date: 2001 Max. power rating: 1961 bhp Fuel: ULSD diesel Sulfur content: 0.0015% by weight Daily operational limit: 24 hrs/day Annual operational limit: 727 hrs/yr	N/A	Exit height: 13.5 ft Exit flow rate: 11,167 acfm Exit temperature: 820 °F
Secondary IC Engine	Secondary IC Engine: Manufacturer: Perkins Prime Power Model: 90KW Manufacture Date: 1998 Max. power rating: 165 bhp Fuel: ULSD diesel Sulfur content: 0.0015% by weight Daily operational limit: 24 hrs/day Annual use limit: 727 hrs/yr	N/A	Exit height: 10.25 ft Exit Diameter: 5 in Exit temperature: 872 °F

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 the DEQ developed HMA EI spreadsheet (see Appendix A). Emissions estimates of criteria pollutant PTE were based on the following assumptions:

- Maximum asphalt throughput does not exceed 450 ton HMA/hour, 6,300 ton HMA/day, and 400,000 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.
- 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 1961 bhp, and proposed operation of up to 24 hour/day and 727 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 165 bhp and proposed operation of up to 24 hour/day and 727 hour/year (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 uncontrolled emissions were assumed to be based upon four times the proposed annual throughput (4 x 400,000 T/yr = 1,600,000 T/yr).
- For the asphaltic oil tank heater controlled emissions were scaled up from 4,000 hours per year of permitted operation (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 727 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 emissions were scaled up from 727 hours per year of permitted operation (as proposed by the Applicant) to 8,760 hours per year for full-time operation.

The following table presents the uncontrolled Potential to Emit for criteria pollutants as calculated per the DEQ HMA EI spreadsheet. 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	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC	CO_2e
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Asphalt drum mixer	2640	71.20	44.00	104.00	25.60	38,728
Asphaltic oil tank heater	0.211	0.454	1.53	0.32	0.0355	
Primary IC engine and Secondary IC engine	7.58	0.0911	141.00	166.00	20.2	
Load-out and silo filling	0.886	0.00	0.00	2.02	3.23	
Total	**2648.68**	**71.75**	**186.53**	**272.34**	**49.07**	**38,728.0**

The following table presents the uncontrolled Potential to Emit for HAP pollutants as calculated per the DEQ HMA EI spreadsheet. See Appendix A for a detailed presentation of the calculations emissions for each emissions unit. Worst-case HAPs emissions were based upon the same assumptions as for criteria pollutants.

Table 3 UNCONTROLLED POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS

IDAPA Listing	Hazardous Air Pollutants	Uncontrolled PTE (T/yr)
585	Dioxins	1.58E-07
	Furans	2.63E-07
	Acrolein	2.17E-02
	Antimony	4.8E-04
	Barium	4.8E-03
	Chromium	4.45E-03
	Cobalt	4.06E-04
	Copper	2.59E-03
	Ethyl benzene	1.92E-01
	Hexane	7.36E-01
	Manganese	6.35E-03
	Methyl chloroform	3.84E-02
	Methyl ethyl ketone (MEK)	1.60E-02
	Molybdenum	5.03E-05
	Naphthalene	5.29E-01
	Pentane	0.00
	Phosphorus	2.3E-02
	Propionaldehyde	1.04E-01
	Quinone	1.28E-01
	Selenium	3.24E-04
	Silver	3.84E-04
	Thallium	3.28E-06
	Toluene	2.34
	Vanadium	2.03E-03
	Xylene	1.73E-01
	Zinc	5.07E-02
586	Acetaldehyde	1.05
	Arsenic	5.32E-04
	Benzene	0.363
	Benzo(a)anthracene	2.14E-04
	Benzo(a)pyrene	2.42E-05
	Benzo(b)fluoranthene	1.54E-04
	Benzo(k)fluoranthene	4.67E-05
	Beryllium	1.78E-06
	1,3-Butadiene	1.98E-04
	Cadmium	3.53E-04
	Chrysene	2.38E-04
	Dibenzo(a,h)anthracene	2.38E-05
	Formaldehyde	2.49
	Hexavalent Chromium	3.76E-04
	Indeno(1,2,3-cd)pyrene	3.24E-05
	3-Methylchloranthrene	0.00
	Nickel	5.58E-02

Not Listed	Acenaphthene	1.44E-03
	Acenaphthylene	1.82E-02
	Anthracene	2.57E-03
	Benzo(e)pyrene	8.80E-05
	Benzo(g,h,l)perylene	6.79E-05
	Dichlorobenzene	0.00
	Fluoranthene	7.72E-04
	Fluorene	9.72E-03
	Isooctane	3.20E-02
	Mercury	2.09E-03
	2-Methylnaphthalene	1.36E-01
	Perylene	7.04E-06
	Phenanthrene	2.13E-02
	Pyrene	2.65E-03
Total		**8.73**

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 4 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions Unit	$PM_{10}/PM_{2.5}$		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)]	T/yr[(b)]
Asphalt drum mixer	10.35	4.60	40.05	17.80	24.75	11.00	58.50	26.00	14.40	6.40	8,092.24
Asphaltic oil tank heater	0.0336	0.0671	0.104	0.207	0.35	0.701	0.073	0.146	0.00812	0.0162	
Primary IC engine and Secondary IC engine	2.10	0.763	0.0218	0.00756	32.20	11.70	37.80	13.8	4.61	1.67	
Load-out and silo filling	0.499	0.222	0.00	0.00	0.00	0.00	1.14	0.506	1.81	0.806	
Post Project Totals	**12.98**	**5.65**	**40.18**	**18.01**	**57.30**	**23.40**	**97.51**	**40.45**	**20.83**	**8.89**	**8,092.2**

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.

As demonstrated in Tables 2 and 4, this facility has uncontrolled potential to emit for SO_2 and VOC, and CO_2e emissions less than the Major Source threshold of 100 T/yr and 100,000 T/yr respectively and a controlled potential to emit for PM_{10}, SO_2, NO_X, CO, and VOC, and CO_2e emissions less than the Major Source threshold of 100 T/yr and 100,000 T/yr respectively. In addition, as demonstrated in Table 3, this facility has an uncontrolled potential to emit for HAP emissions less than the Major Source threshold of 10 T/yr for any one HAP and 25 T/y for all HAPs combined. Therefore, this facility is designated as a Minor 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 5 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions	$PM_{10}/PM_{2.5}$		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	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
Post Project Potential to Emit	12.98	5.65	40.18	18.01	57.30	23.40	97.51	40.45	20.83	8.89	8,092.2
Changes in Potential to Emit	**12.98**	**5.65**	**40.18**	**18.01**	**57.30**	**23.40**	**97.51**	**40.45**	**20.83**	**8.89**	**8,092.2**

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 6 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	2.20E-01	**0.2200**	**119**	**No**
Acrolein	0.00E-03	6.83E-03	**0.0068**	**0.017**	**No**
Antimony	0.00E-03	1.24E-04	**0.0001**	**0.033**	**No**
Barium	0.00E-03	1.56E-03	**0.0016**	**0.033**	**No**
Carbon disulfide	0.00E-03	6.54E-04	**0.0015**	**2**	**No**
Chromium metal (II and III)	0.00E-03	1.46E-03	**0.0015**	**0.033**	**No**
Cobalt metal dust, and fume	0.00E-03	9.47E-05	**0.0001**	**0.0033**	**No**
Copper (fume)	0.00E-03	8.39E-04	**0.0008**	**0.013**	**No**
Crotonaldehyde	0.00E-03	2.26E-02	**0.0226**	**0.38**	**No**
Cumene	0.00E-03	1.20E-03	**0.0012**	**16.3**	**No**
Ethyl benzene	0.00E-03	6.73E-02	**0.0673**	**29**	**No**
Ethyl chloride (Chloroethane)	0.00E-03	1.30E-04	**0.0001**	**176**	**No**
Heptane	0.00E-03	2.47E-00	**2.4700**	**109**	**No**
Hexane	0.00E-03	2.46E-01	**0.2460**	**12**	**No**
Manganese as Mn (fume)	0.00E-03	2.07E-03	**0.0021**	**0.067**	**No**
Mercury (alkyl compounds as Hg)	0.00E-03	6.84E-04	**0.0007**	**0.001**	**No**
Methyl bromide	0.00E-03	2.62E-04	**0.0003**	**1.27**	**No**
Methyl chloride (Chloromethane)	0.00E-03	9.00E-04	**0.0009**	**6.867**	**No**
Methyl chloroform	0.00E-03	1.26E-02	**0.0126**	**127**	**No**
Methyl ethyl ketone (MEK)	0.00E-03	7.03E-03	**0.0070**	**39.3**	**No**
Molybdenum (soluble)	0.00E-03	1.15E-05	**0.0000**	**0.333**	**No**
Pentane	0.00E-03	0.00E-03	**0.0000**	**118**	**No**
Phenol	0.00E-03	1.06E-03	**0.0011**	**1.27**	**No**
Phosphorous	0.00E-03	7.49E-03	**0.0075**	**0.007**	**Yes**
Propionaldehyde	0.00E-03	3.41E-02	**0.0341**	**0.0287**	**Yes**
Quinone	0.00E-03	4.20E-02	**0.0420**	**0.027**	**Yes**
Selenium	0.00E-03	1.02E-04	**0.0001**	**0.013**	**No**
Silver as Ag (soluble)	0.00E-03	1.26E-04	**0.0001**	**0.001**	**No**
Styrene monomer	0.00E-03	2.52E-04	**0.0003**	**6.67**	**No**
Thallium	0.00E-03	1.08E-06	**0.0000**	**0.007**	**No**
Toluene	0.00E-03	7.66E-01	**0.7660**	**25**	**No**
Trichloroethylene	0.00E-03	0.00E-03	**0.0000**	**17.93**	**No**
Vanadium as V_2O_5	0.00E-03	4.64E-04	**0.0005**	**0.003**	**No**
Xylene	0.00E-03	7.39E-02	**0.0739**	**29**	**No**
Zinc metal	0.00E-03	1.64E-02	**0.0164**	**0.667**	**No**

Some of the PTEs for non-carcinogenic TAPs were exceeded as a result of this project. Therefore, modeling is required for 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 7 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	5.94E-02	**0.0594**	**3.0E-03**	**Yes**
Arsenic	0.00E-03	3.44E-05	**0.000034**	**1.5E-06**	**Yes**
Benzene	0.00E-03	1.81E-02	**0.0181**	**8.0E-04**	**Yes**
Beryllium and compounds	0.00E-03	1.85E-07	**0.0000002**	**2.8E-05**	**No**
Cadmium and compounds	0.00E-03	2.14E-05	**0.0000222**	**3.7E-06**	**Yes**
Chromium (VI)	0.00E-03	2.22E-05	**0.000022**	**5.6E-07**	**Yes**
Dichloromethane	0.00E-03	8.64E-06	**0.000009**	**1.6E-03**	**No**
Formaldehyde	0.00E-03	1.46E-01	**0.1460**	**5.1E-04**	**Yes**
Nickel	0.00E-03	3.44E-03	**0.0034**	**2.7E-05**	**Yes**
PAHs Total	0.00E-03	8.74E-03	**0.0087**	**9.1E-05**	**Yes**
POM Total[a]	0.00E-03	7.75E-05	**0.000078**	**2.0E-06**	**Yes**
Tetrachloroethylene	0.00E-03	0.00E-03	**0.0000**	**1.3E-02**	**No**

a) 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. Therefore, modeling is required for Formaldehyde, Nickel, PAHs Total, POM Total, Cadmium and compounds, Chromium (VI), Acetaldehyde, Arsenic, and Benzene because the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

Post Project HAP Emissions

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, VOC, HAP, and TAP from this project were below 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 analysis 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).

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

As a result of the ambient air quality impact analysis, as well as information submitted by the Applicant for specific operating scenarios, the following conditions (along with corresponding monitoring and record keeping requirements) were placed in the permit:

- The Emissions Limits permit condition,
- The Asphalt Production Limits permit condition,
- The Allowable Raw Materials permit condition,
- The Asphalt Operation Setback Distance Requirements permit condition,
- The Simultaneous Operation Requirement permit condition, and
- The Relocation Requirement permit condition.

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 2.6.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

A	=	Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.
SM80	=	Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.
SM	=	Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.
B	=	Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.
UNK	=	Class is unknown

For All Other Pollutants:

A	=	Use when permitted emissions of a pollutant are > 100 T/yr.
SM80	=	Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.
SM	=	Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.
B	=	Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.
UNK	=	Class is unknown.

Table 8 Regulated Air Pollutant Facility Classification

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	2648.68	5.65	**100**	SM
PM_{10}	2648.68	5.65	**100**	SM
$PM_{2.5}$	2648.68	5.65	**100**	SM
SO_2	71.75	18.01	**100**	B
NO_X	186.53	23.4	**100**	SM
CO	272.34	40.45	**100**	SM
VOC	49.07	8.89	**100**	B
HAP (single)	2.49	0.621	**10**	B
Total HAPs	8.73	2.17	**25**	B

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 new portable drum-mix asphalt plant. 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 3.5 and 4.4.

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 2.1, 2.2, and 2.8.

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 ≥ 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 ≥ 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 450 T/hr, E is calculated as follows:

Proposed throughput = 450 T/hr x 2,000 lb/1 T = 900,000 lb/hr

Therefore, E is calculated as:

$E = 1.10 \times PW^{0.60} = 1.10 \times (900{,}000)^{0.25} = 33.88$ lb-PM/hr

As presented previously in the Emissions Inventories Section of this evaluation the post project PTE for this emissions unit is 12.98 lb-$PM_{10}/PM_{2.5}$ per hour. Assuming PM is 50% $PM_{10}/PM_{2.5}$ means that PM emissions will be 25.96 lb-PM/hr (12.98 lb- $PM_{10}/PM_{2.5}$ per hour ÷ 0.5 lb-$PM_{10}/PM_{2.5}$ per lb-PM). This is less than the calculated Rule requirement PM emissions rate of 33.88 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 2.7 and 2.10.

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 2.1 and 2.2.

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 PM_{10}, SO_2, NO_X, CO, VOC, and HAP 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.

Non-road Engine (40 CFR 1068)

40 CFR 1068	General Compliance Provisions for Highway, Stationary, and Non-road Programs

40 CFR 1068.30 defines a non-road engine is an internal combustion engine that is by itself or in or on a piece of equipment, it is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

An IC engine is not a non-road engine if it will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. For any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced, include the time period of both engines in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (*i.e.*, at least two years) and that operates at that single location approximately three months (or more) each year. See §1068.31 for provisions that apply if the engine is removed from the location.

For this project the facility has proposed a compression ignition IC engine that meets the definition of a non-road engine.

Note: If the IC engine remains at a site for more than 12 months, the facility shall submit an application for a PTC modification to permit the engine as stationary source IC engine.

This requirement is assured by Permit Condition 2.5.

NSPS Applicability (40 CFR 60)

Because the facility produces asphalt and has two compression ignition IC engines the following NSPS Subparts may be 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

DEQ has been delegated authority to this subpart.

Those sections that are applicable are highlighted.

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 3.4 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 3.12 and 3.13 includes the requirements of this section.

DEQ has been delegated authority to this subpart.

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 non-road engine provisions, are not required to meet any other provisions under this subpart with regard to such engines.

The requirements of NSPS Subpart IIII do not apply to non-road engines and therefore do not apply to the two IC engines proposed for this project.

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

However, the requirements of NESHAP Subpart ZZZZ do not apply to non-road engines and therefore do not apply to the two IC engines proposed for this project.

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 1.1 establishes the permit to construct scope.

Permit condition, Table 1.1, 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 2.1 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 2.2 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 2.3 establishes that the asphalt plant shall not collocate with a rock crushing plant, any other asphalt plant, or a concrete batch plant as requested by the Applicant.

Permit condition 2.4 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 2.5 establishes that the permittee shall relocate the HMA equipment to a new pit or storage area once every 12 months. This requirement was requested by the Applicant because this is how the plant will normally be operated and because it allowed the set-back distances, required through the Ambient Air Quality Analysis, to be less than what would be required if more than one year of operation at a site was requested.

Permit condition 2.6 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 2.7 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 2.8 establishes that the permittee shall monitor fugitive dust emissions on a daily basis to demonstrate compliance with the facility-wide permit requirements.

Permit condition 2.9 establishes that the permittee record the date and location of the HMA plant each time it is relocated to demonstrate compliance with the Relocation Demonstration permit condition.

Permit condition 2.10 establishes that the permittee monitor and record odor complaints to demonstrate compliance with the facility-wide permit requirements.

Permit Condition 2.11 establishes that the permittee shall maintain records as required by the Recordkeeping General Provision.

Asphalt Production Equipment

Permit condition 3.1 provides a process description of the asphalt production process at this facility.

Permit condition 3.2 provides a description of the control devices used on the asphalt production equipment at this facility.

Permit condition 3.3 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 3.4 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 3.5 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 3.6 establishes an hourly, a daily, and an annual asphalt production limit for the asphalt production operation as proposed by the Applicant.

Permit Condition 3.7 establishes limits for the raw materials used in the asphalt production operation as proposed by the Applicant.

Permit condition 3.8 establishes setback distance restrictions for the asphalt production operation when the IC engines are operating and not operating. The setback distance restrictions are based upon the results of the Ambient Air Quality Modeling Analysis performed for this project.

Permit Condition 3.9 establishes that a baghouse be used to control emissions from the asphalt drum mixer as proposed by the Applicant.

Permit Condition 3.10 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.

Permit Condition 3.11 establishes fuel use restrictions for combustion in the asphaltic oil tank heater. These fuel use restrictions were based on the fuels proposed by the Applicant to be combusted in the asphaltic oil tank heater.

Permit Condition 3.12 establishes PM performance testing requirements as required by 40 CFR 60, Subpart I for Hot Mix Asphalt Plants.

Permit Condition 3.13 establishes PM testing methods and procedures as required by 40 CFR 60, Subpart I for Hot Mix Asphalt Plants.

Permit Condition 3.14 establishes $PM_{2.5}$ performance testing requirements required by DEQ on asphalt plants located in the state of Idaho.

Permit Condition 3.15 establishes $PM_{2.5}$ performance testing methods and procedures required by DEQ on asphalt plants located in the state of Idaho.

Permit condition 3.16 establishes that the permittee monitor asphalt production, visible emissions, RAP percentage usage, and the fuel combusted in the asphalt drum mixer during the performance tests to establish the validity of the performance tests.

Permit condition 3.17 establishes that the Permittee monitor and record hourly and daily asphalt production to demonstrate compliance with the Asphalt Production Limits permit condition.

Permit condition 3.18 establishes that the Permittee calculate and record RAP use to demonstrate compliance with the Allowable Raw Materials permit condition.

Permit condition 3.19 establishes that the Permittee measure and record asphalt production equipment setback distances to demonstrate compliance with operating permit requirements.

Permit condition 3.20 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 3.21 establishes that the permittee monitor distillate fuel oil shipments to demonstrate compliance with operating permit requirements.

Permit condition 3.22 establishes that the permittee monitor and record biodiesel and biodiesel blends fuel shipments to demonstrate compliance with operating permit requirements.

Permit condition 3.23 establishes that the permittee monitor used oil fuel shipments to demonstrate compliance with the used oil fuel requirements of the permit.

Permit Condition 3.24 establishes that the permittee shall maintain records as required by the Recordkeeping General Provision.

Permit Condition 3.25 establishes that the permittee shall submit the results of the performance tests to the appropriate DEQ office.

Permit condition 3.26 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 3.27 incorporates 40 CFR 60, Subpart A – General Provisions.

Internal Combustion Engines

Permit condition 4.1 provides a process description of the IC engines process at this facility.

Permit condition 4.2 provides a description of the control devices used on the IC engines at this facility.

Permit condition 4.3 establishes hourly and annual emissions limits for $PM_{10}/PM_{2.5}$, SO_2, NO_X, CO, and VOC emissions from the IC engines at this facility.

As discussed previously, Permit Condition 4.4 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 4.5 establishes that the Primary IC engine shall be EPA Tier certified to the certification proposed by the Applicant.

Permit condition 4.6 establishes that the Secondary IC engine shall be EPA Tier certified to the certification proposed by the Applicant.

Permit Condition 4.7 establishes an annual operation limit for the Primary IC Engine as proposed by the Applicant.

Permit Condition 4.8 establishes an annual operation limit for the Secondary IC Engine as proposed by the Applicant.

Permit Condition 4.9 establishes that both IC engines not be operated simultaneously. This requirement was requested by the Applicant because this is how the IC engines will normally be operated and because it allowed the set-back distances, required through the Ambient Air Quality Analysis, to be less than what would be required if simultaneous operation was requested.

Permit Condition 4.10 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.

Permit condition 4.11 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 4.12 establishes that the permittee monitor and record daily operation of the Secondary IC Engine to demonstrate compliance with the Secondary IC Engine Operating Limits permit condition.

Permit condition 4.13 establishes that the daily operating requirements demonstrate that both IC engines are not operated simultaneously demonstrate compliance with the IC Engines Simultaneous Operation Requirement permit condition.

Permit condition 4.14 establishes that the permittee monitor distillate fuel oil shipments to demonstrate compliance with the distillate fuel oil requirements of the permit.

Permit Condition 4.15 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

Hot Mix Asphalt EI Spreadsheet

Idaho Department of Environmental Quality, Air Quality Division, Boise, Idaho **Version 8/2/18**

Information shown in bold blue on any worksheet indicates user input for that cell. Black or blue text (normal or bold) is calculated or hard-wired -- do not type over formulas in these cells.

These worksheets were developed to expedite processing of PTC permits for Hot Mix Asphalt (HMA) facilities that are collocated with only one rock crushing plant and no other sources of emissions within 1,000 feet.

User Input:

Facility Data Input worksheet: Input facility-specific data including contact information, equipment ratings, proposed HMA production levels, and tank heater and generator hours of operation. Select fuel types and generator options as noted below.

Short term source factor for carcinogens is set to "N", i.e., No. Do not change this to Y. Do not delete cells related to this as this will zero out carcinogenic emissions.

Using T-RACT for carcinogens is set to "N", i.e., No. Do not change this to Y. If appropriate, apply T-RACT factor of 10 to the carcinogenic ambient impact results from the modeling analysis.

Asphalt Drum Mixer/Dryer with Fabric Filter (Baghouse), either counterflow or parallel flow, fired by the following fuels:

For distallate fuel oil the default is 0.5% sulfur content by weight. User input is required in "Facility Data Input" for any other sulfur content.
For used Oil/RFO4 the default is 0.5% sulfur content by weight. User input required in "Facility Data Input" for any other sulfur content.
Natural gas
LPG/propane
Note: For Facility Data Input., input "1" (use this fuel) or "0" (don't use this fuel).
Note: The EI summary sheets will use the highest emission for any selected fuel for each pollutant.

Asphaltic Oil Tank Heater, either fired by #2 fuel oil or natural gas

Note: For Facility Data Input., input "1" (use this fuel) or "0" (don't use this fuel).
Note: If line power is **ALWAYS** used to power the Asphaltic oil tank heater, input "0" for each fuel.
For distallate fuel oil the default is 0.5% sulfur content by weight. User input is required in "Facility Data Input" for any other sulfur content.
Note: The EI summary sheets will use the highest emission for any selected fuel for each pollutant.

For IC Engines Powering Electrical Generators (with a maximum of one small, less than 600 bhp, and/or one large IC engine, greater than 600 bhp)

Facility Data Input: Input "1" (include IC engine) or "0" (omit IC engine). If the engine is a "non-road" IC engine (thus not stationary), "0" should be selected for fuel.
For distallate fuel oil the default is 0.5% sulfur content by weight. User input is required in "Facility Data Input" for any other sulfur content.
Engine Certification: Input whether or not the IC engine is certified, or is certfied to meet EPA Tier 1, Tier 2, Tier 3, Tier 4 or Blue Sky standards.
The EI will use the appropriate EFs for either a large or small diesel-fueled generator. EI summary sheets combine contributions from just one small (< 600 bhp) and/or one large (> 600 bhp) generator.

General Assumptions (see the next tab sheet for specific assumptions for each tab sheet):

This emissions evaluation is based on IDAPA regulatory requirements current as of spreadsheet version date.
EFs are drawn from AP-42 factors available as of spreadsheet version date.
Average brake-specific fuel consumption of 7,000 Btu/hp-hr was assumed to convert from lb/MMBtu to lb/hp-hr.
Average diesel heating value is based on 19,300 Btu/lb with a density of 7.1 lb/gal.
AP-42 EFs for natural gas combustion (Tables 1.4-xx) are based on heat value of 1,020 Btu/scf.
Natural Gas Fuel Heating Value assumed to be 137,030 Btu/gal.
"Reasonable" AP-42 factors are used. Where factors were available in more than one AP-42 section, the estimates are based on the highest of the available factors. For example, AP-42 11.1 EFs for a tank heater burning #2 oil include no information for emissions of PM, NOx, SOx, VOCs, or lead, which is not reasonable. Criteria pollutant EFs from AP-42 1.3, Fuel Oil Combustion, are used instead, and are considered reasonable.
Fugitive Emissions: Fugitive PM emissions from storage piles are typically caused by front-end loader operations that transport the aggregate to the cold feed unit hoppers. Piles of RAP, because RAP is coated with asphalt cement, are not likely to cause significant fugitive dust problems. Aggregate moisture content prior to entry into the dryer is typically 3 percent to 7 percent. This moisture content, along with aggregate size classification, tend to minimize emissions from these sources, which contribute little to total facility PM emissions. PM10 emissions from these sources are reported to account for about 19 percent of their total PM emissions. *Source: STAPPA-ALAPCO-EPA, Preferred and Alternative Methods for Estimating Air Emissions from Hot-Mix Asphalt Plants, Final Report, July 1996. DEQ* CONCLUSION: Negligible fine PM emissions from RAP. Worst-case fugitive emissions from material handling are for 0% RAP. Assume aggregate/RAP

Worksheet Tabs: Letter-Number reflect Location and Order in Statement of Basis

Facility Data Input (primary worksheet for user **input** of facility-specific parameters)
EmissionInventory lb/hr - Drum dryer baghouse, tank heater, generator, silo filling, and load-out
EmissionInventory TPY - Drum dryer baghouse, tank heater, generator, silo filling, and load-out
Values in Emission Inventories reflect the maximum emissions ONLY from fuel types selected.
FACWIDE TAPs ELs. Used for TAPs EL screening. Includes silo/loadout fugitives.
Lb/hr emissions shown are 24-hr averages for noncarcinogens and annual averages for carcinogens.
Modeling - Criteria Pollutants 1-, 3-, 8-, 24-hour, and annual lb/hr emission rates
Modeling - TAPs 24-hour and annual lb/hr emission rates

Worksheets for Emissions based on Source and Fuel Type:

Drum Dryer Used Oil FabricFilter	Drum Dryer, fired on used oil or RF04 oil
Drum Dryer #2 Oil FabricFilter	Drum Dryer, fired on #2 fuel oil
Drum Dryer NG Fabric Filter	Drum Dryer, natural gas fired
Drum Dryer LPG or Propane FabricFilter	Drum Dryer, LPG or propane-fired
Tank Heater #2 Oil AP-42 1.3, 11.1	Asphalt Tank Heater, fired on #2 fuel oil
Tank Heater NG-AP42 11.1	Asphalt Tank Heater, natural gas fired
Tank Heater NG-AP42 1.4	Asphalt Tank Heater, natural gas fired
Silo Fill Operations	Fugitive emissions based on HMA throughput
Load-out Operations	Fugitive emissions based on HMA throughput

Scalping Screen & Transfer Points (Front-end Loader and Conveyors) - **Input # transfer pts, wind speeds & moisture**
IC1 Emission Factors (Selects appropriate EFs for non-certified engines and EPA Tier 1, 2, 3, and Blue Sky engines)
IC ENGINE 1< 600 bhp (< 447kW) #2 Fuel oil fired
IC2 Emission Factors (Selects appropriate EFs for non-certified engines and EPA Tier 1, 2, 3, and Blue Sky engines)
IC ENGINE 2 > 600 bhp (> 447kW) #2 Fuel oil fired

DEQ ASSUMPTIONS

DEQ assumptions for the "Drum Dryer UsedOil FabricFilter" Calculations
1. Drum Dryer may be either counter-flow or parallel flow (AP-42 specifies no diference in emissions from either type).
2. SO2 emissions are based on the sulfur content and the Scavenging Factor (varies from 50 to 97%). DEQ used a scavenging factor of 63%. The sulfur content of the three waste oil source tests averaged 0.44 % by weight.

DEQ assumptions for the "Drum Dryer NG FabricFilter" Calculations

DEQ assumptions for the "Drum Dryer #2 Oil FabricFilter" Calculations
1. SO2 emissions are based on the sulfur content and the Scavenging Factor (varies from 50 to 97%). DEQ used a scavenging factor of 63%. The sulfur content of the three waste oil source tests averaged 0.44 % by weight.

DEQ assumptions for the "Drum Dryer LPGProp FabricFilter" Calculations

DEQ assumptions for the "TankHtr #2 Oil-AP42 1.3,11.1" Calculations
1. VOC and TAPs emissions from the asphaltic oil storage tank were determined using Tanks 4.0.9d and the Working and Breathing losses were negligible (less than 1% of total VOC emissions).

DEQ assumptions for the "Tank Heater NG-AP42 11.1" Calculations
1. VOC and TAPs emissions from the asphaltic oil storage tank were determined using Tanks 4.0.9d and the Working and Breathing losses were negligible (less than 1% of total VOC emissions).

DEQ assumptions for the "Tank Heater NG-AP42 1.4" Calculations
1. VOC and TAPs emissions from the asphaltic oil storage tank were determined using Tanks 4.0.9d and the Working and Breathing losses were negligible (less than 1% of total VOC emissions).

DEQ assumptions for the "SiloFill Criteria&TAPs" Calculations
1. All PM10 is assumed to be PM2.5.

CURRENT PTC APPLICATION VALUES

DEQ Verification Worksheets: Hot Mix Asphalt (HMA) Drum Mix Facility Data

Facility ID/AIRS No.	777-00611	Spreadsheet Date	3/23/2020 13:08
Permit No.	P-2020.0002	DEQ Version Date	8/2/2018
Facility Owner/Company Name:	POE Asphalt Paving, Inc. - 00611		
Address:	Portable		
City, State, Zip:	Lewiston, ID 83501		
Facility Contact:	Jeremy Walkup		
Contact Number/ e-mail:	(509)758-5561 / jeremy@poeasphalt.com		
		Include Silo Fill & Loadout Emissions?	Y
Use Short Term Source Factor on 586 ELs? Y/N	N	**Use T-RACT on 586 AACC? Y/N**	N
Hot Mix Plant AP-42 Section 11.1	**Input (Bold Color) or Calculated Value (Black)**	**Fuel Type(s)**	**Fuel Type Toggle ("0" or "1")**
Drum Dryer Make/Model	GenCor/ Ultradrum - 400	Distallate (#2) Fuel Oil	1
Rated heat input capacity, MMBtu/hr	135	Used Oil or RFO4 Oil	1
Drum Dryer Hourly HMA Production, Tons/hour	450	Natural Gas	1
Max Production Per day, Tons per day	6,300	LPG or Propane	1
Max Annual HMA Production, Tons/year	400,000	Default #2 fuel oil and used oil sulfur content percentage by weight	0.0015% and 0.5%
Min Hours of operation per year (annual/max hourly production)	889	#2 Fuel Oil Max Sulfur Content	0.0500%
		Used Oil/RFO4 Oil Max Sulfur Content	0.5000%

Asphaltic Oil Tank Heater AP-42, Section 11.1 (oil or natural gas fuel), or Section 1.4 (natural gas fuel)			
Rated heat input capacity, MMBtu/hr	2.000	**Fuel Type(s)**	**Fuel Toggle**
Hours of operation per day	24	#2 Fuel Oil	1
Operation, days per year (DEQ Assumption)	166.67	Fuel oil sulfur content	0.050%
Max Hours of operation per year (DEQ Assumption)	4,000	Natural Gas	0

Asphaltic Oil Tank Heater Fuel Consumption Calculations	**#2 Fuel Oil**	**Natural Gas**
Heat Input Rating, MMBtu/hr	2.000	2.000
Fuel Heating Value, Btu/gal (oil) or Btu/scf (gas)	137,030	1,020
Heating Value Correction for Natural Gas EFs, see Note	n/a	1.000
Theoretical Max Fuel Use Rate gal/hr [oil] or scf/hr [gas]	14.60	1,961
Max Operational Hours per Year	4,000	4,000
Note: AP-42 EFs for natural gas and diesel combustion are based on heat value of 1,020 Btu/scf and 137,030 Btu/gal		

IC Engine EI Conversion Factors			
1 hp = 0.7456999 kW	0.7457	1 lb = (g)	453.59
Avg brake-specific fuel consumption (BSFC) = 7000 Btu/hp-hr	7000	Fuel Heating Value, Btu/gal	137,030
Note: AP-42 Tables 3.3-x,3.4-x: avg. diesel heating value is based on 19,300 Btu/lb with density equal 7.1 lb/gal=> Btu/gal =			137,030

NOTE: THE HMA EI SUMMARY WORKSHEETS ONLY ALLOWS ONE SMALL AND/OR ONE LARGE IC ENGINE.

IC Engine 1 < 600 bhp (447 kW) AP-42 Section 3.3 (diesel fueled)			
IC Engine Make/Model	Perkins Prime Power / 90KW	**Fuel Type(s)**	**IC Engine Toggle**
IC Engine Year Manufactured (yyyy)	1998	#2 Fuel Oil (Diesel)	1
IC Engine Max Rated Power (bhp)	165	Max Sulfur weight percentage	0.0015%
IC Engine Max Rated Capacity (kW)	123	Max Operational Hours/Day	24
		Max Operational Hours/Year	727
IC Engine 1 EPA Certification:	1	Calculated Max Fuel Use Rate, gal/hr	8.43
Not EPA-certified: Enter "0" (zero)		Calculated MMBtu/hr	1.16
Certified Tier I, Tier 2, Tier 3, or Tier 4: Enter 1, 2, 3, or 4			
Certified "BLUE SKY" engine: Enter 5			

IC Engine 2 > 600 bhp (447 kW) AP-42 Section 3.4 (diesel fueled)			
IC Engine Make/Model	CAT / XQ 1500	**Fuel Type(s)**	**IC Engine Toggle**
IC Engine Year Manufactured (yyyy)	2001	#2 Fuel Oil (Diesel)	1
IC Engine Rated Capacity (bhp)	1,961	Max Sulfur weight percentage	0.0015%
IC Engine Max Rated Capacity (kW)	1,462	Max Operational Hours per Day	24
		Max Operational Hours per Year	727
IC Engine 2 EPA Certification:	1	Calculated Max Fuel Use Rate, gal/hr	100.18
Not EPA-certified: Enter "0" (zero)		Calculated MMBtu/hr	13.73
Certified Tier I, Tier 2, Tier 3, or Tier 4: Enter 1, 2, 3, or 4			
Certified "BLUE SKY" engine: Enter 5			

Aggregate Handling - Fugitive Emissions		
U = mean wind speed (miles per hour)	10	
Moisture/Control % Considerations:		
AP-42 Table 11.19.2-2, Note b. Moisture content of uncontrolled sources ranged from 0.21 to 1.3%		
AP-42 Table 11.19.2-2, Note b. Moisture content of controlled (water spray) sources ranged from 0.55 to 2.88% -->		
		--> ~91.3% control for screening, ~95% control for conveyor tr
M = moisture content (%)	3	Bulk aggregate for HMAstypically stabilizes at 3 to 5% by weight.
If higher moisture is maintained, apply additional % control:	90.00%	For M=3% add 10% control. For M=5% add 15% control. 90% contro
Number of front-end loader drop points (aggregate and RAP) (DEQ Assumption)	2	Drops to storage pile(s) and drop(s) to bins
Aggregate weigh conveyor transfer points (DEQ Assumption)	2	Transfer from bins to conveyor & from conveyor to scaling screen

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID:** **P-2020.0002** **777-00611**

Used Oil Fired Drum Mix Asphalt Plant With Fabric Filter AP-42 Section 11.1

Fuel Type Toggle =	1	
Max Hourly Production	450	T/hr
Max Daily Production	6,300	Tons/day
Max Annual Production	400,000	Tons/yr

User Input Weight % Sulfur = 0.5000%
AP-42 EF of 0.058 lb SO2/ton presumed based on #2 oil, max 0.5% sulfur content
SO2 emissions are multiplied by a factor: User Input Value/0.5% = 1.00

Pollutant	Emission Factor[a] (lb/ton)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total) [b]	0.033	14.85	6.60	
PM-10 (total) [b]	0.023	10.35	4.60	
PM-2.5 [b1]	0.0223	10.04	4.46	
CO [c]	0.13	58.50	26.00	
NOx [c]	0.055	24.75	11.00	
SO_2 [c]	0.089	40.05	17.80	
VOC [d]	0.032	14.40	6.40	
Lead	1.50E-05	6.75E-03	3.00E-03	
HCl [d,e]	0.00021	0.0945	4.20E-02	
Dioxins[e,f]				
2,3,7,8-TCDD	2.10E-13	9.45E-11	4.20E-11	**9.59E-12**
Total TCDD	9.30E-13	4.19E-10	1.86E-10	**4.25E-11**
1,2,3,7,8-PeCDD	3.10E-13	1.40E-10	6.20E-11	**1.42E-11**
Total PeCDD	2.20E-11	9.90E-09	4.40E-09	**1.00E-09**
1,2,3,4,7,8-HxCDD	4.20E-13	1.89E-10	8.40E-11	**1.92E-11**
1,2,3,6,7,8-HxCDD	1.30E-12	5.85E-10	2.60E-10	**5.94E-11**
1,2,3,7,8,9-HxCDD	9.80E-13	4.41E-10	1.96E-10	**4.47E-11**
Total HxCDD	1.20E-11	5.40E-09	2.40E-09	**5.48E-10**
1,2,3,4,6,7,8-Hp-CDD	4.80E-12	2.16E-09	9.60E-10	**2.19E-10**
Total HpCDD	1.90E-11	8.55E-09	3.80E-09	**8.68E-10**
Octa CDD	2.50E-11	1.13E-08	5.00E-09	**1.14E-09**
Total PCDD[h]	7.90E-11	3.56E-08	1.58E-08	**3.61E-09**
Furans[e,f]				
2,3,7,8-TCDF	9.70E-13	4.37E-10	1.94E-10	**4.43E-11**
Total TCDF	3.70E-12	1.67E-09	7.40E-10	**1.69E-10**
1,2,3,7,8-PeCDF	4.30E-12	1.94E-09	8.60E-10	**1.96E-10**
2,3,4,7,8-PeCDF	8.40E-13	3.78E-10	1.68E-10	**3.84E-11**
Total PeCDF	8.40E-11	3.78E-08	1.68E-08	**3.84E-09**
1,2,3,4,7,8-HxCDF	4.00E-12	1.80E-09	8.00E-10	**1.83E-10**
1,2,3,6,7,8-HxCDF	1.20E-12	5.40E-10	2.40E-10	**5.48E-11**
2,3,4,6,7,8-HxCDF	1.90E-12	8.55E-10	3.80E-10	**8.68E-11**
1,2,3,7,8,9-HxCDF	8.40E-12	3.78E-09	1.68E-09	**3.84E-10**
Total HxCDF	1.30E-11	5.85E-09	2.60E-09	**5.94E-10**
1,2,3,4,6,7,8-HpCDF	6.50E-12	2.93E-09	1.30E-09	**2.97E-10**
1,2,3,4,7,8,9-HpCDF	2.70E-12	1.22E-09	5.40E-10	**1.23E-10**
Total HpCDF	1.00E-11	4.50E-09	2.00E-09	**4.57E-10**
Octa CDF	4.80E-12	2.16E-09	9.60E-10	**2.19E-10**
Total PCDF[h]	4.00E-11	1.80E-08	8.00E-09	**1.83E-09**
Total PCDD/PCDF[h]	1.20E-10	5.40E-08	2.40E-08	**5.48E-09**
Non-PAH HAPs[f]				
Acetaldehyde[e]	1.30E-03	5.85E-01	2.60E-01	**5.94E-02**
Acrolein[e]	2.60E-05	1.17E-02	5.20E-03	6.83E-03
Benzene[e]	3.90E-04	1.76E-01	7.80E-02	**1.78E-02**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	1.08E-01	4.80E-02	6.30E-02
Formaldehyde[e]	3.10E-03	1.40E+00	6.20E-01	**1.42E-01**
Hexane[e]	9.20E-04	4.14E-01	1.84E-01	2.42E-01
Isooctane	4.00E-05	1.80E-02	8.00E-03	1.05E-02
Methyl Ethyl Ketone[e]	2.00E-05	9.00E-03	4.00E-03	5.25E-03
Pentane[e]				
Propionaldehyde[e]	1.30E-04	5.85E-02	2.60E-02	3.41E-02
Quinone[e]	1.60E-04	7.20E-02	3.20E-02	4.20E-02
Methyl chloroform[e]	4.80E-05	2.16E-02	9.60E-03	1.26E-02
Toluene[e]	2.90E-03	1.31E+00	5.80E-01	7.61E-01
Xylene[e]	2.00E-04	9.00E-02	4.00E-02	5.25E-02
POM (7-PAH Group)		2.47E-04		**2.50E-05**

Pollutant	Emission Factor[a] (lb/ton)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PAH HAPs[f]				
2-Methylnaphthalene	1.70E-04	7.65E-02	3.40E-02	**7.76E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	6.30E-04	2.80E-04	**6.39E-05**
Acenaphthylene	2.20E-05	9.90E-03	4.40E-03	**1.00E-03**
Anthracene	3.10E-06	1.40E-03	6.20E-04	**1.42E-04**
Benzo(a)anthracene	2.10E-07	9.45E-05	4.20E-05	**9.59E-06**
Benzo(a)pyrene[e]	9.80E-09	4.41E-06	1.96E-06	**4.47E-07**
Benzo(b)fluoranthene	1.00E-07	4.50E-05	2.00E-05	**4.57E-06**
Benzo(e)pyrene	1.10E-07	4.95E-05	2.20E-05	**5.02E-06**
Benzo(g,h,i)perylene	4.00E-08	1.80E-05	8.00E-06	**1.83E-06**
Benzo(k)fluoranthene	4.10E-08	1.85E-05	8.20E-06	**1.87E-06**
Chrysene	1.80E-07	8.10E-05	3.60E-05	**8.22E-06**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	2.75E-04	1.22E-04	**2.79E-05**
Fluorene	1.10E-05	4.95E-03	2.20E-03	**5.02E-04**
Indeno(1,2,3-cd)pyrene	7.00E-09	3.15E-06	1.40E-06	**3.20E-07**
Naphthalene[e]	6.50E-04	2.93E-01	1.30E-01	**2.97E-02**
Perylene	8.80E-09	3.96E-06	1.76E-06	**4.02E-07**
Phenanthrene	2.30E-05	1.04E-02	4.60E-03	**1.05E-03**
Pyrene	3.00E-06	1.35E-03	6.00E-04	**1.37E-04**
Non-HAP Organic Compounds[f]				
Acetone[e]	8.30E-04	3.74E-01	1.66E-01	2.18E-01
Benzaldehyde	1.10E-04	4.95E-02	2.20E-02	2.89E-02
Butane	6.70E-04	3.02E-01	1.34E-01	1.76E-01
Butyraldehyde	1.60E-04	7.20E-02	3.20E-02	4.20E-02
Crotonaldehyde[e]	8.60E-05	3.87E-02	1.72E-02	2.26E-02
Ethylene	7.00E-03	3.15E+00	1.40E+00	1.84E+00
Heptane	9.40E-03	4.23E+00	1.88E+00	2.47E+00
Hexanal	1.10E-04	4.95E-02	2.20E-02	2.89E-02
Isovaleraldehyde	3.20E-05	1.44E-02	6.40E-03	8.40E-03
2-Methyl-1-pentene	4.00E-03	1.80E+00	8.00E-01	1.05E+00
2-Methyl-2-butene	5.80E-04	2.61E-01	1.16E-01	1.52E-01
3-Methylpentane	1.90E-04	8.55E-02	3.80E-02	4.99E-02
1-Pentene	2.20E-03	9.90E-01	4.40E-01	5.78E-01
n-Pentane	2.10E-04	9.45E-02	4.20E-02	5.51E-02
Valeraldehyde[e]	6.70E-05	3.02E-02	1.34E-02	1.76E-02
Metals[g]				
Antimony[e]	1.80E-07	8.10E-05	3.60E-05	4.73E-05
Arsenic[e]	5.60E-07	2.52E-04	1.12E-04	**2.56E-05**
Barium[e]	5.80E-06	2.61E-03	1.16E-03	1.52E-03
Beryllium[e]				
Cadmium[e]	4.10E-07	1.85E-04	8.20E-05	**1.87E-05**
Chromium[e]	5.50E-06	2.48E-03	1.10E-03	1.44E-03
Cobalt[e]	2.60E-08	1.17E-05	5.20E-06	6.83E-06
Copper[e]	3.10E-06	1.40E-03	6.20E-04	8.14E-04
Hexavalent Chromium[e]	4.50E-07	2.03E-04	9.00E-05	**2.05E-05**
Manganese[e]	7.70E-06	3.47E-03	1.54E-03	2.02E-03
Mercury[e]	2.60E-06	1.17E-03	5.20E-04	6.83E-04
Molybdenum[e]				
Nickel[e]	6.30E-05	2.84E-02	1.26E-02	**2.88E-03**
Phosphorus[e]	2.80E-05	1.26E-02	5.60E-03	7.35E-03
Silver[e]	4.80E-07	2.16E-04	9.60E-05	1.26E-04
Selenium[e]	3.50E-07	1.58E-04	7.00E-05	9.19E-05
Thallium[e]	4.10E-09	1.85E-06	8.20E-07	1.08E-06
Vanadium[e]				
Zinc[e]	6.10E-05	2.75E-02	1.22E-02	1.60E-02

a) Emission factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04
b) AP-42, Table 11.1-3, Particulate Matter Emission Factors for Drum Mix Hot Asphalt Plants, 3/04
b1) AP-42, Table 11.1-4, Summary of Particle Size Distribution for Drum Mix Dryers **(Emission Rating Factor E - "Poor")**
c) AP-42, Table 11.1-7, Emission Factors for CO. CO2, NOx, and SO2 from Drum Mix Hot Asphalt Plants, 3/04
In addition, for SO2 emissions the AP-42 EF of 0.058 lb/ton was adjusted twice. First, to account for the average sulfur content of the fuel used during the source test (0.44% by weight, three tests on waste oil), 0.058 to 0.066. Second, to account for the average scavenging factor of 63% down to 50%, 0.062 to 0.089.
d) AP-42, Table 11.1-8, Emission Factors for TOC, Methane, VOC, and HCl from Drum Mix Hot Asphalt Plants, 3/04
e) IDAPA Toxic Air Pollutant
f) AP-42, Table 11.1-10, Emission Factors for Organic Pollutant Emissions from Drum Mix Hot Asphalt Plants, 3/04
g) AP-42, Table 11.1-12, Emission Factors for Metal Emissions from Drum Mix Hot Mix Asphalt Plants, 3/04
h) Compound is classified as polycyclic organic matter, as defined in the 1990 CAAA. Total PCDD is the sum of the total tetra through octa dioxins; total PCDF is sum of the total tetra through octa furans; and total PCDD/PCDF is the sum of total PCDD and total PCDF.
Pollutants shown in bold/blue text are emitted when using Used Oil but not when using #2 Fuel Oil or Natural Gas.
Pollutants shown in magenta are emitted when using Used Oil or #2 Fuel Oil, but not when using Natural Gas

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Pollutants shown in blue text are emitted only when burning Used Oil, but not when burning #2 Fuel Oil or Natural Gas

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/ Facility ID: P-2020.0002 777-00611**

Natural Gas Fired Drum Mix Asphalt Plant With Fabric Filter AP-42 Section 11.1

Fuel Type Toggle =	1	
Max Hourly Production	450	Tons/hr
Max Daily Production	6,300	Tons/day
Max Annual Production	400,000	Tons/yr (Proposed Throughput Limit)

Pollutant	Emission Factor[a] (lb/ton)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total)[b]	0.033	14.85	6.60	
PM-10 (total)[b]	0.023	10.35	4.60	
PM-2.5 [b1]	0.0223	10.04	4.46	
CO [c]	0.13	58.50	26.00	
NOx [c]	0.026	11.70	5.20	
SO_2 [c]	0.0034	1.53	0.68	
VOC [d]	0.032	14.40	6.40	
Lead	6.20E-07	2.79E-04	1.24E-04	
HCl [d,e]	No Data			
Dioxins[e]				
-- No EFs for Natural Gas Fuel --				
Furans[e]				
-- No EFs for Natural Gas Fuel --				
Non-PAH HAPs[f]				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]	3.90E-04	1.76E-01	7.80E-02	**1.78E-02**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	1.08E-01	4.80E-02	6.30E-02
Formaldehyde[e]	3.10E-03	1.40E+00	6.20E-01	**1.42E-01**
Hexane[e]	9.20E-04	4.14E-01	1.84E-01	2.42E-01
Isooctane	4.00E-05	1.80E-02	8.00E-03	1.05E-02
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	2.16E-02	9.60E-03	1.26E-02
Toluene[e]	1.50E-04	6.75E-02	3.00E-02	3.94E-02
Xylene[e]	2.00E-04	9.00E-02	4.00E-02	5.25E-02
POM (7-PAH Group)		5.11E-02		**5.18E-03**

Pollutant	Emission Factor[a] (lb/ton)	Emissions (lb/hr)	Emissions (T/yr)	TAPS Emissions (lb/hr) **Annual** or 24-hr Average
PAH HAPs[f]				
2-Methylnaphthalene	7.40E-05	3.33E-02	1.48E-02	**3.38E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	6.30E-04	2.80E-04	**6.39E-05**
Acenaphthylene	8.60E-06	3.87E-03	1.72E-03	**3.93E-04**
Anthracene	2.20E-07	9.90E-05	4.40E-05	**1.00E-05**
Benzo(a)anthracene	2.10E-07	9.45E-05	4.20E-05	**9.59E-06**
Benzo(a)pyrene[e]	9.80E-09	4.41E-06	1.96E-06	**4.47E-07**
Benzo(b)fluoranthene	1.00E-07	4.50E-05	2.00E-05	**4.57E-06**
Benzo(e)pyrene	1.10E-07	4.95E-05	2.20E-05	**5.02E-06**
Benzo(g,h,l)perylene	4.00E-08	1.80E-05	8.00E-06	**1.83E-06**
Benzo(k)fluoranthene	4.10E-08	1.85E-05	8.20E-06	**1.87E-06**
Chrysene	1.80E-07	8.10E-05	3.60E-05	**8.22E-06**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	2.75E-04	1.22E-04	**2.79E-05**
Fluorene	3.80E-06	1.71E-03	7.60E-04	**1.74E-04**
Indeno(1,2,3-cd)pyrene	7.00E-09	3.15E-06	1.40E-06	**3.20E-07**
Naphthalene[e]	9.00E-05	4.05E-02	1.80E-02	**4.11E-03**
Perylene	8.80E-09	3.96E-06	1.76E-06	**4.02E-07**
Phenanthrene	7.60E-06	3.42E-03	1.52E-03	**3.47E-04**
Pyrene	5.40E-07	2.43E-04	1.08E-04	**2.47E-05**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	3.02E-01	1.34E-01	1.76E-01
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	3.15E+00	1.40E+00	1.84E+00
Heptane	9.40E-03	4.23E+00	1.88E+00	2.47E+00
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	1.80E+00	8.00E-01	1.05E+00
2-Methyl-2-butene	5.80E-04	2.61E-01	1.16E-01	1.52E-01
3-Methylpentane	1.90E-04	8.55E-02	3.80E-02	4.99E-02
1-Pentene	2.20E-03	9.90E-01	4.40E-01	5.78E-01
n-Pentane	2.10E-04	9.45E-02	4.20E-02	5.51E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	8.10E-05	3.60E-05	4.73E-05
Arsenic[e]	5.60E-07	2.52E-04	1.12E-04	**2.56E-05**
Barium[e]	5.80E-06	2.61E-03	1.16E-03	1.52E-03
Beryllium[e]				
Cadmium[e]	4.10E-07	1.85E-04	8.20E-05	**1.87E-05**
Chromium[e]	5.50E-06	2.48E-03	1.10E-03	1.44E-03
Cobalt[e]	2.60E-08	1.17E-05	5.20E-06	6.83E-06
Copper[e]	3.10E-06	1.40E-03	6.20E-04	8.14E-04
Hexavalent Chromium[e]	4.50E-07	2.03E-04	9.00E-05	**2.05E-05**
Manganese[e]	7.70E-06	3.47E-03	1.54E-03	2.02E-03
Mercury[e]	2.40E-07	1.08E-04	4.80E-05	6.30E-05
Molybdenum[e]				
Nickel[e]	6.30E-05	2.84E-02	1.26E-02	**2.88E-03**
Phosphorus[e]	2.80E-05	1.26E-02	5.60E-03	7.35E-03
Silver[e]	4.80E-07	2.16E-04	9.60E-05	1.26E-04
Selenium[e]	3.50E-07	1.58E-04	7.00E-05	9.19E-05
Thallium[e]	4.10E-09	1.85E-06	8.20E-07	1.08E-06
Vanadium[e]				
Zinc[e]	6.10E-05	2.75E-02	1.22E-02	1.60E-02

a) Emission factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04
b) AP-42, Table 11.1-3, Particulate Matter Emission Factors for Drum Mix Hot Asphalt Plants, 3/04
b1) AP-42, Table 11.1-4, Summary of Particle Size Distribution for Drum Mix Dryers **(Emission Rating Factor E - "Poor")**
c) AP-42, Table 11.1-7, Emission Factors for CO. CO2, NOx, and SO2 from Drum Mix Hot Asphalt Plants, 3/04
d) AP-42, Table 11.1-8, Emission Factors for TOC, Methane, VOC, and HCl from Drum Mix Hot Asphalt Plants, 3/04
e) IDAPA Toxic Air Pollutant
f) AP-42, Table 11.1-10, Emission Factors for Organic Pollutant Emissions from Drum Mix Hot Asphalt Plants, 3/04
g) AP-42, Table 11.1-12, Emission Factors for Metal Emissions from Drum Mix Hot Mix Asphalt Plants, 3/04

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID: P-2020.0002 777-00611**

#2 Fuel Oil Fired Drum Mix Asphalt Plant With Fabric Filter AP-42 Section 11.1

Fuel Type Toggle =	1	
Hourly Production	450	T/hr
Daily Production	6,300	Tons/day
Max Annual Production	400,000	Tons/yr

User Input Weight % Sulfur = 0.0500%
AP-42 EF of 0.058 lb SO2/ton presumed based on #2 oil, max 0.5% sulfur content
SO2 emissions are multiplied by a factor: User Input Value/0.5% = 0.100

Pollutant	Emission Factor[a] (lb/ton)	Emissions (lb/hr) Maximum	Emissions (T/yr)	TAPs Emissions (lb/hr) Annual or 24-hr Average
PM (total)[b]	0.033	14.85	6.60	
PM-10 (total)[b]	0.023	10.35	4.60	
PM-2.5[b1]	0.0223	10.04	4.46	
CO[c]	0.13	58.50	26.00	
NOx[c]	0.055	24.75	11.00	
SO_2[c]	0.089	4.01	1.78	
VOC[d]	0.032	14.40	6.40	
Lead	1.50E-05	6.75E-03	3.00E-03	
HCl[d,e]	No Data			
Dioxins[e]				
2,3,7,8-TCDD	2.10E-13	9.45E-11	4.20E-11	**9.59E-12**
Total TCDD	9.30E-13	4.185E-10	1.86E-10	**4.25E-11**
1,2,3,7,8-PeCDD	3.10E-13	1.395E-10	6.20E-11	**1.42E-11**
Total PeCDD	2.20E-11	9.9E-09	4.40E-09	**1.00E-09**
1,2,3,4,7,8-HxCDD	4.20E-13	1.89E-10	8.40E-11	**1.92E-11**
1,2,3,6,7,8-HxCDD	1.30E-12	5.85E-10	2.60E-10	**5.94E-11**
1,2,3,7,8,9-HxCDD	9.80E-13	4.41E-10	1.96E-10	**4.47E-11**
Total HxCDD	1.20E-11	5.4E-09	2.40E-09	**5.48E-10**
1,2,3,4,6,7,8-Hp-CDD	4.80E-12	2.16E-09	9.60E-10	**2.19E-10**
Total HpCDD	1.90E-11	8.55E-09	3.80E-09	**8.68E-10**
Octa CDD	2.50E-11	1.125E-08	5.00E-09	**1.14E-09**
Total PCDD[h]	7.90E-11	3.555E-08	1.58E-08	**3.61E-09**
Furans[e]				
2,3,7,8-TCDF	9.70E-13	4.365E-10	1.94E-10	**4.43E-11**
Total TCDF	3.70E-12	1.665E-09	7.40E-10	**1.69E-10**
1,2,3,7,8-PeCDF	4.30E-12	1.935E-09	8.60E-10	**1.96E-10**
2,3,4,7,8-PeCDF	8.40E-13	3.78E-10	1.68E-10	**3.84E-11**
Total PeCDF	8.40E-11	3.78E-08	1.68E-08	**3.84E-09**
1,2,3,4,7,8-HxCDF	4.00E-12	1.8E-09	8.00E-10	**1.83E-10**
1,2,3,6,7,8-HxCDF	1.20E-12	5.4E-10	2.40E-10	**5.48E-11**
2,3,4,6,7,8-HxCDF	1.90E-12	8.55E-10	3.80E-10	**8.68E-11**
1,2,3,7,8,9-HxCDF	8.40E-12	3.78E-09	1.68E-09	**3.84E-10**
Total HxCDF	1.30E-11	5.85E-09	2.60E-09	**5.94E-10**
1,2,3,4,6,7,8-HpCDF	6.50E-12	2.925E-09	1.30E-09	**2.97E-10**
1,2,3,4,7,8,9-HpCDF	2.70E-12	1.215E-09	5.40E-10	**1.23E-10**
Total HpCDF	1.00E-11	4.5E-09	2.00E-09	**4.57E-10**
Octa CDF	4.80E-12	2.16E-09	9.60E-10	**2.19E-10**
Total PCDF[h]	4.00E-11	1.8E-08	8.00E-09	**1.83E-09**
Total PCDD/PCDF[h]	1.20E-10	5.4E-08	2.40E-08	**5.48E-09**
Non-PAH HAPs[f]				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]	3.90E-04	1.76E-01	7.80E-02	**1.78E-02**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	1.08E-01	4.80E-02	6.30E-02
Formaldehyde[e]	3.10E-03	1.40E+00	6.20E-01	**1.42E-01**
Hexane[e]	9.20E-04	4.14E-01	1.84E-01	2.42E-01
Isooctane	4.00E-05	1.80E-02	8.00E-03	1.05E-02
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	2.16E-02	9.60E-03	1.26E-02
Toluene[e]	2.90E-03	1.31E+00	5.80E-01	7.61E-01
Xylene[e]	2.00E-04	9.00E-02	4.00E-02	5.25E-02
POM (7-PAH Group)		2.47E-04		**2.50E-05**

Pollutant	Emission Factor[a] (lb/ton)	Emissions (lb/hr) Maximum	Emissions (T/yr)	TAPs Emissions (lb/hr) Annual or 24-hr Average
PAH HAPs[f]				
2-Methylnaphthalene	0.00017	7.65E-02	3.40E-02	**7.76E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	6.30E-04	2.80E-04	**6.39E-05**
Acenaphthylene	2.20E-05	9.90E-03	4.40E-03	**1.00E-03**
Anthracene	3.10E-06	1.40E-03	6.20E-04	**1.42E-04**
Benzo(a)anthracene	2.10E-07	9.45E-05	4.20E-05	**9.59E-06**
Benzo(a)pyrene[e]	9.80E-09	4.41E-06	1.96E-06	**4.47E-07**
Benzo(b)fluoranthene	1.00E-07	4.50E-05	2.00E-05	**4.57E-06**
Benzo(e)pyrene	1.10E-07	4.95E-05	2.20E-05	**5.02E-06**
Benzo(g,h,l)perylene	4.00E-08	1.80E-05	8.00E-06	**1.83E-06**
Benzo(k)fluoranthene	4.10E-08	1.85E-05	8.20E-06	**1.87E-06**
Chrysene	1.80E-07	8.10E-05	3.60E-05	**8.22E-06**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	2.75E-04	1.22E-04	**2.79E-05**
Fluorene	1.10E-05	4.95E-03	2.20E-03	**5.02E-04**
Indeno(1,2,3-cd)pyrene	7.00E-09	3.15E-06	1.40E-06	**3.20E-07**
Naphthalene[e]	0.00065	2.93E-01	1.30E-01	**2.97E-02**
Perylene	8.80E-09	3.96E-06	1.76E-06	**4.02E-07**
Phenanthrene	2.30E-05	1.04E-02	4.60E-03	**1.05E-03**
Pyrene	3.00E-06	1.35E-03	6.00E-04	**1.37E-04**
Non-HAP Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	3.02E-01	1.34E-01	1.76E-01
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	3.15E+00	1.40E+00	1.84E+00
Heptane	9.40E-03	4.23E+00	1.88E+00	2.47E+00
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	1.80E+00	8.00E-01	1.05E+00
2-Methyl-2-butene	5.80E-04	2.61E-01	1.16E-01	1.52E-01
3-Methylpentane	1.90E-04	8.55E-02	3.80E-02	4.99E-02
1-Pentene	2.20E-03	9.90E-01	4.40E-01	5.78E-01
n-Pentane	2.10E-04	9.45E-02	4.20E-02	5.51E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	8.10E-05	3.60E-05	4.73E-05
Arsenic[e]	5.60E-07	2.52E-04	1.12E-04	**2.56E-05**
Barium[e]	5.80E-06	2.61E-03	1.16E-03	1.52E-03
Beryllium[e]				
Cadmium[e]	4.10E-07	1.85E-04	8.20E-05	**1.87E-05**
Chromium[e]	5.50E-06	2.48E-03	1.10E-03	1.44E-03
Cobalt[e]	2.60E-08	1.17E-05	5.20E-06	6.83E-06
Copper[e]	3.10E-06	1.40E-03	6.20E-04	8.14E-04
Hexavalent Chromium[e]	4.50E-07	2.03E-04	9.00E-05	**2.05E-05**
Manganese[e]	7.70E-06	3.47E-03	1.54E-03	2.02E-03
Mercury[e]	2.60E-06	1.17E-03	5.20E-04	6.83E-04
Molybdenum[e]				
Nickel[e]	6.30E-05	2.84E-02	1.26E-02	**2.88E-03**
Phosphorus[e]	2.80E-05	1.26E-02	5.60E-03	7.35E-03
Silver[e]	4.80E-07	2.16E-04	9.60E-05	1.26E-04
Selenium[e]	3.50E-07	1.58E-04	7.00E-05	9.19E-05
Thallium[e]	4.10E-09	1.85E-06	8.20E-07	1.08E-06
Vanadium[e]				
Zinc[e]	6.10E-05	2.75E-02	1.22E-02	1.60E-02

a) Emission factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04
b) AP-42, Table 11.1-3, Particulate Matter Emission Factors for Drum Mix Hot Asphalt Plants, 3/04
b1) AP-42, Table 11.1-4, Summary of Particle Size Distribution for Drum Mix Dryers **(Emission Rating Factor E - "Poor")**
c) AP-42, Table 11.1-7, Emission Factors for CO. CO2, NOx, and SO2 from Drum Mix Hot Asphalt Plants, 3/04
In addition, for SO2 emissions the AP-42 EF of 0.058 lb/ton was adjusted twice. First, to account for the average sulfur content of the fuel used during the source test (0.44% by weight, three tests on waste oil), 0.058 to 0.066. Second, to account for the average scavenging factor of 63% down to 50%, 0.062 to 0.089.
d) AP-42, Table 11.1-8, Emission Factors for TOC, Methane, VOC, and HCl from Drum Mix Hot Asphalt Plants, 3/04
e) IDAPA Toxic Air Pollutant
f) AP-42, Table 11.1-10, Emission Factors for Organic Pollutant Emissions from Drum Mix Hot Asphalt Plants, 3/04
g) AP-42, Table 11.1-12, Emission Factors for Metal Emissions from Drum Mix Hot Mix Asphalt Plants, 3/04
h) Compound is classified as polycyclic organic matter, as defined in the 1990 CAAA. Total PCDD is the sum of the total tetra through octa dioxins; total PCDF is sum of the total tetra through octa furans; and total PCDD/PCDF is the sum of total PCDD and total PCDF.

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/ Facility ID: P-2020.0002 777-00611**

LPG or Propane Fired Drum Mix Asphalt Plant With Fabric Filter

Fuel Type Toggle =	1	
Max Hourly Production	450	Tons/hr
Max Daily Production	6,300	Tons/day
Max Annual Production	400,000	Tons/yr

Note: Presumes same emissions as natural gas except for NOx (see AP-42, Section 1.5, Liquefied Petroleum Gas Combustion) SO2 emissions from natural gas are ~70% lower than with #2 Fuel Oil, and ~94% lower than with Used Oil or #6 Fuel Oil (minimal impact on emissions, used Nat Gas EF)

Pollutant	Emission Factor[a] (lb/ton)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total)[b]	0.033	14.85	6.60	
PM-10 (total)[b]	0.023	10.35	4.60	
PM-2.5 [b1]	0.0223	10.04	4.46	
CO [c]	0.13	58.50	26.00	
NOx [c1] (Natural Gas EF x 1.5)	0.039	17.55	7.80	
SO_2 [c]	0.0034	1.53	0.68	
VOC [d]	0.032	14.40	6.40	
Lead	6.20E-07	0.000279	1.24E-04	
HCl [d,e]	No Data			
Dioxins[e]				
-- No EFs for LP Gas or Propane Fuel --				
Furans[e]				
-- No EFs for LP Gas or Propane Fuel --				
Non-PAH HAPs[f]				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]	3.90E-04	1.76E-01	7.80E-02	**1.78E-02**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	1.08E-01	4.80E-02	6.30E-02
Formaldehyde[e]	3.10E-03	1.40E+00	6.20E-01	**1.42E-01**
Hexane[e]	9.20E-04	4.14E-01	1.84E-01	2.42E-01
Isooctane	4.00E-05	1.80E-02	8.00E-03	1.05E-02
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	2.16E-02	9.60E-03	1.26E-02
Toluene[e]	1.50E-04	6.75E-02	3.00E-02	3.94E-02
Xylene[e]	2.00E-04	9.00E-02	4.00E-02	5.25E-02
POM (7-PAH Group)		2.47E-04		**2.50E-05**

Pollutant	Emission Factor[a] (lb/ton)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PAH HAPs[f]				
2-Methylnaphthalene	7.40E-05	3.33E-02	1.48E-02	**3.38E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	6.30E-04	2.80E-04	**6.39E-05**
Acenaphthylene	8.60E-06	3.87E-03	1.72E-03	**3.93E-04**
Anthracene	2.20E-07	9.90E-05	4.40E-05	**1.00E-05**
Benzo(a)anthracene	2.10E-07	9.45E-05	4.20E-05	**9.59E-06**
Benzo(a)pyrene[e]	9.80E-09	4.41E-06	1.96E-06	**4.47E-07**
Benzo(b)fluoranthene	1.00E-07	4.50E-05	2.00E-05	**4.57E-06**
Benzo(e)pyrene	1.10E-07	4.95E-05	2.20E-05	**5.02E-06**
Benzo(g,h,l)perylene	4.00E-08	1.80E-05	8.00E-06	**1.83E-06**
Benzo(k)fluoranthene	4.10E-08	1.85E-05	8.20E-06	**1.87E-06**
Chrysene	1.80E-07	8.10E-05	3.60E-05	**8.22E-06**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	2.75E-04	1.22E-04	**2.79E-05**
Fluorene	3.80E-06	1.71E-03	7.60E-04	**1.74E-04**
Indeno(1,2,3-cd)pyrene	7.00E-09	3.15E-06	1.40E-06	**3.20E-07**
Naphthalene[e]	9.00E-05	4.05E-02	1.80E-02	**4.11E-03**
Perylene	8.80E-09	3.96E-06	1.76E-06	**4.02E-07**
Phenanthrene	7.60E-06	3.42E-03	1.52E-03	**3.47E-04**
Pyrene	5.40E-07	2.43E-04	1.08E-04	**2.47E-05**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	3.02E-01	1.34E-01	1.76E-01
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	3.15E+00	1.40E+00	1.84E+00
Heptane	9.40E-03	4.23E+00	1.88E+00	2.47E+00
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	1.80E+00	8.00E-01	1.05E+00
2-Methyl-2-butene	5.80E-04	2.61E-01	1.16E-01	1.52E-01
3-Methylpentane	1.90E-04	8.55E-02	3.80E-02	4.99E-02
1-Pentene	2.20E-03	9.90E-01	4.40E-01	5.78E-01
n-Pentane	2.10E-04	9.45E-02	4.20E-02	5.51E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	8.10E-05	3.60E-05	4.73E-05
Arsenic[e]	5.60E-07	2.52E-04	1.12E-04	**2.56E-05**
Barium[e]	5.80E-06	2.61E-03	1.16E-03	1.52E-03
Beryllium[e]				
Cadmium[e]	4.10E-07	1.85E-04	8.20E-05	**1.87E-05**
Chromium[e]	5.50E-06	2.48E-03	1.10E-03	1.44E-03
Cobalt[e]	2.60E-08	1.17E-05	5.20E-06	6.83E-06
Copper[e]	3.10E-06	1.40E-03	6.20E-04	8.14E-04
Hexavalent Chromium[e]	4.50E-07	2.03E-04	9.00E-05	**2.05E-05**
Manganese[e]	7.70E-06	3.47E-03	1.54E-03	2.02E-03
Mercury[e]	2.40E-07	1.08E-04	4.80E-05	6.30E-05
Molybdenum[e]				
Nickel[e]	6.30E-05	2.84E-02	1.26E-02	**2.88E-03**
Phosphorus[e]	2.80E-05	1.26E-02	5.60E-03	7.35E-03
Silver[e]	4.80E-07	2.16E-04	9.60E-05	1.26E-04
Selenium[e]	3.50E-07	1.58E-04	7.00E-05	9.19E-05
Thallium[e]	4.10E-09	1.85E-06	8.20E-07	1.08E-06
Vanadium[e]				
Zinc[e]	6.10E-05	2.75E-02	1.22E-02	1.60E-02

a) Emission factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04
b) AP-42, Table 11.1-3, Particulate Matter Emission Factors for Drum Mix Hot Asphalt Plants, 3/04
b1) AP-42, Table 11.1-4, Summary of Particle Size Distribution for Drum Mix Dryers **(Emission Rating Factor E - "Poor")**
c) AP-42, Table 11.1-7, Emission Factors for CO. CO2, NOx, and SO2 from Drum Mix Hot Asphalt Plants, 3/04
c1) AP-42, Table 1.5-1, Emission Factors for LPG Combustion, note (a): "Assumes emissions (except SOx and NOx) are the same, on a heat input basis, as for natural gas combustion. The NOx emission factors have been multiplied by a factor of 1.5, which is the approximate ration of propane/butane NOx emissions to natural gas NOx emissions.
d) AP-42, Table 11.1-8, Emission Factors for TOC, Methane, VOC, and HCl from Drum Mix Hot Asphalt Plants, 3/04
e) IDAPA Toxic Air Pollutant
f) AP-42, Table 11.1-10, Emission Factors for Organic Pollutant Emissions from Drum Mix Hot Asphalt Plants, 3/04
g) AP-42, Table 11.1-12, Emission Factors for Metal Emissions from Drum Mix Hot Mix Asphalt Plants, 3/04

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

3/23/2020 13:08 Permit/Facility ID: P-2020.0002 777-00611

Asphalt Tank Heater - #2 Oil Fired, Estimated Emissions Using AP-42 Sections 11.1 (HMA Plants) & 1.3 (Fuel Oil Combustion)

Fuel Type Toggle =	1		User Input Weight % Sulfur =	0.0500%
Fuel Consumption Rate	14.60	gal/hr	AP-42 1.3-1 EF is 0.142S lb SO2 per gallon of fuel oil	
Max Daily Operation	24	hr/day		
Max Annual Operation	4,000	hrs/yr		

Pollutant	Emission Factor[a] (lb/gal)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total)[b] (filterable+cond)	0.0033	4.82E-02	0.10	
PM-10 (total)[b] (filterable+cond)	0.0023	3.36E-02	0.07	
PM-2.5 (total)[b] (filterable+cond)	0.00154	0.022	0.04	
CO[b] ("C" EF Rating Factor)	0.005	7.30E-02	0.15	
NOx[b]	0.024	3.50E-01	0.70	
SO_2[b]	0.0071	0.10	0.21	
VOC[d] (NMTOC EF)	5.56E-04	8.12E-03	1.62E-02	
Lead[f]	1.51E-06	2.20E-05	4.41E-05	
HCl[e]				
Dioxins[e]				
2,3,7,8-TCDD				
Total TCDD				
1,2,3,7,8-PeCDD				
Total PeCDD				
1,2,3,4,7,8-HxCDD[c]	6.90E-13	1.01E-11	2.01E-11	**4.60E-12**
1,2,3,6,7,8-HxCDD				
1,2,3,7,8,9-HxCDD[c]	7.60E-13	1.11E-11	2.22E-11	**5.07E-12**
Total HxCDD				
1,2,3,4,6,7,8-Hp-CDD[c]	1.50E-11	2.19E-10	4.38E-10	**1.00E-10**
Total HpCDD[c]	2.00E-11	2.92E-10	5.84E-10	**1.33E-10**
Octa CDD[c]	1.60E-10	2.34E-09	4.67E-09	**1.07E-09**
Total PCDD[c]	2.00E-10	2.92E-09	5.84E-09	**1.33E-09**
Furans[e]				
2,3,7,8-TCDF				
Total TCDF[c]	3.30E-12	4.82E-11	9.63E-11	**2.20E-11**
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF[c]	4.80E-13	7.01E-12	1.40E-11	**3.20E-12**
1,2,3,4,7,8-HxCDF				
1,2,3,6,7,8-HxCDF				
2,3,4,6,7,8-HxCDF				
1,2,3,7,8,9-HxCDF				
Total HxCDF[c]	2.00E-12	2.92E-11	5.84E-11	**1.33E-11**
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF[c]	9.70E-12	1.42E-10	2.83E-10	**6.46E-11**
Octa CDF[c]	1.20E-11	1.75E-10	3.50E-10	**8.00E-11**
Total PCDF[c]	3.10E-11	4.52E-10	9.05E-10	**2.07E-10**
Total PCDD/PCDF[c]	2.30E-10	3.36E-09	6.71E-09	**1.53E-09**
Non-PAH HAPs				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]				
1,3-Butadiene[e]				
Ethylbenzene[e]				
Formaldehyde[c,e]	3.50E-06	5.11E-05	1.02E-04	**2.33E-05**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[e]				
Xylene[e]				
POM (7-PAH Group)		1.46E-06		**6.66E-07**

Pollutant	Emission Factor[a] (lb/gal)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PAH HAPs				
2-Methylnaphthalene				
3-Methylchloranthrene[e]				
Acenaphthene[c]	5.30E-07	7.74E-06	1.55E-05	**3.53E-06**
Acenaphthylene[c]	2.00E-07	2.92E-06	5.84E-06	**1.33E-06**
Anthracene[c]	1.80E-07	2.63E-06	5.25E-06	**1.20E-06**
Benzo(a)anthracene				
Benzo(a)pyrene[e]				
Benzo(b)fluoranthene[c]	1.00E-07	1.46E-06	2.92E-06	**6.66E-07**
Benzo(e)pyrene				
Benzo(g,h,l)perylene				
Benzo(k)fluoranthene				
Chrysene				
Dibenzo(a.h)anthracene				
Dichlorobenzene				
Fluoranthene[c]	4.40E-08	6.42E-07	1.28E-06	**2.93E-07**
Fluorene[c]	3.20E-08	4.67E-07	9.34E-07	**2.13E-07**
Indeno(1,2,3-cd)pyrene				
Naphthalene[c,e]	1.70E-05	2.48E-04	4.96E-04	**1.13E-04**
Perylene				
Phenanthrene[c]	4.90E-06	7.15E-05	1.43E-04	**3.27E-05**
Pyrene[c]	3.20E-08	4.67E-07	9.34E-07	**2.13E-07**
Non-HAP Organic Compounds				
Acetone[e]				
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene				
Heptane				
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene				
2-Methyl-2-butene				
3-Methylpentane				
1-Pentene				
n-Pentane				
Valeraldehyde				
Metals[f]				
Antimony[e]	5.25E-06	7.66E-05	1.53E-04	7.66E-05
Arsenic[e]	1.32E-06	1.93E-05	3.85E-05	**8.80E-06**
Barium[e]	2.57E-06	3.75E-05	7.50E-05	3.75E-05
Beryllium[e]	2.78E-08	4.06E-07	8.12E-07	**1.85E-07**
Cadmium[e]	3.98E-07	5.81E-06	1.16E-05	**2.65E-06**
Chromium[e]	8.45E-07	1.23E-05	2.47E-05	1.23E-05
Cobalt[e]	6.02E-06	8.79E-05	1.76E-04	8.79E-05
Copper[e]	1.76E-06	2.57E-05	5.14E-05	2.57E-05
Hexavalent Chromium[e]	2.48E-07	3.62E-06	7.24E-06	**1.65E-06**
Manganese[e]	3.00E-06	4.38E-05	8.76E-05	4.38E-05
Mercury[e]	1.13E-07	1.65E-06	3.30E-06	1.65E-06
Molybdenum[e]	7.87E-07	1.15E-05	2.30E-05	1.15E-05
Nickel[e]	8.45E-05	1.23E-03	2.47E-03	**5.63E-04**
Phosphorus[e]	9.46E-06	1.38E-04	2.76E-04	1.38E-04
Silver[e]				
Selenium[e]	6.83E-07	9.97E-06	1.99E-05	9.97E-06
Thallium[e]				
Vanadium[e]	3.18E-05	4.64E-04	9.28E-04	4.64E-04
Zinc[e]	2.91E-05	4.25E-04	8.49E-04	4.25E-04

a) Emission factors for criteria pollutants are from AP-42, 1.3, Fuel Oil Combustion, 9/98; all other factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04
b) AP-42, Table 1.3-1, Criteria Pollutant Emission Factors for Fuel Oil Combustion, 9/98, Boilers < 100 MMBtu, SOx based on max fuel sulfur content, PM10 is 1.3 lb/1,000 gal + 50% of 2.0 lb/1,000 gal
c) AP-42, Table 11.1-13, Emission Factors for Hot Mix Asphalt Hot Oil Systems, 3/04
d) AP-42, Table 1.3-3, Emission Factors for Total Organic Compounds (TOC), Methane, and Nonmethane TOC (NMTOC) from Uncontrolled Distillate Fuel Oil Combustion; Commercial Boiler
e) IDAPA Toxic Air Pollutant
f) AP-42, Table 1.3-11, Emission Factors for Metals from Uncontrolled No. 6 Fuel Oil Combustion

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID: P-2020.0002 777-00611**

Asphalt Tank Heater - Natural Gas Fired, Estimated Emissions Using AP-42 Section 11.1 (Hot Mix Asphalt Plants)

Fuel Type Toggle =	0	
Fuel Consumption Rate	1,961	scf/hr
Max Daily Operation	24	hr/day
Max Annual Operation	4,000	hrs/yr

Note: CO EF per AP-42 Table 1.4.1 for natural gas combustion in boilers is 84 lb/MMscf, a factor of 10 higher than the factor shown in Table 11.1-13
Tank heater CO emissions are based on using 84 lb/MMscf

Pollutant	Emission Factor[a] (lb/scf)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total)				
PM-10 (total)				
PM-2.5				
CO [c]	**8.90E-06**	0.00E+00	0.00E+00	
NOx				
SO_2				
VOC				
Lead				
HCl [e]				
Dioxins[e]				
-- No EFs for Natural Gas Fuel --				
Furans[e]				
-- No EFs for Natural Gas Fuel --				
Non-PAH HAPs				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]				
1,3-Butadiene[e]				
Ethylbenzene[e]				
Formaldehyde[c,e]	2.60E-08	0.00E+00	0.00E+00	**0.00E+00**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[e]				
Xylene[e]				
POM (7-PAH Group)		0.00E+00		**0.00E+00**

Pollutant	Emission Factor[a] (lb/scf)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PAH HAPs				
2-Methylnaphthalene				
3-Methylchloranthrene[e]				
Acenaphthene				
Acenaphthylene				
Anthracene				
Benzo(a)anthracene				
Benzo(a)pyrene[e]				
Benzo(b)fluoranthene				
Benzo(e)pyrene				
Benzo(g,h,l)perylene				
Benzo(k)fluoranthene				
Chrysene				
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene				
Fluorene				
Indeno(1,2,3-cd)pyrene				
Naphthalene[e]				
Perylene				
Phenanthrene				
Pyrene				
Non-HAPs Organic Compounds				
Acetone[e]				
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene				
Heptane				
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene				
2-Methyl-2-butene				
3-Methylpentane				
1-Pentene				
n-Pentane				
Valeraldehyde				
Metals				
Antimony[e]				
Arsenic[e]				
Barium[e]				
Beryllium[e]				
Cadmium[e]				
Chromium[e]				
Cobalt[e]				
Copper[e]				
Hexavalent Chromium[e]				
Manganese[e]				
Mercury[e]				
Molybdenum[e]				
Nickel[e]				
Phosphorus[e]				
Silver[e]				
Selenium[e]				
Thallium[e]				
Vanadium[e]				
Zinc[e]				

a) Emission factors are from AP-42
b) (reserved)
c) AP-42, Table 11.1-13, Emission Factors for Hot Mix Asphalt Hot Oil Systems, 3/04
d) (reserved)
e) IDAPA Toxic Air Pollutant

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID: P-2020.0002 777-00611**

Asphalt Tank Heater - Natural Gas Fired, Estimated Emissions Using AP-42 Section 1.4 (Natural Gas Combustion)

Fuel Type Toggle =	0	
Fuel Consumption Rate	1,961	scf/hr
Max Daily Operation	24	hr/day
Max Annual Operation	4,000	hrs/yr
Heating Value Correction:	1.000	applied to Emissions (lb/hr, T/yr) calculations

Note: CO EF per AP-42 Table 1.4.1 for natural gas combustion in boilers is 84 lb/MMscf, a factor of 10 higher than the factor shown in Table 11.1-13
Tank heater CO emissions are based on using 84 lb/MMscf

Pollutant	Emission Factor[a] (lb/MMscf)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total)[c]	7.6	0.00E+00	0.00E+00	
PM-10 (total)[c]	7.6	0.00E+00	0.00E+00	
PM-2.5	7.6	0.00E+00	0.00E+00	
CO [b]	84	0.00E+00	0.00E+00	
NOx [b]	100	0.00E+00	0.00E+00	
SO_2 [c]	0.6	0.00E+00	0.00E+00	
VOC [c]	5.5	0.00E+00	0.00E+00	
Lead [c]	5.00E-04	0.00E+00	0.00E+00	
HCl [e]				
Dioxins[e]				
-- No EFs for Natural Gas Fuel --				
Furans[e]				
-- No EFs for Natural Gas Fuel --				
Non-PAH HAPs[f]				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[c1, e]	2.10E-03	0.00E+00	0.00E+00	**0.00E+00**
1,3-Butadiene[e]				
Ethylbenzene[e]				
Formaldehyde[e]	7.50E-02	0.00E+00	0.00E+00	**0.00E+00**
Hexane[e]	1.80E+00	0.00E+00	0.00E+00	0.00E+00
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[c1, e]	2.60E+00	0.00E+00	0.00E+00	0.00E+00
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c1, e]	3.40E-03	0.00E+00	0.00E+00	0.00E+00
Xylene[e]				
POM (7-PAH Group)		0.00E+00		**0.00E+00**

Pollutant	Emission Factor[a] (lb/MMscf)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PAH HAPs[f]				
2-Methylnaphthalene[c1]	2.40E-05	0.00E+00	0.00E+00	**0.00E+00**
3-Methylchloranthrene [c1, e]	1.80E-06	0.00E+00	0.00E+00	**0.00E+00**
Acenaphthene[c1]	1.80E-06	0.00E+00	0.00E+00	**0.00E+00**
Acenaphthylene[c1]	1.80E-06	0.00E+00	0.00E+00	**0.00E+00**
Anthracene[c1]	2.40E-06	0.00E+00	0.00E+00	**0.00E+00**
Benzo(a)anthracene[c1]	1.80E-06	0.00E+00	0.00E+00	**0.00E+00**
Benzo(a)pyrene[c1, e]	1.20E-06	0.00E+00	0.00E+00	**0.00E+00**
Benzo(b)fluoranthenec[1]	1.80E-06	0.00E+00	0.00E+00	**0.00E+00**
Benzo(e)pyrene				
Benzo(g,h,l)perylene[c1]	1.20E-06	0.00E+00	0.00E+00	**0.00E+00**
Benzo(k)fluoranthene[c1]	1.80E-06	0.00E+00	0.00E+00	**0.00E+00**
Chrysene[c1]	1.80E-06	0.00E+00	0.00E+00	**0.00E+00**
Dibenzo(a,h)anthracene[c1]	1.20E-06	0.00E+00	0.00E+00	**0.00E+00**
Dichlorobenzene[c1]	1.20E-03	0.00E+00	0.00E+00	**0.00E+00**
Fluoranthene[c1]	3.00E-06	0.00E+00	0.00E+00	**0.00E+00**
Fluorene[c1]	2.80E-06	0.00E+00	0.00E+00	**0.00E+00**
Indeno(1,2,3-cd)pyrene[c1]	1.80E-06	0.00E+00	0.00E+00	**0.00E+00**
Naphthalene[c1, e]	6.10E-04	0.00E+00	0.00E+00	**0.00E+00**
Perylene				
Phenanthrene[c1]	1.70E-05	0.00E+00	0.00E+00	**0.00E+00**
Pyrene[c1]	5.00E-06	0.00E+00	0.00E+00	**0.00E+00**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane[c1]	2.10E+00	0.00E+00	0.00E+00	0.00E+00
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene				
Heptane				
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene				
2-Methyl-2-butene				
3-Methylpentane				
1-Pentene				
n-Pentane				
Valeraldehyde				
Metals[g]				
Antimony[e]				
Arsenic[d,e]	2.00E-04	0.00E+00	0.00E+00	**0.00E+00**
Barium[d,e]	4.40E-03	0.00E+00	0.00E+00	0.00E+00
Beryllium[e]	1.20E-05	0.00E+00	0.00E+00	**0.00E+00**
Cadmium[d,e]	1.10E-03	0.00E+00	0.00E+00	**0.00E+00**
Chromium[d,e]	1.40E-03	0.00E+00	0.00E+00	0.00E+00
Cobalt[d,e]	8.40E-05	0.00E+00	0.00E+00	0.00E+00
Copper[d,e]	8.50E-04	0.00E+00	0.00E+00	0.00E+00
Hexavalent Chromium[e]				
Manganese[d,e]				
Mercury[d,e]				
Molybdenum[d,e]	1.10E-03	0.00E+00	0.00E+00	0.00E+00
Nickel[d,e]				
Phosphorus[e]				
Silver[e]				
Selenium[d,e]				
Thallium[e]				
Vanadium[d,e]	2.30E-03	0.00E+00	0.00E+00	0.00E+00
Zinc[d,e]				

a) Emission factors are from AP-42
b) AP-42, Table 1.4-1, Emission Factors for NOx and CO from Natural Gas Combustion, 7/98
c) AP-42, Table 1.4-2, Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion, 7/98
c1) AP-42, Table 1.4-3, Emission Factors for Speciated Organic Compounds from Natural Gas Combustion, 7/98
d) AP-42, Table 1.4-4, Emission Factors for Metals from Natural Gas Combustion, 7/98
e) IDAPA Toxic Air Pollutant

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID: P-2020.0002 777-00611**

Silo Filling Operations AP-42 Section 11.1

Emissions Toggle =	1	
Max Hourly Production	450	T/hr
Max Daily Production	6,300	Tons/day
Max Annual Production	400,000	Tons/yr

Pollutant	Emission Factor[a] Silo Fill (lb/ton)	Emissions (lb/hr) 1-hr Average	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total) [b]	5.86E-04	0.2637	0.1172	
PM-10 (total) [b]	5.86E-04	0.2637	0.1172	
PM-2.5 [b]	5.86E-04	0.2637	0.1172	
CO [b]	1.18E-03	0.5310	0.2360	
NOx				
SO_2				
VOC [d,g]	1.22E-04	5.48E-02	0.0244	
Lead				
HCl [d,e]	No Data			
Dioxins[e]				
2,3,7,8-TCDD				
Total TCDD				
1,2,3,7,8-PeCDD				
Total PeCDD				
1,2,3,4,7,8-HxCDD				
1,2,3,6,7,8-HxCDD				
1,2,3,7,8,9-HxCDD				
Total HxCDD				
1,2,3,4,6,7,8-Hp-CDD				
Total HpCDD				
Octa CDD				
Total PCDD[h]				
Furans[e]				
2,3,7,8-TCDF				
Total TCDF				
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF				
1,2,3,4,7,8-HxCDF				
1,2,3,6,7,8-HxCDF				
2,3,4,6,7,8-HxCDF				
1,2,3,7,8,9-HxCDF				
Total HxCDF				
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF				
Octa CDF				
Total PCDF[h]				
Total PCDD/PCDF[h]				
Non-PAH HAPs				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]	3.90E-06	1.75E-03	7.80E-04	0.0002
1,3-Butadiene[e]				
Ethylbenzene[e]	4.63E-06	2.08E-03	9.26E-04	1.22E-03
Formaldehyde[e]	8.41E-05	3.78E-02	1.68E-02	0.0038
Hexane[e]	1.22E-05	5.48E-03	2.44E-03	3.20E-03
Isooctane	3.78E-08	1.70E-05	7.56E-06	9.92E-06
Methyl Ethyl Ketone[e]	4.75E-06	2.14E-03	9.51E-04	1.25E-03
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]		0.00E+00	0.00E+00	
Toluene[e]	7.56E-06	3.40E-03	1.51E-03	1.98E-03
Xylene[e]	3.13E-05	1.41E-02	6.26E-03	8.22E-03
POM (7-PAH Group)		3.04E-04		**3.08E-05**

Pollutant	Emission Factor[a] Silo Fill (lb/ton)	Emissions (lb/hr) 1-hr Average	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PAH HAPs[f]				
2-Methylnaphthalene	1.34E-05	6.02E-03	2.68E-03	6.11E-04
3-Methylchloranthrene[e]				
Acenaphthene	1.19E-06	5.37E-04	2.39E-04	5.45E-05
Acenaphthylene	3.55E-08	1.60E-05	7.11E-06	1.62E-06
Anthracene	3.30E-07	1.49E-04	6.60E-05	1.51E-05
Benzo(a)anthracene	1.42E-07	6.40E-05	2.84E-05	6.49E-06
Benzo(a)pyrene[e]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(e)pyrene	2.41E-08	1.09E-05	4.82E-06	1.10E-06
Benzo(g,h,I)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrysene	5.33E-07	2.40E-04	1.07E-04	2.43E-05
Dibenzo(a,h)anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dichlorobenzene				
Fluoranthene	3.81E-07	1.71E-04	7.62E-05	1.74E-05
Fluorene	2.56E-06	1.15E-03	5.13E-04	1.17E-04
Indeno(1,2,3-cd)pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene[e]	4.62E-06	2.08E-03	9.24E-04	2.11E-04
Perylene	7.62E-08	3.43E-05	1.52E-05	3.48E-06
Phenanthrene	4.57E-06	2.06E-03	9.14E-04	2.09E-04
Pyrene	1.12E-06	5.03E-04	2.23E-04	5.10E-05
Non-HAP Organic Compounds				
Acetone[e]	6.70E-06	3.02E-03	0.0013	1.76E-03
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	1.34E-04	6.03E-02	0.0268	3.52E-02
Heptane				
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene				
2-Methyl-2-butene				
3-Methylpentane				
1-Pentene				
n-Pentane				
Valeraldehyde				
Metals				
Antimony[e]				
Arsenic[e]				
Barium[e]				
Beryllium[e]				
Cadmium[e]				
Chromium[e]				
Cobalt[e]				
Copper[e]				
Hexavalent Chromium[e]				
Manganese[e]				
Mercury[e]				
Molybdenum[e]				
Nickel[e]				
Phosphorus[e]				
Silver[e]				
Selenium[e]				
Thallium[e]				
Vanadium[e]				
Zinc[e]				

a) Emission factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04

b) AP-42, Table 11.1-14, Predictive Emission Factor Equations for Load-Out and Silo Filling Operations, 3/04 Defaults: (-V) = 0.5 T (^{o}F) = 325

Equation		LOADOUT	SILO FILL	
Total PM EF = $0.000181+0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ + $000332+ 0.00105(-V)e^{((0.0251)(T+460)-20.43)}$	=	5.219E-04	5.859E-04	(split addends)
Organic PM EF = $0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ + $0.00105(-V)e^{((0.0251)(T+460)-20.43)}$	=	3.409E-04	2.539E-04	(split addends)
TOC PM EF = $0.0172(-V)e^{((0.0251)(T+460)-20.43)}$ + $0.0504(-V)e^{((0.0251)(T+460)-20.43)}$	=	4.159E-03	1.219E-02	(split addends)
CO PM EF = $0.00558(-V)e^{((0.0251)(T+460)-20.43)}$ + $0.00488(-V)e^{((0.0251)(T+460)-20.43)}$	=	1.349E-03	1.180E-03	(split addends)

e) IDAPA Toxic Air Pollutant

f) AP-42, Table 11.1-15, Speciation Profiles for Load-out, Silo Filling, & Asphalt Storage--Organic Particulate-Based Compounds, 3/04 (EF=Spec% * Organic PM EF)

g) AP-42, Table 11.1-16, Speciation Profiles for Load-out, Silo Filling, &Asphalt Storage--Organic Volatile-Based Compounds, 3/04, (EF=Spec% * TOC PM EF)

Pollutants shown in bold text are carcinogens subject to an annual standard. These lb/hr values are annual averages.

Pollutants shown in blue text are organic volatile-based compounds, EF = Spec% x TOC PM EF.

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID: P-2020.0002 777-00611**

Silo Filling Operations AP-42 Section 11.1, Page 2

Fuel Type Toggle =	1	
Max Hourly Production	450	T/hr
Max Daily Production	6,300	Tons/day
Max Annual Production	400,000	Tons/yr

Pollutant	Emission Factor[a] Silo Fill (lb/ton)	Emissions (lb/hr) 1-hr Average	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
non-PAH HAPs[e]				
Bromomethane[e]	5.97E-07	2.69E-04	0.0001	1.57E-04
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	1.95E-06	8.77E-04	0.0004	5.12E-04
Chloroethane (Ethyl chloride[e])	4.87E-07	2.19E-04	0.0001	1.28E-04
Chloromethane (Methyl chloride[e])	2.80E-06	1.26E-03	0.0006	7.36E-04
Cumene[e]				
n-Hexane (see Hexane[e])				
Methylene chloride (Dichloromethane[e])	3.29E-08	1.48E-05	6.58E-06	8.64E-06
MTBE				
Styrene[e]	6.58E-07	2.96E-04	1.32E-04	1.73E-04
Tetrachloroethene (Tetrachloroethylene[e])	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,1,1-Trichloroethane (Methyl chloroform[e])	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Trichloroethene (Trichloroethylene[e])				
Trichlorofluoromethane				
m-/p-Xylene[e] (added into Xylene[e])	2.44E-05	1.10E-02	0.0049	6.40E-03
o-Xylene[e] (added into Xylene[e])	6.95E-06	3.13E-03	0.0014	1.82E-03
Phenol[e,f]				
Non-HAP Organic Compounds				
Methane	3.17E-03	1.43E+00	0.6337	8.32E-01

Pollutants shown in blue text are organic volatile-based compounds, EF = Spec% x TOC PM EF.

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID: P-2020.0002 777-00611**

Load-out Operations AP-42 Section 11.1

Emissions Toggle =	1	
Max Hourly Production	450	T/hr
Max Daily Production	6,300	Tons/day
Max Annual Production	400,000	Tons/yr

Pollutant	Emission Factor[a] Loadout (lb/ton)	Emissions (lb/hr) 1-hr Average	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total)[b]	5.22E-04	0.235	0.10	
PM-10 (total)[b]	5.22E-04	0.235	0.10	
PM-2.5[b]	5.22E-04	0.235	0.10	
CO[b]	1.35E-03	0.607	0.27	
NOx				
SO_2				
VOC[d,g]	3.91E-03	1.759	0.78	
Lead				
HCl[d,e]	No Data			
Dioxins[e]				
2,3,7,8-TCDD				
Total TCDD				
1,2,3,7,8-PeCDD				
Total PeCDD				
1,2,3,4,7,8-HxCDD				
1,2,3,6,7,8-HxCDD				
1,2,3,7,8,9-HxCDD				
Total HxCDD				
1,2,3,4,6,7,8-Hp-CDD				
Total HpCDD				
Octa CDD				
Total PCDD[h]				
Furans[e]				
2,3,7,8-TCDF				
Total TCDF				
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF				
1,2,3,4,7,8-HxCDF				
1,2,3,6,7,8-HxCDF				
2,3,4,6,7,8-HxCDF				
1,2,3,7,8,9-HxCDF				
Total HxCDF				
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF				
Octa CDF				
Total PCDF[h]				
Total PCDD/PCDF[h]				
Non-PAH HAPs				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]	2.16E-06	9.73E-04	4.33E-04	**9.88E-05**
1,3-Butadiene[e]				
Ethylbenzene[e]	1.16E-05	5.24E-03	2.33E-03	3.06E-03
Formaldehyde[e]	3.66E-06	1.65E-03	7.32E-04	**1.67E-04**
Hexane[e]	6.24E-06	2.81E-03	1.25E-03	1.64E-03
Isooctane	7.49E-08	3.37E-05	1.50E-05	1.97E-05
Methyl Ethyl Ketone[e]	2.04E-06	9.17E-04	4.08E-04	5.35E-04
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[e]	8.73E-06	3.93E-03	1.75E-03	2.29E-03
Xylene[e]	5.03E-05	2.26E-02	1.01E-02	1.32E-02
POM (7-PAH Group)		2.07E-04		**2.10E-05**

Pollutant	Emission Factor[a] Loadout (lb/ton)	Emissions (lb/hr) 1-hr Average	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PAH HAPs[f]				
2-Methylnaphthalene	8.11E-06	3.65E-03	1.62E-03	**3.71E-04**
3-Methylchloranthrene[e]				
Acenaphthene	8.86E-07	3.99E-04	1.77E-04	**4.05E-05**
Acenaphthylene	9.55E-08	4.30E-05	1.91E-05	**4.36E-06**
Anthracene	2.39E-07	1.07E-04	4.77E-05	**1.09E-05**
Benzo(a)anthracene	6.48E-08	2.92E-05	1.30E-05	**2.96E-06**
Benzo(a)pyrene[e]	7.84E-09	3.53E-06	1.57E-06	**3.58E-07**
Benzo(b)fluoranthene	2.59E-08	1.17E-05	5.18E-06	**1.18E-06**
Benzo(e)pyrene	2.66E-08	1.20E-05	5.32E-06	**1.21E-06**
Benzo(g,h,l)perylene	6.48E-09	2.92E-06	1.30E-06	**2.96E-07**
Benzo(k)fluoranthene	7.50E-09	3.38E-06	1.50E-06	**3.42E-07**
Chrysene	3.51E-07	1.58E-04	7.02E-05	**1.60E-05**
Dibenzo(a,h)anthracene	1.26E-09	5.68E-07	2.52E-07	**5.76E-08**
Dichlorobenzene				
Fluoranthene	1.70E-07	7.67E-05	3.41E-05	**7.78E-06**
Fluorene	2.63E-06	1.18E-03	5.25E-04	**1.20E-04**
Indeno(1,2,3-cd)pyrene	1.60E-09	7.21E-07	3.20E-07	**7.32E-08**
Naphthalene[e]	4.26E-06	1.92E-03	8.52E-04	**1.95E-04**
Perylene	7.50E-08	3.38E-05	1.50E-05	**3.42E-06**
Phenanthrene	2.76E-06	1.24E-03	5.52E-04	**1.26E-04**
Pyrene	5.11E-07	2.30E-04	1.02E-04	**2.34E-05**
Non-HAP Organic Compounds				
Acetone[e]	1.95E-06	8.76E-04	3.89E-04	5.11E-04
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	2.95E-05	1.33E-02	5.91E-03	7.75E-03
Heptane				
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene				
2-Methyl-2-butene				
3-Methylpentane				
1-Pentene				
n-Pentane				
Valeraldehyde				
Metals				
Antimony[e]				
Arsenic[e]				
Barium[e]				
Beryllium[e]				
Cadmium[e]				
Chromium[e]				
Cobalt[e]				
Copper[e]				
Hexavalent Chromium[e]				
Manganese[e]				
Mercury[e]				
Molybdenum[e]				
Nickel[e]				
Phosphorus[e]				
Silver[e]				
Selenium[e]				
Thallium[e]				
Vanadium[e]				
Zinc[e]				

a) Emission factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04

b) AP-42, Table 11.1-14, Predictive Emission Factor Equations for Load-Out and Silo Filling Operations, 3/04

Defaults: (-V) = 0.5 T (^{o}F) = 325

Equation		LOADOUT	SILO FILL	
Total PM EF = $0.000181+0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ + $000332+ 0.00105(-V)e^{((0.0251)(T+460)-20.43)}$	=	5.219E-04	5.859E-04	(split addends)
Organic PM EF = $0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ + $0.00105(-V)e^{((0.0251)(T+460)-20.43)}$	=	3.409E-04	2.539E-04	(split addends)
TOC PM EF = $0.0172(-V)e^{((0.0251)(T+460)-20.43)}$ + $0.0504(-V)e^{((0.0251)(T+460)-20.43)}$	=	4.159E-03	1.219E-02	(split addends)
CO PM EF = $0.00558(-V)e^{((0.0251)(T+460)-20.43)}$ + $0.00488(-V)e^{((0.0251)(T+460)-20.43)}$	=	1.349E-03	1.180E-03	(split addends)

e) IDAPA Toxic Air Pollutant

f) AP-42, Table 11.1-15, Speciation Profiles for Load-out, Silo Filling, & Asphalt Storage--Organic Particulate-Based Compounds, 3/04 (EF=Spec% * Organic PM EF)

g) AP-42, Table 11.1-16, Speciation Profiles for Load-out, Silo Filling, &Asphalt Storage--Organic Volatile-Based Compounds, 3/04, (EF=Spec% * TOC PM EF)

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Pollutants shown in blue text are organic volatile-based compounds, EF = Spec% x TOC PM EF.

Facility: POE Asphalt Paving, Inc. - 00611
3/23/2020 13:08 Permit/Facility ID: P-2020.0002 777-00611

Load-out Operations AP-42 Section 11.1, Page 2

Fuel Type Toggle =	1	
Max Hourly Production	450	T/hr
Max Daily Production	6,300	Tons/day
Max Annual Production	400,000	Tons/yr

Pollutant	Emission Factor[a] Loadout (lb/ton)	Emissions (lb/hr) 1-hr Average	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
non-PAH HAPs[g]				
Bromomethane[e]	3.99E-07	1.80E-04	7.99E-05	1.05E-04
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	5.41E-07	2.43E-04	1.08E-04	1.42E-04
Chloroethane (Ethyl chloride[e])	8.73E-09	3.93E-06	1.75E-06	2.29E-06
Chloromethane (Methyl chloride[e])	6.24E-07	2.81E-04	1.25E-04	1.64E-04
Cumene[e]	4.57E-06	2.06E-03	9.15E-04	1.20E-03
n-Hexane (see Hexane[e])				
Methylene chloride (Dichloromethane[e])				
MTBE				
Styrene[e]	3.04E-07	1.37E-04	6.07E-05	7.97E-05
Tetrachloroethene (Tetrachloroethylene[e])	3.20E-07	1.44E-04	6.40E-05	8.41E-05
1,1,1-Trichloroethane (Methyl chloroform[e])				
Trichloroethene (Trichloroethylene[e])				
Trichlorofluoromethane	5.41E-08	2.43E-05	1.08E-05	1.42E-05
m-/p-Xylene[e] (added into Xylene[e])	1.71E-05	7.67E-03	3.41E-03	4.48E-03
o-Xylene[e] (added into Xylene[e])	3.33E-05	1.50E-02	6.65E-03	8.73E-03
Phenol[e,f]	4.02E-06	1.81E-03	8.05E-04	1.06E-03
Non-HAP Organic Compounds				
Methane	2.70E-04	1.22E-01	5.41E-02	7.10E-02

Pollutants shown in blue text are organic volatile-based compounds, EF = Spec% x TOC PM EF.

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: POE Asphalt Paving, Inc. - 00611
3/23/2020 13:08 Permit P-2020.0002 Facility ID: 777-00611

G1 Electrical Generator < 600 hp (447 kW)

Fuel Type Toggle =	1	
Fuel Consumption Rate	8.43	gal/hr
Calculated MMBtu/hr	1.155	MMBtu/hr
Max Daily Operation	24	hr/day
Max Annual Operation	727	hrs/yr

Rated Power (kW): 123

Not EPA Certified:	No
Certified EPA Tier 1:	Yes
Certified EPA Tier 2:	No
Certified EPA Tier 3:	No
Certified EPA Tier 4*:	No
Blue Sky Engine:	No

Conversion Factors:

Avg brake-specific fuel consumption (BSFC) =	7000	Btu/hp-hr
1 hp =	0.746	kW
1 lb =	453.592	g

g/kW-hr x (lb/453g) x (hp-hr/7000 Btu) x (0.746 kW/hp) x 10^6 Btu/MMBtu = lb/MMBtu
g/kW-hr x 0.23486 = lb/MMBtu

**Tier 4 emission factors from https://www.epa.gov/sites/production/files/2018-02/documents/02-update-tier-4-nonroad-diesel-engines-2017-12-06.pdf and 40 CFR 1039.1(*

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM = PM10
EMISSION FACTORS USED FOR G1 (lb/MMBtu):	**2.16**	**0.36**		**0.95**	**0.310**

AP-42, Ch 3.3 (10/96) EMISSION FACTORS (diesel fueled)

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM = PM10
Emission Factor (lb/MMBtu)	4.41	0.36		0.95	0.31
Emission Factor (g/kW-hr))	18.78	1.53		4.05	1.32

40 CFR 89, EPA CERTIFIED GENERATOR EMISSION FACTORS (g/kW-hr converted to lb/MMBtu)

Rated Power (kW)	Tier	Applicable?	Model Year[1]	NOx	HC	NMHC + NOx	CO	PM = PM10
kW< 8	1	0	2000	---	*0.36*	2.47	1.88	0.23
kW< 8	2	0	2005	---	*0.36*	1.76	1.88	0.09
kW< 8	4	0	2008	---	*0.36*	1.76	1.88	0.19
kW< 8	BlueSky	0	n/a	---	*0.36*	1.08	*1.88*	0.11
8 ≤ kW < 19	1	0	2000	---	*0.36*	2.23	1.55	0.19
8 ≤ kW < 19	2	0	2005	---	*0.36*	1.76	1.55	0.19
8 < kW < 19	4	0	2008	---	*0.36*	1.76	1.55	0.09
8 ≤ kW < 19	BlueSky	0	n/a	---	*0.36*	1.06	*1.55*	0.11
19 ≤ kW < 37	1	0	1999	---	*0.36*	2.23	1.29	0.19
19 ≤ kW < 37	2	0	2004	---	*0.36*	1.76	1.29	0.14
19 ≤ kW < 37	4	0	2008	---	*0.36*	1.76	1.29	0.07
19 < kW < 37	4	0	2013	---	*0.36*	1.10	1.29	0.01
19 ≤ kW < 37	BlueSky	0	n/a	---	*0.36*	1.06	*1.29*	0.085
37 ≤ kW < 56	1	0	1998	2.16	*0.36*	---	*0.95*	*0.31*
37 ≤ kW < 56	2	0	2004	---	*0.36*	1.76	1.17	0.09
37 ≤ kW < 56	3	0	2008	---	*0.36*	1.10	1.17	0.09
37 ≤ kW < 56	4	0	2008	---	*0.36*	1.10	1.17	0.07
37 ≤ kW < 56	4	0	2012	---	*0.36*	1.10	1.17	0.07
37 ≤ kW < 56	4	0	2013	---	*0.36*	1.10	1.17	0.01
37 ≤ kW < 56	BlueSky	0	n/a	---	*0.36*	1.10	*1.17*	0.056
56 ≤ kW < 75	1	0	1998	2.16	*0.36*	---	*0.95*	*0.31*
56 ≤ kW < 75	2	0	2004	---	*0.36*	1.76	1.17	0.09
56 ≤ kW < 75	3	0	2008	---	*0.36*	1.10	1.17	0.09
56 ≤ kW < 75	4	0	2012	---	0.04	0.80	1.17	0.005
56 ≤ kW < 75	4	0	2015	0.80	0.04	--	1.17	0.005
56 ≤ kW < 75	BlueSky	0	n/a	---	*0.36*	1.10	*1.17*	0.056
75 ≤ kW < 130	1	1	1997	2.16	*0.36*	---	*0.95*	*0.31*
75 ≤ kW < 130	2	0	2003	---	*0.36*	1.55	1.17	0.07
75 ≤ kW < 130	3	0	2007	---	*0.36*	0.94	1.17	0.07
75 ≤ kW < 130	4	0	2012	---	0.04	0.80	1.17	0.005
75 ≤ kW < 130	4	0	2015	0.80	0.04	--	1.17	0.005
75 ≤ kW < 130	BlueSky	0	n/a	---	*0.36*	0.94	1.17	0.042
130 ≤ kW < 225	1	0	1996	2.16	0.31	---	2.68	0.13
130 ≤ kW < 225	2	0	2003	---	*0.31*	1.55	0.82	0.05
130 ≤ kW < 225	3	0	2006	---	*0.31*	0.94	0.82	0.05
130 ≤ kW < 225	4	0	2011	0.47	0.04	---	0.82	0.005
130 ≤ kW < 225	4	0	2014	0.47	0.04	---	0.82	0.005
130 ≤ kW ≤ 560	BlueSky	0	n/a	---	*0.31*	0.94	*0.82*	0.028
225 ≤ kW < 450	1	0	1996	2.16	0.31	---	2.68	0.13
225 ≤ kW < 450	2	0	2001	---	*0.31*	1.50	0.82	0.05
225 ≤ kW < 450	3	0	2006	---	*0.31*	0.94	0.82	0.05
225 ≤ kW < 450	4	0	2011	0.47	0.04	---	0.82	0.05
225 ≤ kW < 450	4	0	2014	0.47	0.04		0.82	0.05

40 CFR 89, EPA CERTIFIED GENERATOR EMISSION FACTORS FOR GENERATOR G1 (lb/MMBtu)

Rated Power (kW)	Tier	Applicable?	Model Year[1]	NOx	HC	NMHC + NOx	CO	PM10
kW< 8	1	0	2000	0.00	0.00	0.00	0.00	0.00
kW< 8	2	0	2005	0.00	0.00	0.00	0.00	0.00
kW< 8	4	0	2008	0.00	0.00	0.00	0.00	0.00
kW< 8	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
8 ≤ kW < 19	1	0	2000	0.00	0.00	0.00	0.00	0.00
8 ≤ kW < 19	2	0	2005	0.00	0.00	0.00	0.00	0.00
8 < kW < 19	4	0	2008	0.00	0.00	0.00	0.00	0.00
8 ≤ kW < 19	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
19 ≤ kW < 37	1	0	1999	0.00	0.00	0.00	0.00	0.00
19 ≤ kW < 37	2	0	2004	0.00	0.00	0.00	0.00	0.00
19 ≤ kW < 37	4	0	2008	0.00	0.00	0.00	0.00	0.00
19 < kW < 37	4	0	2013	0.00	0.00	0.00	0.00	0.00
19 ≤ kW < 37	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 56	1	0	1998	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 56	2	0	2004	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 56	3	0	2008	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 56	4	0	2008	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 56	4	0	2012	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 56	4	0	2013	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 56	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
56 ≤ kW < 75	1	0	1998	0.00	0.00	0.00	0.00	0.00
56 ≤ kW < 75	2	0	2004	0.00	0.00	0.00	0.00	0.00
56 ≤ kW < 75	3	0	2008	0.00	0.00	0.00	0.00	0.00
56 ≤ kW < 75	4	0	2012	0.00	0.00	0.00	0.00	0.00
56 ≤ kW < 75	4	0	2015	0.00	0.00	0.00	0.00	0.00

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID: P-2020.0002 777-00611**

IC Engine 1 Powering an Electrical Generator < 600 hp (447 kW) AP-42 Section 3.3 (diesel fueled)

Fuel Type Toggle =	1	123 kw	User Input Weight % Sulfur =	0.0015%
Fuel Consumption Rate	8.43 gal/hr		AP-42 3.3 SO2 EF = 0.29 for #2 fuel oil, presumed max 0.5%	
Calculated MMBtu/hr	1.155 MMBtu/hr		SO2 emissions are multiplied by a factor: User Input Value/0.5% =	0.00
Max Daily Operation	24 hr/day		EPA Certified Generator (Tier 1, 2, 3, or Blue Sky)	
Max Annual Operation	727 hrs/yr			

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total) [b]	0.31	0.358	1.30E-01	
PM-10 (total) [b]	0.31	0.358	1.30E-01	
PM-2.5	0.07	0.081	2.94E-02	
CO [b]	0.95	1.097	3.99E-01	
NOx[b]	2.16	2.496	9.07E-01	
SO_2 [b] (total SOx presumed SO2)	0.29	1.00E-03	1.10E-06	
VOC [b] (total TOC--> VOCs)	0.36	0.416	1.51E-01	
Lead				
HCl [e]				
Dioxins[e]				
2,3,7,8-TCDD				
Total TCDD				
1,2,3,7,8-PeCDD				
Total PeCDD				
1,2,3,4,7,8-HxCDD[c]				
1,2,3,6,7,8-HxCDD				
1,2,3,7,8,9-HxCDD[c]				
Total HxCDD				
1,2,3,4,6,7,8-Hp-CDD[c]				
Total HpCDD[c]				
Octa CDD[c]				
Total PCDD[c]				
Furans[e]				
2,3,7,8-TCDF				
Total TCDF[c]				
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF[c]				
1,2,3,4,7,8-HxCDF				
1,2,3,6,7,8-HxCDF				
2,3,4,6,7,8-HxCDF				
1,2,3,7,8,9-HxCDF				
Total HxCDF[c]				
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF[c]				
Octa CDF[c]				
Total PCDF[c]				
Total PCDD/PCDF[c]				
Non-PAH HAPs				
Acetaldehyde[c]	7.67E-04	8.86E-04	3.22E-04	**7.35E-05**
Acrolein[c]	9.25E-05	1.07E-04	3.88E-05	1.07E-04
Benzene[c,e]	9.33E-04	1.08E-03	3.92E-04	**8.94E-05**
1,3-Butadiene[c,e]	3.91E-05	4.52E-05	1.64E-05	**3.75E-06**
Ethylbenzene[e]				
Formaldehyde[c,e]	1.18E-03	1.36E-03	4.95E-04	**1.13E-04**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c,e]	4.09E-04	4.72E-04	1.72E-04	4.72E-04
Xylene[c,e]	2.85E-04	3.29E-04	1.20E-04	3.29E-04
POM (7-PAH Group)		3.97E-06		**3.29E-07**

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PAH HAPs				
2-Methylnaphthalene				
3-Methylchloranthrene[e]				
Acenaphthene[c]	1.42E-06	1.64E-06	5.96E-07	**1.36E-07**
Acenaphthylene[c]	5.06E-06	5.84E-06	2.12E-06	**4.85E-07**
Anthracene[c]	1.87E-06	2.16E-06	7.85E-07	**1.79E-07**
Benzo(a)anthracene[c]	1.68E-06	1.94E-06	7.05E-07	**1.61E-07**
Benzo(a)pyrene[c,e]	1.88E-07	2.17E-07	7.89E-08	**1.80E-08**
Benzo(b)fluoranthene[c]	9.91E-08	1.14E-07	4.16E-08	**9.50E-09**
Benzo(e)pyrene				
Benzo(g,h,l)perylene[c]	4.89E-07	5.65E-07	2.05E-07	**4.69E-08**
Benzo(k)fluoranthene[c]	1.55E-07	1.79E-07	6.51E-08	**1.49E-08**
Chrysene[c]	3.53E-07	4.08E-07	1.48E-07	**3.38E-08**
Dibenzo(a,h)anthracene[c]	5.83E-07	6.73E-07	2.45E-07	**5.59E-08**
Dichlorobenzene				
Fluoranthene[c]	7.61E-06	8.79E-06	3.20E-06	**7.29E-07**
Fluorene[c]	2.92E-05	3.37E-05	1.23E-05	**2.80E-06**
Indeno(1,2,3-cd)pyrene[c]	3.75E-07	4.33E-07	1.57E-07	**3.59E-08**
Naphthalene[c,e]	8.48E-05	9.79E-05	3.56E-05	**8.13E-06**
Perylene				
Phenanthrene[c]	2.94E-05	3.40E-05	1.23E-05	**2.82E-06**
Pyrene[c]	4.78E-06	5.52E-06	2.01E-06	**4.58E-07**
Non-HAP Organic Compounds				
Acetone[e]				
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene				
Heptane				
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene				
2-Methyl-2-butene				
3-Methylpentane				
1-Pentene				
n-Pentane				
Valeraldehyde				
Metals				
Antimony[e]				
Arsenic[e]				
Barium[e]				
Beryllium[e]				
Cadmium[e]				
Chromium[e]				
Cobalt[e]				
Copper[e]				
Hexavalent Chromium[e]				
Manganese[e]				
Mercury[e]				
Molybdenum[e]				
Nickel[e]				
Phosphorus[e]				
Silver[e]				
Selenium[e]				
Thallium[e]				
Vanadium[e]				
Zinc[e]				

a) Emission factors are from AP-42
b) AP-42, Table 3.3-1, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines, 10/96
c) AP-42, Table 3.3-2, Speciated Organic Compoun Emission Factors for Uncontrolled Diesel Engine, **Emission Factor Rating E**, 10/96
d) (reserved)
e) IDAPA Toxic Air Pollutant

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: POE Asphalt Paving, Inc. - 00611 **Facility ID:** 777-00611
3/23/2020 13:08 **Permit** P-2020.0002

G2 Electrical Generator > 600 hp (447 kW)

Fuel Type Toggle =	1	
Fuel Consumption Rate	100.18	gal/hr
Calculated MMBtu/hr	13.73	MMBtu/hr
Max Daily Operation	24	hr/day
Max Annual Operation	727	hrs/yr

Rated Power (kW):	1,462
Not EPA Certified:	No
Certified EPA Tier 1:	Yes
Certified EPA Tier 2:	No
Certified EPA Tier 3:	No
Certified EPA Tier 4*:	No
Blue Sky Engine:	No

Conversion Factors:

Avg brake-specific fuel consumption (BSFC) =	7000	Btu/hp-hr
1 hp =	0.746	kW
1 lb =	453.592	g

g/kW-hr x (lb/453g) x (hp-hr/7000 Btu) x (0.746 kW/hp) x 10^6 Btu/MMBtu = lb/MMBtu
g/kW-hr x 0.23486 = lb/MMBtu

**Tier 4 emission factors from https://www.epa.gov/sites/production/files/2018-02/documents/02-update-tier-4-nonroad-diesel-engines-2017-12-06.pdf and 40 CFR 1039.101;Genset EF's*

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM=PM10
EMISSION FACTORS USED FOR G2 (lb/MMBtu):	**2.16**	**0.31**		**2.68**	**0.127**

AP-42, Ch 3.4 (10/96) EMISSION FACTORS (diesel fueled, uncontrolled)

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM10
Emission Factor (lb/MMBtu)	3.2	0.09		0.85	0.13
Emission Factor (g/kW-hr))	13.63	0.38		3.62	0.55

Note: Rating for AP-42 PM10 EF of 0.0573 is "E" or Poor. Used Tier 1 PM EF and presumed PM = PM10

40 CFR 89, EPA CERTIFIED GENERATOR EMISSION FACTORS (g/kW-hr converted to lb/MMBtu)

Rated Power (kW)	Tier	Applicable?	Model Year[1]	NOx	HC	NMHC + NOx	CO	PM = PM10
130 ≤ kW ≤ 560	BlueSky	0	n/a	---	*0.31*	0.94	*0.82*	0.028
225 ≤ kW < 450	1	0	1996	2.16	0.31	---	2.68	0.13
225 ≤ kW < 450	2	0	2001	---	*0.31*	1.50	0.82	0.05
225 ≤ kW < 450	3	0	2006	---	*0.31*	0.94	0.82	0.05
225 ≤ kW < 450	4	0	2011	0.47	0.04	---	0.82	0.05
225 ≤ kW < 450	4	0	2014	0.47	0.04		0.82	0.05
450 ≤ kW ≤ 560	1	0	1996	2.16	0.31	---	2.68	0.13
450 ≤ kW ≤ 560	2	0	2002	---	*0.31*	1.50	0.82	0.05
450 ≤ kW ≤ 560	3	0	2006	---	*0.31*	0.94	0.82	0.05
450 ≤ kW ≤ 560	4	0	2011	0.47	0.04	---	0.82	0.005
450 ≤ kW ≤ 560	4	0	2014	0.47	0.04	---	0.82	0.005
kW > 560	1	1	2000	2.16	0.31	---	2.68	0.13
kW > 560	2	0	2006	---	*0.31*	1.50	0.82	0.05
kW > 560	4	0	2011	0.82	0.04	---	0.82	0.01
kW > 560*	4	0	2014	0.16	0.04	---	0.82	0.01
kW > 560	BlueSky	0	n/a	---	*0.31*	0.89	*0.82*	0.028

*Tier 4 final emission factors from 40 CFR 1039.101 for engines that are part of gensets

40 CFR 89, EPA CERTIFIED GENERATOR EMISSION FACTORS FOR GENERATOR G2 (lb/MMBtu)

Rated Power (kW)	Tier	Applicable?	Model Year[1]	NOx	HC	NMHC + NOx	CO	PM10
130 ≤ kW ≤ 560	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
225 ≤ kW < 450	1	0	1996	0.00	0.00	0.00	0.00	0.00
225 ≤ kW < 450	2	0	2001	0.00	0.00	0.00	0.00	0.00
225 ≤ kW < 450	3	0	2006	0.00	0.00	0.00	0.00	0.00
225 ≤ kW < 450	4	0	2011	0.00	0.00	0.00	0.00	0.00
225 ≤ kW < 450	4	0	2014	0.00	0.00	0.00	0.00	0.00
450 ≤ kW ≤ 560	1	0	1996	0.00	0.00	0.00	0.00	0.00
450 ≤ kW ≤ 560	2	0	2002	0.00	0.00	0.00	0.00	0.00
450 ≤ kW ≤ 560	3	0	2006	0.00	0.00	0.00	0.00	0.00
450 ≤ kW ≤ 560	4	0	2011	0.00	0.00	0.00	0.00	0.00
450 ≤ kW ≤ 560	4	0	2014	0.00	0.00	0.00	0.00	0.00
kW > 560	1	1	2000	2.16	0.31	0.00	2.68	0.13
kW > 560	2	0	2006	0.00	0.00	0.00	0.00	0.00
kW > 560	4	0	2011	0.00	0.00	0.00	0.00	0.00
kW > 560	4	0	2015	0.00	0.00	0.00	0.00	0.00
kW > 560	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
EMISSION FACTORS FOR GENERATOR G2 (lb/MMBTU):				**2.16**	**0.31**	**0.00**	**2.68**	**0.127**

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID: P-2020.0002 777-00611**

IC Engine 2 Powering an Electrical Generator > 600 hp (447 kW) AP-42 Section 3.4 (diesel fueled, uncontrolled)

Fuel Type Toggle =	1	1,462 kw	User Input Weight % Sulfur = 0.0015%
Fuel Consumption Rate	100.18 gal/hr		AP-42 3.4-1 SO2 EF = 1.01 x S
Calculated MMBtu/hr	13.73 MMBtu/hr		
Max Daily Operation	24 hr/day		EPA Certified Generator (Tier 1, 2, 3, or Blue Sky)
Max Annual Operation	727 hrs/yr		

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM [b]	0.1	1.373	4.99E-01	1.14E-01
PM-10 (total) [d]	0.13	1.741	6.33E-01	1.44E-01
PM-2.5	0.0556	0.763	2.77E-01	6.33E-02
CO [b]	2.68	36.752	1.34E+01	
NOx[b]	2.16	29.659	1.08E+01	2.46E+00
SO_2 [b] (total SOx presumed SO2)	0.001515	0.021	0.008	1.73E-03
VOC [b] (total TOC--> VOCs)	0.31	4.191	1.523	
Lead				
HCl [e]				
Dioxins[e]				
2,3,7,8-TCDD				
Total TCDD				
1,2,3,7,8-PeCDD				
Total PeCDD				
1,2,3,4,7,8-HxCDD[c]				
1,2,3,6,7,8-HxCDD				
1,2,3,7,8,9-HxCDD[c]				
Total HxCDD				
1,2,3,4,6,7,8-Hp-CDD[c]				
Total HpCDD[c]				
Octa CDD[c]				
Total PCDD[c]				
Furans[e]				
2,3,7,8-TCDF				
Total TCDF[c]				
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF[c]				
1,2,3,4,7,8-HxCDF				
1,2,3,6,7,8-HxCDF				
2,3,4,6,7,8-HxCDF				
1,2,3,7,8,9-HxCDF				
Total HxCDF[c]				
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF[c]				
Octa CDF[c]				
Total PCDF[c]				
Total PCDD/PCDF[c]				
Non-PAH HAPs				
Acetaldehyde[c]	2.52E-05	3.46E-04	1.26E-04	**2.87E-05**
Acrolein[c]	7.88E-06	1.08E-04	3.93E-05	1.08E-04
Benzene[c,e]	7.76E-04	1.07E-02	3.87E-03	**8.84E-04**
1,3-Butadiene[c,e]				
Ethylbenzene[e]				
Formaldehyde[c,e]	7.89E-05	1.08E-03	3.94E-04	**8.99E-05**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c,e]	2.81E-04	3.86E-03	1.40E-03	3.86E-03
Xylene[c,e]	1.93E-04	2.65E-03	9.63E-04	2.65E-03
POM (7-PAH Group)		6.17E-05		**5.12E-06**

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr
PAH HAPs				
2-Methylnaphthalene				
3-Methylchloranthrene[e]				
Acenaphthene[c1]	4.68E-06	6.42E-05	2.34E-05	**5.33E-06**
Acenaphthylene[c1]	9.23E-06	1.27E-04	4.61E-05	**1.05E-05**
Anthracene[c1]	1.23E-06	1.69E-05	6.14E-06	**1.40E-06**
Benzo(a)anthracene[c1]	6.22E-07	8.54E-06	3.10E-06	**7.09E-07**
Benzo(a)pyrene[c1,e]	2.57E-07	3.53E-06	1.28E-06	**2.93E-07**
Benzo(b)fluoranthene[c1]	1.11E-06	1.52E-05	5.54E-06	**1.26E-06**
Benzo(e)pyrene				
Benzo(g,h,l)perylene[c1]	5.56E-07	7.63E-06	2.77E-06	**6.33E-07**
Benzo(k)fluoranthene[c1]	2.18E-07	2.99E-06	1.09E-06	**2.48E-07**
Chrysene[c1]	1.53E-06	2.10E-05	7.63E-06	**1.74E-06**
Dibenzo(a,h)anthracene[c1]	3.46E-07	4.75E-06	1.73E-06	**3.94E-07**
Dichlorobenzene				
Fluoranthene[c1]	4.03E-06	5.53E-05	2.01E-05	**4.59E-06**
Fluorene[c1]	1.28E-05	1.76E-04	6.39E-05	**1.46E-05**
Indeno(1,2,3-cd)pyrene[c1]	4.14E-07	5.68E-06	2.07E-06	**4.72E-07**
Naphthalene[c1,e]	1.30E-04	1.78E-03	6.49E-04	**1.48E-04**
Perylene				
Phenanthrene[c1]	4.08E-05	5.60E-04	2.04E-04	**4.65E-05**
Pyrene[c1]	3.71E-06	5.09E-05	1.85E-05	**4.23E-06**
Non-HAP Organic Compounds				
Acetone[e]				
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene				
Heptane				
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene				
2-Methyl-2-butene				
3-Methylpentane				
1-Pentene				
n-Pentane				
Valeraldehyde				
Metals				
Antimony[e]				
Arsenic[e]				
Barium[e]				
Beryllium[e]				
Cadmium[e]				
Chromium[e]				
Cobalt[e]				
Copper[e]				
Hexavalent Chromium[e]				
Manganese[e]				
Mercury[e]				
Molybdenum[e]				
Nickel[e]				
Phosphorus[e]				
Silver[e]				
Selenium[e]				
Thallium[e]				
Vanadium[e]				
Zinc[e]				

a) Emission factors are from AP-42
b) AP-42, Table 3.4-1, Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual Fuel Engines, 10/96
c) AP-42, Table 3.4-3, Speciated Organic Compound Emission Factors for Large Uncontrolled Stationary Diesel Engines **Emission Factor Rating E**, 10/96
c1) AP-42, Table 3.4-4, PAH Emission Factors for Large Uncontrolled Stationary Diesel Engines,**Emission Factor Rating E**, 10/96
d) AP-42, Table 3.4-2, Particulate and Particle-Sizing Emission Factors for Large Uncontrolled Stationary Diesel Engines,**Emission Factor Rating E**, 10/96
e) IDAPA Toxic Air Pollutant

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID:** **P-2020.0002** **777-00611**

Max Hourly Production	450 T/hr	96%	T/hr is Aggregate & RAP =	**432 T/hr**
Max Daily Production	6,300 Tons/day	96%	T/day is Aggregate & RAP =	**6,048 T/day**
Max Annual Production	400,000 Tons/yr	96%	T/yr is Aggregate & RAP =	**384,000 T/yr**

Fine PM emitted from RAP use is negligible (see assumptions on page 1 of this spreadsheet). Worst case emissions are for 0% RAP

Aggregate Front-end Loader Drop Points, AP-42 13.2.4 (11/06)

$E = k\ (0.0032) \times (U/5)^{1.3}\ /\ (M/2)^{1.4}$ = 3.31E-03 for PM 1.56E-03 lb/ton for PM10 2.37E-04 lb/ton for PM2.5

k = particle size multiplier 0.74 for PM 0.35 for PM10 0.053 for PM2.5
U = mean wind speed = **10 mph** Wind speed range for source conditions for Equation 1: 1.3 to 15 mph. Select 10 mph as base case wind speed.
M = moisture content = **3 %**

Moisture Content: 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: Aggregate moisture content into dryer typically 3 to 7 %
BAAQMD, Hot Mixing Asphalt Facilities, Engineering Evaluation Template, www.baaqmd.gov/pmt/handbook/s11c02ev.htm: Bulk aggregate moisture content typically stabiliizes between 3 and 5% by weight.

Windspeed Variation Factors for AERMOD modeling:				PM10		PM2.5	
Wind Category	Upper windspeed (m/sec)	Avg windspeed (m/sec)	Avg windspeed (mph)	E @ avg mph	F = Eavg mph/ E@10mph	E @ avg mph	F = Eavg mph/ E@10mph
Cat 1:	1.54	0.77	1.72	1.59E-04	0.1016	2.41E-05	0.1016
Cat 2:	3.09	2.32	5.18	6.65E-04	0.4251	1.01E-04	0.4251
Cat 3:	5.14	4.12	9.20	1.40E-03	0.8979	2.13E-04	0.8979
Cat 4:	8.23	6.69	14.95	2.64E-03	1.687	3.99E-04	1.687
Cat 5:	10.80	9.52	21.28	4.17E-03	2.670	6.32E-04	2.670
Cat 6:	14.00	12.40	27.74	5.89E-03	3.767	8.92E-04	3.767

Aggregate Front End Loader Drop Points Drop to storage pile and drop to bins: **432 T/hr** **2** Transfer Points

Pollutant	Calculated Emission Factor from AP-42 13.2.4 (lb/ton)	Emissions Per Transfer Point				Total Emissions			
		Emissions (lb/hr) 1-hr Average	Emissions (lb/hr) 24-hr Average	Emissions (T/yr)	Emissions (lb/hr) Annual Average	Emissions (lb/hr) 1-hr Average	Emissions (lb/hr) 24-hr Average	Emissions (T/yr)	Emissions (lb/hr) Annual Average
PM (total)	3.31E-03	1.43	0.83	0.63	0.14	2.86	1.67	1.27	0.29
PM-10 (total)	1.56E-03	0.68	0.39	0.30	0.07	1.35	0.79	0.60	0.14
PM-2.5	2.37E-04	0.10	0.06	0.05	0.01	0.20	0.12	0.09	0.02

Conveyor and Scalping Screen Emission Points

Moisture/Control %:
AP-42 Table 11.19.2-2, Note b. Moisture content of uncontrolled sources ranged from 0.21 to 1.3%
AP-42 Table 11.19.2-2, Note b. Moisture content of controlled (water spray) sources ranged from 0.55 to 2.88% --> ~91.3% control for screening, ~95% control for conveyor transfer
Bulk aggregate for HMA plants typically stabilizes between 3 and 5% by weight--> Apply additional **90%** control to lb/hr, etc. for the higher moisture.

Aggregate Weigh Conveyor

Transfer from bins to conveyor and from conveyor to scalping screen: **432 T/hr** **2** Transfer Points

Pollutant	Calculated Emission Factor from AP-42 13.2.4 (lb/ton)	Emissions Per Transfer Point				Total Emissions			
		Emissions (lb/hr) 1-hr Average	Emissions (lb/hr) 24-hr Average	Emissions (T/yr)	Emissions (lb/hr) Annual Average	Emissions (lb/hr) 1-hr Average	Emissions (lb/hr) 24-hr Average	Emissions (T/yr)	Emissions (lb/hr) Annual Average
PM (total)	3.31E-03	1.43E-01	8.33E-02	6.35E-02	1.45E-02	2.86E-01	1.67E-01	1.27E-01	2.90E-02
PM-10 (total)	1.56E-03	6.75E-02	3.94E-02	3.00E-02	6.85E-03	1.35E-01	7.88E-02	6.00E-02	1.37E-02
PM-2.5	2.37E-04	1.02E-02	5.97E-03	4.55E-03	1.04E-03	2.05E-02	1.19E-02	9.09E-03	2.08E-03

Aggregate Scalping Screen, AP-42 11.19 (8/04)

Aggregate flow across scalping screen onto conveyor: **432 T/hr**

Pollutant	Emission Factor Table 11.19.2-2 SCREENING UNCONTROLLED (lb/ton)	Emissions (lb/hr) 1-hr Average	Emissions (lb/hr) 24-hr Average	Emissions (T/yr)	Emissions (lb/hr) Annual Average
PM (total)	0.025	1.080	6.30E-01	4.80E-01	1.10E-01
PM-10 (total)	0.0087	0.376	2.19E-01	1.67E-01	3.81E-02
PM-2.5	1.30E-04	0.006	3.28E-03	2.50E-03	5.70E-04

Aggregate Conveyor to Drum (~top end of the drum)

Aggregate transfer from conveyor to drum dryer (1 transfer point): **432 T/hr**

Pollutant	Calculated Emission Factor from AP-42 13.2.4 (lb/ton)	Emissions Per Transfer Point			
		Emissions (lb/hr) 1-hr Average	Emissions (lb/hr) 24-hr Average	Emissions (T/yr)	Emissions (lb/hr) Annual Average
PM (total)	3.31E-03	1.43E-01	8.33E-02	6.35E-02	1.45E-02
PM-10 (total)	1.56E-03	6.75E-02	3.94E-02	3.00E-02	6.85E-03
PM-2.5	2.37E-04	1.02E-02	5.97E-03	4.55E-03	1.04E-03

Facility: POE Asphalt Paving, Inc. - 00611
3/23/2020 13:08 **Permit/Facility ID:** P-2020.0002 777-00611

Asphalt Tank Heater - #2 Oil Fired, Estimated GHG Emissions Using AP-42 Sections 11.1 (HMA Plants) & 1.3 (Fuel Oil Combustion)

Hot Mix Plant Fuel Type Toggle (#2) = 1
Hot Mix Plant Fuel Type Toggle (Used Oil) = 1
Hot Mix Plant Fuel Type Toggle (NG) = 1
Hot Mix Plant Fuel Type Toggle (LPG) = 1
Tank Heater Fuel Type Toggle (NG) = 1
Tank Heater Fuel Type Toggle (#2) = 0

Note: CO2e emissions from the silo, loadout operation, and the tanks were assumed to be negligible (less than 1 ton per year).

Green House Gas Emissions When Combusting #2 Fuel Oil

Asphalt Plant Emissions	Emission Factor (EF)	EF Units	EF Source	Emissions (T/yr)	Global Warming Potential	CO_2e (T/yr)
CO_2	33.00	lb/T	AP-42 Table 11.1-7	6,600.00	1.00	6,600.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	2.40	21.00	50.40
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.113844	310.00	35.29

Tank Heater	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e T/yr
CO_2	Assumes all carbon is converted to CO_2.			0.00	1	0.00
Methane	0.216	lb/10^3 gal	AP-42 Table 1.3-3	0.00E+00	21	0.00
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.00E+00	310	0.00

Green House Gas Emissions When Combusting Used Oil

Asphalt Plant Emissions	Emission Factor (EF)	EF Units	EF Source	Emissions (T/yr)	Global Warming Potential	CO_2e (T/yr)
CO_2	33.00	lb/T	AP-42 Table 11.1-7	6,600.00	1.00	6,600.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	2.40	21.00	50.40
N_2O	0.53	lb/10^3 gal	AP-42 Table 1.3-8	0.232066	310.00	71.94

Green House Gas Emissions When Combusting Natural Gas

Asphalt Plant Emissions	Emission Factor (EF)	EF Units	EF Source	Emissions (T/yr)	Global Warming Potential	CO_2e (T/yr)
CO_2	33.00	lb/T	AP-42 Table 11.1-7	6,600.00	1.00	6,600.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	2.40	21.00	50.40
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.113844	310.00	35.29

Tank Heater	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e T/yr
CO_2	0.12	lb/scf	AP-42 Table 1.4-2	470.59	1	470.59
Methane	0.0000023	lb/scf	AP-42 Table 1.4-2	9.02E-03	21	0.19
N_2O	0.0000022	lb/scf	AP-42 Table 1.4-2	8.63E-03	310	2.67

Green House Gas Emissions When Combusting LPG

Asphalt Plant Emissions	Emission Factor (EF)	EF Units	EF Source	Emissions (T/yr)	Global Warming Potential	CO_2e (T/yr)
CO_2	33.00	lb/T	AP-42 Table 11.1-7	6,600.00	1.00	6,600.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	2.40	21.00	50.40
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.113844	310.00	35.29

Green House Gas Emissions When Combusting Diesel Fuel

IC Engine 1 < 600 bhp	Emission Factor (EF)	EF Units	EF Source	Emissions (T/yr)	Global Warming Potential	CO_2e (T/yr)
CO_2	1.16	lb/bhp-hr	AP-42 Table 3.4-1	69.57	1.00	69.57

IC Engine 2 > 600 bhp	Emission Factor (EF)	EF Units	EF Source	Emissions (T/yr)	Global Warming Potential	CO_2e (T/yr)
CO_2	1.16	lb/bhp-hr	AP-42 Table 3.4-1	826.88	1.00	826.88

Total Green House Gas Emissions

Total Emissions	CO_2e (T/yr)
CO_2	7,967.04
Methane	50.59
N_2O	74.61
Grand Total	**8,092.24**

Facility:	POE Asphalt Paving, Inc. - 00611		
3/23/2020 13:08	Permit/Facility ID:	P-2020.0002	777-00611

EMISSION INVENTORY
POUNDS PER HOUR

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **450** Tons/hour 889 Hours/year **400,000** Tons/year **6,300** Tons/day
Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater: **2.0000** MMBtu/hr **4,000** Hours/year **24** hrs/day
Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil
C1. IC Engine 1: **8.43** gal/hour **727** Hours/year IC Engine < 600hp #2 Fuel Oil **24** hrs/day
C2. IC Engine 2: **100.18** gal/hour **727** Hours/year IC Engine > 600hp #2 Fuel Oil **24** hrs/day

Pollutant	A Drum Mix Max Emission Rate for Pollutant (lb/hr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (lb/hr)	C IC Engine 1 + IC Engine 2 Max Emission Rate for Pollutant (lb/hr)	D Load-out & Silo Filling Emission Rate for Pollutant (lb/hr)	E TOTAL of Max Emission Rates from A, B, C & D (lb/hr)
PM (total)	14.85	4.82E-02	1.73E+00	4.99E-01	17.13
PM-10 (total)	10.35	3.36E-02	2.10E+00	4.99E-01	12.98
PM-2.5	10.04	2.25E-02	8.44E-01	4.99E-01	11.40
CO	58.50	7.30E-02	3.78E+01	1.14E+00	97.56
NOx	24.75	3.50E-01	3.22E+01		57.26
SO_2	40.05	1.04E-01	2.18E-02		40.18
VOC	14.40	8.12E-03	4.61E+00	1.81E+00	20.83
Lead	6.75E-03	2.20E-05	0.00E+00		6.77E-03
HCl [e]	9.45E-02	0.00E+00	0.00E+00		9.45E-02
Dioxins[e]					
2,3,7,8-TCDD	9.59E-12				**9.59E-12**
Total TCDD	4.25E-11				**4.25E-11**
1,2,3,7,8-PeCDD	1.42E-11				**1.42E-11**
Total PeCDD	1.00E-09				**1.00E-09**
1,2,3,4,7,8-HxCDD	1.92E-11	4.60E-12			**2.38E-11**
1,2,3,6,7,8-HxCDD	5.94E-11				**5.94E-11**
1,2,3,7,8,9-HxCDD	4.47E-11	5.07E-12			**4.98E-11**
Total HxCDD	5.48E-10				**5.48E-10**
1,2,3,4,6,7,8-Hp-CDD	2.19E-10	1.00E-10			**3.19E-10**
Total HpCDD	8.68E-10	1.33E-10			**1.00E-09**
Octa CDD	1.14E-09	1.07E-09			**2.21E-09**
Total PCDD[h]	3.61E-09	1.33E-09			**4.94E-09**
Furans[e]					
2,3,7,8-TCDF	4.43E-11				**4.43E-11**
Total TCDF	1.69E-10	2.20E-11			**1.91E-10**
1,2,3,7,8-PeCDF	1.96E-10				**1.96E-10**
2,3,4,7,8-PeCDF	3.84E-11				**3.84E-11**
Total PeCDF	3.84E-09	3.20E-12			**3.84E-09**
1,2,3,4,7,8-HxCDF	1.83E-10				**1.83E-10**
1,2,3,6,7,8-HxCDF	5.48E-11				**5.48E-11**
2,3,4,6,7,8-HxCDF	8.68E-11				**8.68E-11**
1,2,3,7,8,9-HxCDF	3.84E-10				**3.84E-10**
Total HxCDF	5.94E-10	1.33E-11			**6.07E-10**
1,2,3,4,6,7,8-HpCDF	2.97E-10				**2.97E-10**
1,2,3,4,7,8,9-HpCDF	1.23E-10				**1.23E-10**
Total HpCDF	4.57E-10	6.46E-11			**5.21E-10**
Octa CDF	2.19E-10	8.00E-11			**2.99E-10**
Total PCDF[h]	1.83E-09	2.07E-10			**2.03E-09**
Total PCDD/PCDF[h]	5.48E-09	1.53E-09	0.00E+00		**7.01E-09**
Non-PAH HAPs					
Acetaldehyde[e]	5.94E-02		1.02E-04		**5.95E-02**
Acrolein[e]	6.83E-03		2.15E-04		7.04E-03
Benzene[e]	1.78E-02	0.00E+00	9.73E-04	2.77E-04	**1.91E-02**
1,3-Butadiene[e]			3.75E-06		**3.75E-06**
Ethylbenzene[e]	6.30E-02			4.27E-03	6.73E-02
Formaldehyde[e]	1.42E-01	2.33E-05	2.03E-04	4.01E-03	**1.46E-01**
Hexane[e]	2.42E-01	0.00E+00		4.84E-03	2.46E-01
Isooctane	1.05E-02			2.96E-05	1.05E-02
Methyl Ethyl Ketone[e]	5.25E-03			1.78E-03	7.03E-03
Pentane[e]		0.00E+00			0.00E+00
Propionaldehyde[e]	3.41E-02				3.41E-02
Quinone[e]	4.20E-02				4.20E-02
Methyl chloroform[e]	1.26E-02				1.26E-02
Toluene[e]	7.61E-01	0.00E+00	4.33E-03	4.28E-03	7.70E-01
Xylene[e]	5.25E-02		2.98E-03	2.14E-02	7.69E-02
POM (7-PAH Group)[e]	2.50E-05	6.66E-07	5.45E-06	5.18E-05	**8.30E-05**
TOTAL PAH HAPs	4.04E-02	1.53E-04	2.57E-04	2.25E-03	**4.31E-02**

Pollutant	A Drum Mix Max Emission Rate for Pollutant (lb/hr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (lb/hr)	C IC Engine IC1 + IC2 Max Emission Rate for Pollutant (lb/hr)	D Load-out & Silo Filling Emission Rate for Pollutant (lb/hr)	E TOTAL of Max Emission Rates from A, B, C & D (lb/hr)
PAH HAPs					
2-Methylnaphthalene	7.76E-03	0.00E+00		9.81E-04	**8.74E-03**
3-Methylchloranthrene[e]	0.00E+00	0.00E+00			**0.00E+00**
Acenaphthene	6.39E-05	3.53E-06	5.47E-06	9.50E-05	**1.68E-04**
Acenaphthylene	1.00E-03	1.33E-06	1.10E-05	5.98E-06	**1.02E-03**
Anthracene	1.42E-04	1.20E-06	1.58E-06	2.60E-05	**1.70E-04**
Benzo(a)anthracene[e]	9.59E-06	0.00E+00	8.70E-07	9.45E-06	**1.99E-05**
Benzo(a)pyrene[e]	4.47E-07	0.00E+00	3.11E-07	3.58E-07	**1.12E-06**
Benzo(b)fluoranthene[e]	4.57E-06	6.66E-07	1.27E-06	1.18E-06	**7.69E-06**
Benzo(e)pyrene	5.02E-06	0.00E+00		2.32E-06	**7.34E-06**
Benzo(g,h,I)perylene	1.83E-06	0.00E+00	6.80E-07	2.96E-07	**2.80E-06**
Benzo(k)fluoranthene[e]	1.87E-06	0.00E+00	2.63E-07	3.42E-07	**2.48E-06**
Chrysene[e]	8.22E-06	0.00E+00	1.78E-06	4.04E-05	**5.04E-05**
Dibenzo(a,h)anthracene[e]	0.00E+00	0.00E+00	4.50E-07	5.76E-08	**5.08E-07**
Dichlorobenzene	0.00E+00	0.00E+00			**0.00E+00**
Fluoranthene	2.79E-05	2.93E-07	5.32E-06	2.52E-05	**5.86E-05**
Fluorene	5.02E-04	2.13E-07	1.74E-05	2.37E-04	**7.57E-04**
Indeno(1,2,3-cd)pyrene[e]	3.20E-07	0.00E+00	5.08E-07	7.32E-08	**9.00E-07**
Naphthalene[e]	2.97E-02	1.13E-04	1.56E-04	4.06E-04	**3.04E-02**
Perylene	4.02E-07	0.00E+00		6.90E-06	**7.30E-06**
Phenanthrene	1.05E-03	3.27E-05	4.93E-05	3.35E-04	**1.47E-03**
Pyrene	1.37E-04	2.13E-07	4.68E-06	7.44E-05	**2.16E-04**
Non-HAP Organic Compounds					
Acetone[e]	2.18E-01	0.00E+00		2.27E-03	2.20E-01
Benzaldehyde	2.89E-02	0.00E+00			2.89E-02
Butane	1.76E-01	0.00E+00			1.76E-01
Butyraldehyde	4.20E-02	0.00E+00			4.20E-02
Crotonaldehyde[e]	2.26E-02	0.00E+00			2.26E-02
Ethylene	1.84E+00	0.00E+00		4.29E-02	1.88E+00
Heptane	2.47E+00	0.00E+00			2.47E+00
Hexanal	2.89E-02	0.00E+00			2.89E-02
Isovaleraldehyde	8.40E-03	0.00E+00			8.40E-03
2-Methyl-1-pentene	1.05E+00	0.00E+00			1.05E+00
2-Methyl-2-butene	1.52E-01	0.00E+00			1.52E-01
3-Methylpentane	4.99E-02	0.00E+00			4.99E-02
1-Pentene	5.78E-01	0.00E+00			5.78E-01
n-Pentane	5.51E-02	0.00E+00			5.51E-02
Valeraldehyde[e]	1.76E-02	0.00E+00			1.76E-02
Metals					
Antimony[e]	4.73E-05	7.66E-05			1.24E-04
Arsenic[e]	2.56E-05	8.80E-06			**3.44E-05**
Barium[e]	1.52E-03	3.75E-05			1.56E-03
Beryllium[e]	0.00E+00	1.85E-07			**1.85E-07**
Cadmium[e]	1.87E-05	2.65E-06			**2.14E-05**
Chromium[e]	1.44E-03	1.23E-05			1.46E-03
Cobalt[e]	6.83E-06	8.79E-05			9.47E-05
Copper[e]	8.14E-04	2.57E-05			8.39E-04
Hexavalent Chromium[e]	2.05E-05	1.65E-06			**2.22E-05**
Manganese[e]	2.02E-03	4.38E-05			2.07E-03
Mercury[e]	6.83E-04	1.65E-06			6.84E-04
Molybdenum[e]	0.00E+00	1.15E-05			1.15E-05
Nickel[e]	2.88E-03	5.63E-04			**3.44E-03**
Phosphorus[e]	7.35E-03	1.38E-04			7.49E-03
Silver[e]	1.26E-04	0.00E+00			1.26E-04
Selenium[e]	9.19E-05	9.97E-06			1.02E-04
Thallium[e]	1.08E-06	0.00E+00			1.08E-06
Vanadium[e]	0.00E+00	4.64E-04			4.64E-04
Zinc[e]	1.60E-02	4.25E-04			1.64E-02

e) IDAPA Toxic Air Pollutant

Criteria Pollutant lb/hr emissions are maximum 1-hr averages
TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.
Pollutants shown in blue text are emitted only when burning Used Oil, but not when burning #2 Fuel Oil or Natural Gas

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **450** Tons/hour 889 Hours/year **400,000** Tons/year HMA throughput **6,300** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater: **2.0000** MMBtu/hr **4,000** Hours/year **24** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil
C1. IC Engine 1: **8.43** gal/hour **727** Hours/year #2 Fuel Oil Generator < 600hp **24** hrs/day
C2. IC Engine 2: **100.18** gal/hour **727** Hours/year #2 Fuel Oil Generator > 600hp **24** hrs/day

Pollutant	A **Drum Mix** Max Emission Rate for Pollutant (lb/hr)	B **Asphalt Tank Heater** Max Emission Rate for Pollutant (lb/hr)	C **IC Engine** Max Emission Rate for Pollutant (lb/hr)	D **Load-out & Silo Filling** Emission Rate for Pollutant (lb/hr)	E **TOTAL** of Max Emission Rates from A, B, C & D (lb/hr)
non-PAH HAPs[g]					
Bromomethane[e]				2.62E-04	2.62E-04
2-Butanone (see Methyl Ethyl Ketone)					
Carbon disulfide[e]				6.54E-04	6.54E-04
Chloroethane (Ethyl chloride[e])				1.30E-04	1.30E-04
Chloromethane (Methyl chloride[e])				9.00E-04	9.00E-04
Cumene				1.20E-03	1.20E-03
n-Hexane					
Methylene chloride (Dichloromethane[e])				8.64E-06	8.64E-06
MTBE					
Styrene[e]				2.52E-04	2.52E-04
Tetrachloroethene (Tetrachloroethylene[e])				8.41E-05	8.41E-05
1,1,1-Trichloroethane (Methyl chloroform[e])					
Trichloroethene (Trichloroethylene[e])					
Trichlorofluoromethane				1.42E-05	1.42E-05
m-/p-Xylene[e]				1.09E-02	1.09E-02
o-Xylene[e]				1.06E-02	1.06E-02
Phenol[e,f]				1.06E-03	1.06E-03
Non-HAP Organic Compounds					
Methane				9.03E-01	9.03E-01

e) IDAPA Toxic Air Pollutant

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: **POE Asphalt Paving, Inc. - 00611**
3/23/2020 13:08 **Permit/Facility ID:** **P-2020.0002** **777-00611**

EMISSION INVENTORY

TONS PER YEAR

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **450** Tons/hour 889 Hours/year **400,000** Tons/year HMA throughput **6,300** hrs/day
Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater: **2.0000** MMBtu/hr **4,000** Hours/year **24** hrs/day
Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil
C1. IC Engine 1: **8.43** gal/hour **727** Hours/year IC Engine <600hp #2 Fuel Oil **24** hrs/day
C2. IC Engine 2: **100.18** gal/hour **727** Hours/year IC Engine > 600hp #2 Fuel Oil **24** hrs/day

Pollutant	A **Drum Mix** Max Emission Rate for Pollutant (T/yr)	B **Asphalt Tank Heater** Max Emission Rate for Pollutant (T/yr)	C **IC Engine IC1 + IC2** Max Emission Rate for Pollutant (T/yr)	D **Load-out & Silo Filling,** Emission Rate for Pollutant (T/yr)	**E POINT SOURCE TOTAL** of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
PM (total)	6.60	9.63E-02	6.29E-01	2.22E-01	7.33
PM-10 (total)	4.60	6.71E-02	7.63E-01	2.22E-01	5.43
PM-2.5	4.46	4.50E-02	3.07E-01	2.22E-01	4.81
CO	26.00	1.46E-01	1.38E+01	5.06E-01	39.90
NOx	11.00	7.01E-01	1.17E+01		23.39
SO_2	17.80	2.07E-01	7.56E-03		18.01
VOC	6.40	1.62E-02	1.67E+00	8.06E-01	8.09
Lead	3.00E-03	4.41E-05	0.00E+00		3.04E-03
HCl [e]	4.20E-02	0.00E+00	0.00E+00		4.20E-02
Dioxins[e]					
2,3,7,8-TCDD	4.20E-11				4.20E-11
Total TCDD	1.86E-10				1.86E-10
1,2,3,7,8-PeCDD	6.20E-11				6.20E-11
Total PeCDD	4.40E-09				4.40E-09
1,2,3,4,7,8-HxCDD	8.40E-11	2.01E-11			1.04E-10
1,2,3,6,7,8-HxCDD	2.60E-10				2.60E-10
1,2,3,7,8,9-HxCDD	1.96E-10	2.22E-11			2.18E-10
Total HxCDD	2.40E-09				2.40E-09
1,2,3,4,6,7,8-Hp-CDD	9.60E-10	4.38E-10			1.40E-09
Total HpCDD	3.80E-09	5.84E-10			4.38E-09
Octa CDD	5.00E-09	4.67E-09			9.67E-09
Total PCDD[h]	1.58E-08	5.84E-09			2.16E-08
Furans[e]					
2,3,7,8-TCDF	1.94E-10				1.94E-10
Total TCDF	7.40E-10	9.63E-11			8.36E-10
1,2,3,7,8-PeCDF	8.60E-10				8.60E-10
2,3,4,7,8-PeCDF	1.68E-10				1.68E-10
Total PeCDF	1.68E-08	1.40E-11			1.68E-08
1,2,3,4,7,8-HxCDF	8.00E-10				8.00E-10
1,2,3,6,7,8-HxCDF	2.40E-10				2.40E-10
2,3,4,6,7,8-HxCDF	3.80E-10				3.80E-10
1,2,3,7,8,9-HxCDF	1.68E-09				1.68E-09
Total HxCDF	2.60E-09	5.84E-11			2.66E-09
1,2,3,4,6,7,8-HpCDF	1.30E-09				1.30E-09
1,2,3,4,7,8,9-HpCDF	5.40E-10				5.40E-10
Total HpCDF	2.00E-09	2.83E-10			2.28E-09
Octa CDF	9.60E-10	3.50E-10			1.31E-09
Total PCDF[h]	8.00E-09	9.05E-10			8.90E-09
Total PCDD/PCDF[h]	2.40E-08	6.71E-09			3.07E-08
Non-PAH HAPs					
Acetaldehyde[e]	2.60E-01		4.48E-04		2.60E-01
Acrolein[e]	5.20E-03		7.82E-05		5.28E-03
Benzene[e]	7.80E-02	0.00E+00	4.26E-03	1.21E-03	8.23E-02
1,3-Butadiene[e]	0.00E+00		1.64E-05		1.64E-05
Ethylbenzene[e]	4.80E-02			3.26E-03	4.80E-02
Formaldehyde[e]	6.20E-01	1.02E-04	8.89E-04	1.75E-02	6.21E-01
Hexane[e]	1.84E-01	0.00E+00		3.69E-03	1.84E-01
Isooctane	8.00E-03			2.25E-05	8.00E-03
Methyl Ethyl Ketone[e]	4.00E-03			1.36E-03	4.00E-03
Pentane[e]	0.00E+00	0.00E+00			0.00E+00
Propionaldehyde[e]	2.60E-02				2.60E-02
Quinone[e]	3.20E-02				3.20E-02
Methyl chloroform[e]	9.60E-03				9.60E-03
Toluene[e]	5.80E-01	0.00E+00	1.57E-03	3.26E-03	5.82E-01
Xylene[e]	4.00E-02	0.00E+00	1.08E-03	1.63E-02	4.11E-02
TOTAL Federal HAPs (T/yr)=					**2.17E+00**

Pollutant	**A Drum Mix** Max Emission Rate for Pollutant (T/yr)	**B Asphalt Tank Heater** Max Emission Rate for Pollutant (T/yr)	**C IC Engine IC1 + IC2** Max Emission Rate for Pollutant (T/yr)	**D Load-out & Silo Filling** Emission Rate for Pollutant (T/yr)	**E POINT SOURCE TOTAL** of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
PAH HAPs					
2-Methylnaphthalene	3.40E-02	0.00E+00		4.30E-03	3.40E-02
3-Methylchloranthrene[e]	0.00E+00	0.00E+00			0.00E+00
Acenaphthene	2.80E-04	1.55E-05	2.39E-05	4.16E-04	3.19E-04
Acenaphthylene	4.40E-03	5.84E-06	4.82E-05	2.62E-05	4.45E-03
Anthracene	6.20E-04	5.25E-06	6.92E-06	1.14E-04	6.32E-04
Benzo(a)anthracene[e]	4.20E-05	0.00E+00	3.81E-06	4.14E-05	4.58E-05
Benzo(a)pyrene[e]	1.96E-06	0.00E+00	1.36E-06	1.57E-06	3.32E-06
Benzo(b)fluoranthene[e]	2.00E-05	2.92E-06	5.58E-06	5.18E-06	2.85E-05
Benzo(e)pyrene	2.20E-05	0.00E+00		1.01E-05	2.20E-05
Benzo(g,h,I)perylene	8.00E-06	0.00E+00	2.98E-06	1.30E-06	1.10E-05
Benzo(k)fluoranthene[e]	8.20E-06	0.00E+00	1.15E-06	1.50E-06	9.35E-06
Chrysene[e]	3.60E-05	0.00E+00	7.78E-06	1.77E-04	4.38E-05
Dibenzo(a,h)anthracene[e]	0.00E+00	0.00E+00	1.97E-06	2.52E-07	1.97E-06
Dichlorobenzene	0.00E+00	0.00E+00			0.00E+00
Fluoranthene	1.22E-04	1.28E-06	2.33E-05	1.10E-04	1.47E-04
Fluorene	2.20E-03	9.34E-07	7.61E-05	1.04E-03	2.28E-03
Indeno(1,2,3-cd)pyrene[e]	1.40E-06	0.00E+00	2.22E-06	3.20E-07	3.62E-06
Naphthalene[e]	1.30E-01	4.96E-04	6.84E-04	1.78E-03	1.31E-01
Perylene	1.76E-06	0.00E+00		3.02E-05	1.76E-06
Phenanthrene	4.60E-03	1.43E-04	2.16E-04	1.47E-03	4.96E-03
Pyrene	6.00E-04	9.34E-07	2.05E-05	3.26E-04	6.21E-04
Non-HAP Organic Compounds					
Acetone[e]	1.66E-01	0.00E+00		1.73E-03	1.66E-01
Benzaldehyde	2.20E-02	0.00E+00			2.20E-02
Butane	1.34E-01	0.00E+00			1.34E-01
Butyraldehyde	3.20E-02	0.00E+00			3.20E-02
Crotonaldehyde[e]	1.72E-02	0.00E+00			1.72E-02
Ethylene	1.40E+00	0.00E+00		3.27E-02	1.40E+00
Heptane	1.88E+00	0.00E+00			1.88E+00
Hexanal	2.20E-02	0.00E+00			2.20E-02
Isovaleraldehyde	6.40E-03	0.00E+00			6.40E-03
2-Methyl-1-pentene	8.00E-01	0.00E+00			8.00E-01
2-Methyl-2-butene	1.16E-01	0.00E+00			1.16E-01
3-Methylpentane	3.80E-02	0.00E+00			3.80E-02
1-Pentene	4.40E-01	0.00E+00			4.40E-01
n-Pentane[e]	4.20E-02	0.00E+00			4.20E-02
Valeraldehyde[e]	1.34E-02	0.00E+00			1.34E-02
Metals					
Antimony[e]	3.60E-05	1.53E-04			1.89E-04
Arsenic[e]	1.12E-04	3.85E-05			1.51E-04
Barium[e]	1.16E-03	7.50E-05			1.24E-03
Beryllium[e]	0.00E+00	8.12E-07			8.12E-07
Cadmium[e]	8.20E-05	1.16E-05			9.36E-05
Chromium[e]	1.10E-03	2.47E-05			1.12E-03
Cobalt[e]	5.20E-06	1.76E-04			1.81E-04
Copper[e]	6.20E-04	5.14E-05			6.71E-04
Hexavalent Chromium[e]	9.00E-05	7.24E-06			9.72E-05
Manganese[e]	1.54E-03	8.76E-05			1.63E-03
Mercury[e]	5.20E-04	3.30E-06			5.23E-04
Molybdenum[e]	0.00E+00	2.30E-05			2.30E-05
Nickel[e]	1.26E-02	2.47E-03			1.51E-02
Phosphorus[e]	5.60E-03	2.76E-04			5.88E-03
Silver[e]	9.60E-05	0.00E+00			9.60E-05
Selenium[e]	7.00E-05	1.99E-05			8.99E-05
Thallium[e]	8.20E-07				8.20E-07
Vanadium[e]	0.00E+00	9.28E-04			9.28E-04
Zinc[e]	1.22E-02	8.49E-04			1.30E-02

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **450** Tons/hour 889 Hours/year **400,000** Tons/year **6,300** Tons/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater: **2.0000** MMBtu/hr **4,000** Hours/year **24** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil
C1. Generator G1: **8.43** gal/hour **727** Hours/year #2 Fuel Oil IC Engine <600hp **24** hrs/day
C2. Generator G2: **100.18** gal/hour **727** Hours/year #2 Fuel Oil IC Engine > 600hp **24** hrs/day

Pollutant	A **Drum Mix** Max Emission Rate for Pollutant (T/yr)	B **Asphalt Tank Heater** Max Emission Rate for Pollutant (T/yr)	C **Generator** Max Emission Rate for Pollutant (T/yr)	D **Load-out, Silo Filling, & Tank Storage** Emission Rate for Pollutant (T/yr)	E **POINT SOURCE TOTAL** of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
non-PAH HAPs[g]					
Bromomethane[e]				1.99E-04	0.00E+00
2-Butanone (see Methyl Ethyl Ketone)					0.00E+00
Carbon disulfide[e]				4.98E-04	0.00E+00
Chloroethane (Ethyl chloride[e])				9.92E-05	0.00E+00
Chloromethane (Methyl chloride[e])				6.85E-04	0.00E+00
Cumene				9.15E-04	0.00E+00
n-Hexane				0.00E+00	0.00E+00
Methylene chloride (Dichloromethane[e])				6.58E-06	0.00E+00
MTBE					0.00E+00
Styrene[e]				1.92E-04	0.00E+00
Tetrachloroethene (Tetrachloroethylene[e])				6.40E-05	0.00E+00
1,1,1-Trichloroethane (Methyl chloroform[e])				0.00E+00	0.00E+00
Trichloroethene (Trichloroethylene[e])				0.00E+00	0.00E+00
Trichlorofluoromethane				1.08E-05	0.00E+00
m-/p-Xylene[e]				8.29E-03	0.00E+00
o-Xylene[e]				8.04E-03	0.00E+00
Phenol[e,f]				8.05E-04	0.00E+00
Non-HAP Organic Compounds					
Methane				6.88E-01	0.00E+00

e) IDAPA Toxic Air Pollutant

Facility:	POE Asphalt Paving, Inc. - 00611		
3/23/2020 13:08	Permit/Facility ID:	P-2020.0002	777-00611

CRITERIA POLLUTANT MODELING

POUNDS PER HOUR - POINT AND PSEUDO-STACK SOURCES

Maximum Controlled Emissions of Any Pollutant from Drum Mix HMA Plant with Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **450** Tons/hour 889 Hours/year **400,000** Tons/year **6,300** Tons/day 14. hr/day 889 hr/yr

Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil | Used Oil | Natural Gas | LPG/Propane

0.0500% S | 0.5000% S | **24** hrs/day

B. Tank Heater: **2.0000** MMBtu Rate **4,000** Hours/year

Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected = 0.0500% S #2 Fuel Oil

C1. IC Engine 1: **8.43** gal/hour **727** Hours/year IC Engine < 600hp 0.0015% S #2 Fuel Oil **24** hrs/day

C2. IC Engine 2: **100.18** gal/hour **727** Hours/year IC Engine > 600hp 0.0015% S #2 Fuel Oil **24** hrs/day

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

Pollutant	A Drum Mix Max Emission Rate for Pollutant (lb/hr)	B Asphaltic Oil Tank Heater Max Emission Rate for Pollutant (lb/hr)	C1 IC1< 600 bhp Generator Max Emission Rate for Pollutant (lb/hr)	C2 IC2 > 600 bhp Generator Max Emission Rate for Pollutant (lb/hr)	D1 Silo Filling Emission Rate for Pollutant (lb/hr)	D2 Load-out Emission Rate for Pollutant (lb/hr)	See **Scalping Scrn & Transfer Points"** worksheet for 1-hour, 24-hour, and annual PM10 emission rates from those sources.
PM (total)							
PM-10 (total)	10.35	3.36E-02	3.58E-01	1.74E+00	2.64E-01	2.35E-01	
PM-2.5	10.04	2.25E-02	8.09E-02	7.63E-01	2.64E-01	2.35E-01	
CO	58.50	7.30E-02	1.10E+00	3.68E+01	5.31E-01	6.07E-01	
NOx	24.75	3.50E-01	2.50E+00	2.97E+01			
SO_2	40.05	1.04E-01	1.00E-03	2.08E-02			
VOC	14.40	8.12E-03	4.16E-01	4.19E+00	5.48E-02	1.76E+00	
Lead	6.75E-03	2.20E-05					

Max 24-hour averages

Pollutant	A Drum Mix Max Emission Rate for Pollutant (lb/hr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (lb/hr)	C1 G1 < 600 hp Generator Max Emission Rate for Pollutant (lb/hr)	C2 G2 > 600hp Generator Max Emission Rate for Pollutant (lb/hr)	D1 Silo Filling Emission Rate for Pollutant (lb/hr)	D2 Load-out Emission Rate for Pollutant (lb/hr)	See **Scalping Scrn & Transfer Points"** worksheet for 1-hour, 24-hour, and annual PM10 emission rates from those sources.
PM (total)							
PM-10 (total)	6.04	3.36E-02	3.58E-01	1.74E+00	1.54E-01	1.37E-01	
PM-2.5	5.85	2.25E-02	8.09E-02	0.7632212	1.54E-01	1.37E-01	
CO							
NOx							
SO_2	23.36	1.04E-01	1.00E-03	2.08E-02			
VOC							
Lead							

Max Annual averages

Pollutant	A Drum Mix Max Emission Rate for Pollutant (lb/hr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (lb/hr)	C1 G1< 600 hp Generator Max Emission Rate for Pollutant (lb/hr)	C2 G2 > 600hp Generator Max Emission Rate for Pollutant (lb/hr)	D1 Silo Filling Emission Rate for Pollutant (lb/hr)	D2 Load-out Emission Rate for Pollutant (lb/hr)	See **Scalping Scrn & Transfer Points"** worksheet for 1-hour, 24-hour, and annual PM10 emission rates from those sources.
PM (total)							
PM-10 (total)	1.05	1.53E-02	2.97E-02	1.44E-01	2.68E-02	2.38E-02	
PM-2.5	1.02	1.03E-02					
CO							
NOx	2.51	1.60E-01	0.21	2.46			
SO_2	4.06	0.05	8.34E-05	0.00			
VOC							
Lead							

Facility:	**POE Asphalt Paving, Inc. - 00611**			
3/23/2020 13:08	**Permit/Facility ID:**	**P-2020.0002**	**777-00611**	

Max Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Silo Fill/Load-out - Generator not included

A. Drum Mix Plant: **450** Tons/hour — 889 Hours/year — **400,000** Tons/year — **6,300** Tons/day

Maximum emission for each pollutant from any fuel-burning option selected on "Facility Data" worksheet

B. Tank Heater: **2.0000** MMBtu Rated — **4,000** Hours/year — **D. Include all emissions from Load-out/Silo Filling?** **Yes**

Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet — Short Term Source Factor 586 ELs? 1

C1. IC Engine G1: **8.43** gal/hour — **727** Hours/year — IC Engine <600hp — #2 Fuel Oil — **24** hrs/day

C2. IC Engine G2: **100.18** gal/hour — **727** Hours/year — IC Engine > 600hp — #2 Fuel Oil — **24** hrs/day

Pollutant	TOTAL of Max Emission Rates from A, B, & D (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled? Meets AAC or AACC?
HCl [e]	0.095	0.05	Exceeds	
Dioxins		**Toxic Equivalency Factor[c]**	**Adjusted Emission Rate (lb/hr)**	
2,3,7,8-TCDD	9.59E-12	1.0	9.59E-12	
Total TCDD	4.25E-11	n/a		
1,2,3,7,8-PeCDD	1.42E-11	1.0	1.42E-11	
Total PeCDD	1.00E-09	n/a		
1,2,3,4,7,8-HxCDD	2.38E-11	0.1	2.38E-12	
1,2,3,6,7,8-HxCDD	5.94E-11	0.1	5.94E-12	
1,2,3,7,8,9-HxCDD	4.98E-11	0.1	4.98E-12	
Total HxCDD	5.48E-10	n/a		
1,2,3,4,6,7,8-Hp-CDD	3.19E-10	0.01	3.19E-12	
Total HpCDD	1.00E-09	n/a		
Octa CDD	2.21E-09	0.0003	6.62E-13	
Total PCDD	4.94E-09	n/a		
Furans				
2,3,7,8-TCDF	4.43E-11	0.1	4.43E-12	
Total TCDF	1.91E-10	n/a		
1,2,3,7,8-PeCDF	1.96E-10	0.03	5.89E-12	
2,3,4,7,8-PeCDF	3.84E-11	0.3	1.15E-11	
Total PeCDF	3.84E-09	n/a		
1,2,3,4,7,8-HxCDF	1.83E-10	0.1	1.83E-11	
1,2,3,6,7,8-HxCDF	5.48E-11	0.1	5.48E-12	
2,3,4,6,7,8-HxCDF	8.68E-11	0.1	8.68E-12	
1,2,3,7,8,9-HxCDF	3.84E-10	0.1	3.84E-11	
Total HxCDF	6.07E-10	n/a		
1,2,3,4,6,7,8-HpCDF	2.97E-10	0.01	2.97E-12	
1,2,3,4,7,8,9-HpCDF	1.23E-10	0.01	1.23E-12	
Total HpCDF	5.21E-10	n/a		
Octa CDF	2.99E-10	0.0003	8.97E-14	
Total PCDF	2.03E-09	n/a		
Total PCDD/PCDF	7.01E-09	n/a		
TOTAL Dioxin/Furans[c]	Adjusted lb/hr 1.38E-10	TAPs EL for 2,3,7,8 TCDD 1.50E-10	**Exceeds TAPs EL?** No	**Modeled?**
Non-PAH HAPs				
Acetaldehyde	5.94E-02	3.00E-03	Exceeds	
Acrolein	6.83E-03	0.017	No	
Benzene	1.81E-02	8.00E-04	Exceeds	
1,3-Butadiene				
Ethylbenzene	6.73E-02	29	No	
Formaldehyde	1.46E-01	5.10E-04	Exceeds	
Hexane	2.46E-01	12	No	
Isooctane	1.05E-02			
Methyl Ethyl Ketone	7.03E-03	39.3	No	
Pentane	0.00E+00	118	No	
Propionaldehyde	3.41E-02	0.0287	Exceeds	
Quinone	4.20E-02	0.027	Exceeds	
Methyl chloroform	1.26E-02	127	No	
Toluene	7.66E-01	25	No	
Xylene	7.39E-02	29	No	

Pollutant	TOTAL of Max Emission Rates from A, B, & D (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled? Meets AAC or AACC?
PAH HAPs				
2-Methylnaphthalene	8.74E-03	9.10E-05	Exceeds	
3-Methylchloranthrene	0.00E+00	2.50E-06	No	
Acenaphthene	1.62E-04	9.10E-05	Exceeds	
Acenaphthylene	1.01E-03	9.10E-05	Exceeds	
Anthracene	1.69E-04	9.10E-05	Exceeds	
Benzo(a)anthracene	1.90E-05			see POM
Benzo(a)pyrene	8.06E-07	2.00E-06	No	see POM
Benzo(b)fluoranthene	6.42E-06			see POM
Benzo(e)pyrene	7.34E-06	9.10E-05	No	
Benzo(g,h,I)perylene	2.12E-06	9.10E-05	No	
Benzo(k)fluoranthene	2.21E-06			see POM
Chrysene	4.86E-05			see POM
Dibenzo(a,h)anthracene	5.76E-08			see POM
Dichlorobenzene	0.00E+00	9.10E-05	No	
Fluoranthene	5.33E-05	9.10E-05	No	
Fluorene	7.39E-04	9.10E-05	Exceeds	
Indeno(1,2,3-cd)pyrene	3.93E-07			see POM
Naphthalene[e]	3.02E-02	9.10E-05	Exceeds	
Perylene	7.30E-06	9.10E-05	No	
Phenanthrene	1.42E-03	9.10E-05	Exceeds	
Pyrene	2.12E-04	9.10E-05	Exceeds	
PolycyclicOrganicMatter[d]	7.75E-05	2.00E-06	Exceeds	
Non-HAP Organic Compounds				
Acetone	2.20E-01	119	No	
Benzaldehyde	2.89E-02			
Butane	1.76E-01			
Butyraldehyde	4.20E-02			
Crotonaldehyde	2.26E-02	0.38	No	
Ethylene	1.88E+00			
Heptane	2.47E+00	109	No	
Hexanal	2.89E-02			
Isovaleraldehyde	8.40E-03			
2-Methyl-1-pentene	1.05E+00			
2-Methyl-2-butene	1.52E-01			
3-Methylpentane	4.99E-02			
1-Pentene	5.78E-01			
n-Pentane[e]	5.51E-02	118	No	
Valeraldehyde (n-Valeraldehyde)	1.76E-02	11.7	No	
Metals				
Antimony[e]	1.24E-04	0.033	No	
Arsenic	3.44E-05	1.50E-06	Exceeds	
Barium	1.56E-03	0.033	No	
Beryllium	1.85E-07	2.80E-05	No	
Cadmium	2.14E-05	3.70E-06	Exceeds	
Chromium	1.46E-03	0.033	No	
Cobalt	9.47E-05	0.0033	No	
Copper	8.39E-04	0.013	No	
Hexavalent Chromium	2.22E-05	5.60E-07	Exceeds	
Manganese	2.07E-03	0.067	No	
Mercury	6.84E-04	0.003	No	
Molybdenum	1.15E-05	0.333	No	
Nickel	3.44E-03	2.70E-05	Exceeds	
Phosphorus	7.49E-03	0.007	Exceeds	
Silver	1.26E-04	0.007	No	
Selenium	1.02E-04	0.013	No	
Thallium	1.08E-06	0.007	No	
Vanadium	4.64E-04	0.003	No	
Zinc	1.64E-02	0.667	No	

a) Reserved.

b) Toxic Air Pollutants, IDAPA 58.01.01.585 and .586, levels in effect as of February 25, 2009

c) 2005, Van den Berg, et al, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds, *Toxicological Sciences* 93(2), 223-241 (2006). Accessible at http://toxsci.oxfordjournals.org/cgi/reprint/93/2/223.
Use of the 2005 WHO toxic equivalency factors (TEFs) is consistent with current EPA recommendations for TRI reporting (72 FR 26544, May 10, 2007)
n/a = not available. IDAPA 58.01.01.586, TAPs Carcinogenic Increments: Total of adjusted emission rates are treated as a single TAP (2,3,7,8 TCDD)

d) IDAPA 58.01.01.586, Polycyclic Organic Matter: Emissions of highlighted PAHs h shall be considered together as one TAP equivalent in potency to benzo(a)pyrene.

e) Naphthalene is listed as a noncarcinogenic TAP in IDAPA 58.01.01.585 (EL = 3.33 lb/hr), but must also be considered as a carcinogenic PAH (EL = 9.10E-05 lb/hr)

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Pollutants shown in blue text are emitted only when burning Used Oil, but not when burning #2 Fuel Oil or Natural Gas

Max Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Silo Fill/Load-out - Generator not included

A. Drum Mix Plant: **450** Tons/hour 889 Hours/year **400,000** Tons/year **6,300** Tons/day
Maximum emission for each pollutant from any fuel-burning option selected in "Facility Data" worksheet.
B. Tank Heater: **2.0000** MMBtu Rated **4,000** Hours/year **D. Include all emissions from Load-out/Silo Filling?** **Yes**
Maximum emission for each pollutant for heater burning any fuel selected in "Facility Data" worksheet.
C1. IC Engine G1: **8.43** gal/hour **727** Hours/year #2 Fuel Oil **24** hrs/day
C2. IC Engine G2: **100.18** gal/hour **727** Hours/year #2 Fuel Oil **24** hrs/day

Pollutant	**TOTAL** of Max Emission Rates from A, B, & D (lb/hr)	**TAPs** Screening Emission Limit (EL) Increment[b] (lb/hr)	**TAPs** Emissions Exceed EL Increment?	**Modeled?**
non-PAH HAPs[g]				
Bromomethane (Methyl bromide[e])	2.62E-04	1.27	No	
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	6.54E-04	2	No	
Chloroethane (Ethyl chloride[e])	1.30E-04	176	No	
Chloromethane (Methyl chloride[e])	9.00E-04	6.867	No	
Cumene[e]	1.20E-03	16.3	No	
n-Hexane[e] (see Hexane[e])				
Methylene chloride (Dichloromethane[e])	8.64E-06	1.60E-03	No	
MTBE	0.00E+00			
Styrene[e]	2.52E-04	6.67	No	
Tetrachloroethene (Tetrachloroethylene[e])	8.41E-05	1.30E-02	No	
1,1,1-Trichloroethane (see Methyl chloroform[e])				
Trichloroethene (Trichloroethylene[e])	0.00E+00	17.93	No	
Trichlorofluoromethane	1.42E-05			
m-/p-Xylene[e] (added into Xylene[e])				
o-Xylene[e] (added into Xylene[e])				
Phenol[e,f]	1.06E-03	1.27	No	
Non-HAP Organic Compounds				
Methane	9.03E-01			

a) For HMA facilities subject to NSPS (40 CFR 60, Subpart I), PTE includes fugitive emissions of PM from load-out, silo filling & storage tank operations.
e) IDAPA Toxic Air Pollutant, 58.01.01.585 or .586

Facility: POE Asphalt Paving, Inc. - 00611

3/23/2020 13:08 **Permit/Facility ID:** **P-2020.0002** **777-00611**

TAPs MODELING

POUNDS PER HOUR - POINT AND PSEUDO-STACK SOURCES

Maximum Controlled Emissions of Any Pollutant from Drum Mix HMA Plant with Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **450** Tons/hour 889 Hours/year **400,000** Tons/year **6,300** Tons/day

Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane

B. Tank Heater: **2.0000** MMBtu Rated **4,000** Hours/year **24** hrs/day

Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil

C1. IC Engine: **8.43** gal/hour **727** Hours/year IC Engine < 600hp #2 Fuel Oil **24** hrs/day

C2. IC Engine: **100.18** gal/hour **727** Hours/year IC Engine > 600hp #2 Fuel Oil **24** hrs/day

Pollutant	A **Drum Dryer** Max Emission Rate for Pollutant (lb/hr)	B **Asphaltic Oil Tank Heater** Max Emission Rate for Pollutant (lb/hr)	C1 * see note IC1< 600 bhp Generator Max Emission Rate for Pollutant (lb/hr)	C2 * see note IC2 > 600 bhp Generator Max Emission Rate for Pollutant (lb/hr)	D1 Silo Filling Emission Rate for Pollutant (lb/hr)	D2 Load-out Emission Rate for Pollutant (lb/hr)
PM (total)						
PM-10 (total)						
PM-2.5						
CO						
NOx						
SO_2						
VOC						
Lead						
HCl [e]	9.45E-02	0.00E+00	0	0		
Dioxins[e]						
2,3,7,8-TCDD	9.59E-12		0	0		
Total TCDD	4.25E-11		0	0		
1,2,3,7,8-PeCDD	1.42E-11		0	0		
Total PeCDD	1.00E-09		0	0		
1,2,3,4,7,8-HxCDD	1.92E-11	4.60E-12	0	0		
1,2,3,6,7,8-HxCDD	5.94E-11		0	0		
1,2,3,7,8,9-HxCDD	4.47E-11	5.07E-12	0	0		
Total HxCDD	5.48E-10		0	0		
1,2,3,4,6,7,8-Hp-CDD	2.19E-10	1.00E-10	0	0		
Total HpCDD	8.68E-10	1.33E-10	0	0		
Octa CDD	1.14E-09	1.07E-09	0	0		
Total PCDD[h]	3.61E-09	1.33E-09	0	0		
Furans[e]						
2,3,7,8-TCDF	4.43E-11		0	0		
Total TCDF	1.69E-10	2.20E-11	0	0		
1,2,3,7,8-PeCDF	1.96E-10		0	0		
2,3,4,7,8-PeCDF	3.84E-11		0	0		
Total PeCDF	3.84E-09	3.20E-12	0	0		
1,2,3,4,7,8-HxCDF	1.83E-10		0	0		
1,2,3,6,7,8-HxCDF	5.48E-11		0	0		
2,3,4,6,7,8-HxCDF	8.68E-11		0	0		
1,2,3,7,8,9-HxCDF	3.84E-10		0	0		
Total HxCDF	5.94E-10	1.33E-11	0	0		
1,2,3,4,6,7,8-HpCDF	2.97E-10		0	0		
1,2,3,4,7,8,9-HpCDF	1.23E-10		0	0		
Total HpCDF	4.57E-10	6.46E-11	0	0		
Octa CDF	2.19E-10	8.00E-11	0	0		
Total PCDF[h]	1.83E-09	2.07E-10	0	0		
Total PCDD/PCDF[h]	5.48E-09	1.53E-09	0	0		
Non-PAH HAPs						
Acetaldehyde[e]	5.94E-02		0	0		
Acrolein[e]	6.83E-03		0	0		
Benzene[e]	**1.78E-02**	**0.00E+00**	0	0	**1.78E-04**	**9.88E-05**
1,3-Butadiene[e]			0	0		
Ethylbenzene[e]	6.30E-02		0	0	1.22E-03	3.06E-03
Formaldehyde[e]	**1.42E-01**	**2.33E-05**	0	0	**3.84E-03**	**1.67E-04**
Hexane[e]	2.42E-01	0.00E+00	0	0	3.20E-03	1.64E-03
Isooctane	1.05E-02		0	0	9.92E-06	1.97E-05
Methyl Ethyl Ketone[e]	5.25E-03		0	0	1.25E-03	5.35E-04
Pentane[e]		0.00E+00	0	0		
Propionaldehyde[e]	3.41E-02		0	0		
Quinone[e]	4.20E-02		0	0		
Methyl chloroform[e]	1.26E-02		0	0		
Toluene[e]	7.61E-01	0.00E+00	0	0	1.98E-03	2.29E-03
Xylene[e]	5.25E-02		0	0	8.22E-03	1.32E-02
POM (7-PAH Group)	**2.50E-05**	**6.66E-07**		**0.00E+00**	**3.08E-05**	**2.10E-05**

Pollutant	A **Drum Dryer** Max Emission Rate for Pollutant (lb/hr)	B **Asphaltic Oil Tank Heater** Max Emission Rate for Pollutant (lb/hr)	C1 * see note IC1< 600 bhp Generator Max Emission Rate for Pollutant (lb/hr)	C2 * see note IC2 > 600 bhp Generator Max Emission Rate for Pollutant (lb/hr)	D Silo Filling Emission Rate for Pollutant (lb/hr)	D2 Load-out Emission Rate for Pollutant (lb/hr)
PAH HAPs						
2-Methylnaphthalene	**7.76E-03**	**0.00E+00**	0	0	**6.11E-04**	**3.71E-04**
3-Methylchloranthrene[e]	**0.00E+00**	**0.00E+00**	0	0		
Acenaphthene	**6.39E-05**	**3.53E-06**	0	0	**5.45E-05**	**4.05E-05**
Acenaphthylene	**1.00E-03**	**1.33E-06**	0	0	**1.62E-06**	**4.36E-06**
Anthracene	**1.42E-04**	**1.20E-06**	0	0	**1.51E-05**	**1.09E-05**
Benzo(a)anthracene[e]	**9.59E-06**	**0.00E+00**	0	0	**6.49E-06**	**2.96E-06**
Benzo(a)pyrene[e]	**4.47E-07**	**0.00E+00**	0	0	**0.00E+00**	**3.58E-07**
Benzo(b)fluoranthene[e]	**4.57E-06**	**6.66E-07**	0	0	**0.00E+00**	**1.18E-06**
Benzo(e)pyrene	**5.02E-06**	**0.00E+00**	0	0	**1.10E-06**	**1.21E-06**
Benzo(g,h,l)perylene	**1.83E-06**	**0.00E+00**	0	0	**0.00E+00**	**2.96E-07**
Benzo(k)fluoranthene[e]	**1.87E-06**	**0.00E+00**	0	0	**0.00E+00**	**3.42E-07**
Chrysene[e]	**8.22E-06**	**0.00E+00**	0	0	**2.43E-05**	**1.60E-05**
Dibenzo(a,h)anthracene[e]	**0.00E+00**	**0.00E+00**	0	0	**0.00E+00**	**5.76E-08**
Dichlorobenzene	**0.00E+00**	**0.00E+00**	0	0		
Fluoranthene	**2.79E-05**	**2.93E-07**	0	0	**1.74E-05**	**7.78E-06**
Fluorene	**5.02E-04**	**2.13E-07**	0	0	**1.17E-04**	**1.20E-04**
Indeno(1,2,3-cd)pyrene[e]	**3.20E-07**	**0.00E+00**	0	0	**0.00E+00**	**7.32E-08**
Naphthalene[e]	**2.97E-02**	**1.13E-04**	0	0	**2.11E-04**	**1.95E-04**
Perylene	**4.02E-07**	**0.00E+00**	0	0	**3.48E-06**	**3.42E-06**
Phenanthrene	**1.05E-03**	**3.27E-05**	0	0	**2.09E-04**	**1.26E-04**
Pyrene	**1.37E-04**	**2.13E-07**	0	0	**5.10E-05**	**2.34E-05**
Non-HAP Organic Compounds						
Acetone[e]	2.18E-01	0.00E+00	0	0	1.76E-03	5.11E-04
Benzaldehyde	2.89E-02	0.00E+00	0	0		
Butane	1.76E-01	0.00E+00	0	0		
Butyraldehyde	4.20E-02	0.00E+00	0	0		
Crotonaldehyde[e]	2.26E-02	0.00E+00	0	0		
Ethylene	1.84E+00	0.00E+00	0	0	3.52E-02	7.75E-03
Heptane	2.47E+00	0.00E+00	0	0		
Hexanal	2.89E-02	0.00E+00	0	0		
Isovaleraldehyde	8.40E-03	0.00E+00	0	0		
2-Methyl-1-pentene	1.05E+00	0.00E+00	0	0		
2-Methyl-2-butene	1.52E-01	0.00E+00	0	0		
3-Methylpentane	4.99E-02	0.00E+00	0	0		
1-Pentene	5.78E-01	0.00E+00	0	0		
n-Pentane	5.51E-02	0.00E+00	0	0		
Valeraldehyde[e]	1.76E-02	0.00E+00	0	0		
Metals						
Antimony[e]	4.73E-05	7.66E-05	0	0		
Arsenic[e]	**2.56E-05**	**8.80E-06**	0	0		
Barium[e]	1.52E-03	3.75E-05	0	0		
Beryllium[e]	**0.00E+00**	**1.85E-07**	0	0		
Cadmium[e]	**1.87E-05**	**2.65E-06**	0	0		
Chromium[e]	1.44E-03	1.23E-05	0	0		
Cobalt[e]	6.83E-06	8.79E-05	0	0		
Copper[e]	8.14E-04	2.57E-05	0	0		
Hexavalent Chromium[e]	**2.05E-05**	**1.65E-06**	0	0		
Manganese[e]	2.02E-03	4.38E-05	0	0		
Mercury[e]	6.83E-04	1.65E-06	0	0		
Molybdenum[e]	0.00E+00	1.15E-05	0	0		
Nickel[e]	**2.88E-03**	**5.63E-04**	0	0		
Phosphorus[e]	7.35E-03	1.38E-04	0	0		
Silver[e]	1.26E-04	0.00E+00	0	0		
Selenium[e]	9.19E-05	9.97E-06	0	0		
Thallium[e]	1.08E-06	0.00E+00	0	0		
Vanadium[e]	0.00E+00	4.64E-04	0	0		
Zinc[e]	1.60E-02	4.25E-04	0	0		

e) IDAPA Toxic Air Pollutant

Criteria Pollutant lb/hr emissions are maximum 1-hr averages

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Pollutants shown in blue text are emitted only when burning Used Oil, but not when burning #2 Fuel Oil or Natural Gas

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSIS

DRAFT M E M O R A N D U M

DATE: March 9, 2020

TO: Zach Pierce, Permit Writer, Air Program

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

PROJECT: P-2020.0002 PROJ 62362, Permit to Construct (PTC) for POE Asphalt Paving, Inc. portable Hot Mix Asphalt Plant.

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

Contents

Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a non-carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
acfm	Actual cubic feet per minute
AERMAP	The terrain data preprocessor for AERMOD
AERMET	The meteorological data preprocessor for AERMOD
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
As	Arsenic
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
CBP	Concrete Batch Plant
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality Modeling System
CO	Carbon Monoxide
DEM	Digital Elevation Map
DEQ	Idaho Department of Environmental Quality
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
GB	Americrete Ready Mix dba GB Redi-Mix
GEP	Good Engineering Practice
hr	hours
IC	internal combustion
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
ISCST3	Industrial Source Complex Short Term 3 dispersion model
K	Kelvin
m	Meters
m/sec	Meters per second
MMBtu	Million British Thermal Units
NAAQS	National Ambient Air Quality Standards
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
NWS	National Weather Service
O_3	Ozone
PAH	Polyaromatic Hydrocarbons
Pb	Lead
PM_{10}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers
$PM_{2.5}$	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers
POE	POE Asphalt Paving, Inc.

POM	Polycyclic Organic Matter
ppb	parts per million
PRIME	Plume Rise Model Enhancement
PTC	Permit to Construct
PTE	Potential to Emit
SIL	Significant Impact Level
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
tpy	tons per year
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compounds
$\mu g/m^3$	Micrograms per cubic meter of air

1.0 Summary

POE Asphalt Paving, Inc. (POE) submitted a Permit to Construct (PTC) application to operate a portable hot mix asphalt (HMA) plant in Idaho. Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03) requires that no permit be issued unless it is demonstrated that applicable emissions do not result in violation of a National Ambient Air Quality Standard (NAAQS) or Toxic Air Pollutant (TAP) increment. This memorandum provides a summary of the applicable impact analysis requirements and a summary of those analyses used to demonstrate compliance with applicable NAAQS and TAP increments, as required by Idaho Air Rules Section 203.02 and 203.03.

DEQ review of submitted data and DEQ analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that estimated emissions associated with operation of the facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not address/evaluate compliance with other rules or analyses not pertaining to the air impact analyses. Evaluation of emission estimates was primarily the responsibility of the DEQ permit writer and is addressed in the main body of the DEQ Statement of Basis.

Table 1 presents key assumptions and results to be considered in the development of the permit. Idaho Air Rules require air impact analyses be conducted in accordance with methods outlined in 40 CFR 51, Appendix W *Guideline on Air Quality Models* (Appendix W). Appendix W requires that air quality impacts be assessed using atmospheric dispersion models with 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: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that estimated potential/allowable emissions are at a level defined as below regulatory concern (BRC) and do not require a NAAQS compliance demonstration; b) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or c) that predicted pollutant concentrations from emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable NAAQS at ambient air locations where and when the project has a significant impact; 5) showed that TAP emissions increases associated with the project will not result in increased emissions above ELs or ambient air impacts exceeding allowable TAP increments. This conclusion assumes that conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition. The DEQ permit writer should use Table 1 and other information presented in this memorandum to generate appropriate permit provisions/restrictions to assure the requirements of Appendix W are met regarding emissions representative of design capacity or permit allowable rates.

Summary of Submittals and Actions

- January 8, 2020: Application received by DEQ.
- January 9, 2020: Regulatory start date.
- February 7, 2020: Application determined complete by DEQ.

Table 1. KEY CONDITIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Setback from Ambient Air Boundary. The following minimum setback distances between the nearest point of potential public access and the stacks of the drum dryer and any internal combustion (IC) engines powering generators must be maintained: **1)** When using IC engines to power generators, and not remaining at a specific site for more than 12 months, the setback must be 787 feet (240 meters). **2)** When not using IC engines to power generators, and not remaining at a specific site for more than 12 months, the setback must be 755 feet (230 meters). 3) When at any one location for more than 12 months and using IC engines to power generators, the setback must be 1,640 feet (500 meters). **4)** When at any one location for more than 12 months and not using IC engines to power generators, the setback must be 1,150 feet (350 meters).	The applicable setback distance is necessary to assure compliance with air quality standards at ambient air locations. Areas not under direct control of the permittee cannot be excluded from consideration as ambient air.
Allowable Production. Maximum HMA production does not exceed allowable rates of 450 ton/hour, 6,300 ton/day, and 400,000 ton/year.	Short-term and annual pollutant impact analyses were performed using emissions based on these rates. These rates must not be exceeded.
Control of Vehicle Fugitive Emissions: Air impact analyses were performed assuming fugitive particulate emissions from vehicle traffic on unpaved roadways is negligible and could be reasonably accounted for in the background concentration used.	Emissions from vehicle traffic must be controlled to a high degree, otherwise compliance with particulate NAAQS has not been demonstrated.
General Emissions Rates. Emissions rates used in the dispersion modeling analyses, as listed in this memorandum, must represent maximum potential emissions as given by design capacity, inherently limited by the nature of the process or configuration of the facility, or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses.
Location with other pollutant emitting equipment. Co-contributing emissions sources such as other HMA plants, concrete batch plants (CBPs), and/or rock crushing plants will not locate on the plant property and within 1,000 feet of the drum dryer stack or IC engine stacks (powering generators) of the HMA plant, except as noted below for a rock crushing plant. NAAQS compliance is assured for the HMA plant with a co-contributing rock crushing plant, provided asphalt production is half the daily allowable rate (3,150 ton/day) during any day when the rock crushing 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 as the permittee. Neighboring facilities would be required to account for the HMA impacts for their own permitting analyses.
Relocating to Sites with Co-Contributing Facilities. 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 (on different properties) do not move in.
Operation in Non-Attainment Areas: The HMA plant will not locate within any area designated as non-attainment for a NAAQS.	Impact analyses performed for this project assumed background concentrations of criteria pollutants are well below NAAQS.
Multiyear Continuous Operation: The HMA was modeled as a permanent source operating year around at specified production	Relocation of the HMA plant every 12 months is not required to assure compliance with

Table 1. KEY CONDITIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
rates.	applicable standards.
Release Parameters for Emission Points. Stack heights are no shorter than what is indicated in this memorandum. Stack diameters are no larger than what is indicated in this memorandum. Exhaust flow rates and temperatures at the point of release are not less than about 80 percent of the values indicated in this memorandum.	Compliance with applicable air quality standards are not assured if release parameters vary substantially from what was used in impact analyses.

2.0 Background Information

This section provides background information applicable to the project and the site where the facility will be located. It also provides a brief description of the applicable air impact analyses requirements for the project.

2.1 Project Description, Proposed Location, and Area Classification

The proposed project is a new HMA plant that will operate as a portable source in Idaho. Line power will be used if available. Where it is not available, diesel-fired generators will be used. The submitted application also indicated the HMA plant will not operate at any one location for more than 12 months. However, needed setback distances were also determined for the scenario where the plant will remain at a site for longer than 12 months. The impact analyses performed assumed that the HMA plant will only locate in areas designated as attainment or unclassifiable for all criteria pollutants.

Pollutant-emitting processes conducted at the HMA plant include drum drying aggregate and mixing with asphalt oil, handling of aggregate materials, handling of produced asphalt, operation of IC engines to power electrical generators, and fuel combustion in the asphalt oil heater.

2.2 Air Impact Analyses Required for All Permits to Construct

Criteria Pollutant and TAP Impact Analyses for a PTC are addressed in Idaho Air Rules Sections 203.02 and 203.03:

> *No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:*
>
> ***02. NAAQS**. The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*
>
> ***03. Toxic Air Pollutants.** 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.*

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

> ***Estimates of Ambient Concentrations****. All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.3 Significant Impact Level and Cumulative NAAQS Impact Analyses

The SIL analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in Appendix W. Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in 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. Table 2 lists the applicable SILs.

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with a new facility or modification exceed the SILs, 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 assessing ambient impacts (typically the design values consistent with the form of the standard) from facility-wide emissions, and emissions from any nearby co-contributing sources, and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. As an example, consider a hypothetical case where the SIL analysis indicates the project (new source or modification) has impacts exceeding the SIL and the cumulative impact analysis indicates a violation of the NAAQS. If project-specific impacts are below the SIL at the specific receptors showing the violations during the times when modeled violations occurred, then the project does not have a significant contribution to the specific violations.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) applicable specific criteria pollutant emission increases are at a level defined as BRC, using the criteria established by DEQ regulatory interpretation[1] (see Section 3.1.1 of this memorandum); or b) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or c) modeled design values of the cumulative NAAQS impact analysis (modeling all emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or d) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

a. Table 2. APPLICABLE REGULATORY LIMITS				
b. Pollutant	Averaging Period	Significant Impact Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Design Value Used[d]
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.2	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]	Maximum 2nd highest[n]
	8-hour	500	10,000[m]	Maximum 2nd highest[n]
Sulfur Dioxide (SO_2)	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]
	3-hour	25	1,300[m]	Maximum 2nd highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 $\mu g/m^3$)	100 ppb[r] (188 $\mu g/m^3$)	Mean of maximum 8th highest[s]
	Annual	1.0	100[t]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[t]	Maximum 1st highest[n]
	Quarterly	NA	1.5[t]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	70 ppb[w]	Not typically modeled

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
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. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
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 mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration. The NAAQS was revised from 15 $\mu g/m^3$ to12 $\mu g/m^3$ on December 14, 2012. However, this standard will not be applicable for permitting purposes in Idaho until it is incorporated by reference *sine die* into Idaho Air Rules (Spring 2014).
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
s. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
t. Not to be exceeded in any calendar year.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years.

2.4 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.*

Permitting requirements for TAPs 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.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP. The DEQ permit writer evaluates the applicability of specific TAPs to the Section 210.20 exclusion.

3.0 Analytical Methods and Data

This section describes the methods and data used in analyses to demonstrate compliance with applicable air quality impact requirements.

3.1 Emission Source Data

Emissions of criteria pollutants and TAPs resulting from operation of the HMA plant were calculated by DEQ for various applicable averaging periods. DEQ's HMA plant emission calculation spreadsheet was used to calculate emissions for the facility, given the specified equipment and requested operational rates. DEQ air impact analyses assured that the estimated potential emissions rates were properly used in the model. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emissions rates used in the dispersion modeling analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emissions inventory used in the DEQ Statement of Basis. All modeled criteria air pollutant and TAP emissions rates must be equal to or greater than the facility's potential emissions calculated in the PTC emissions inventory or proposed permit allowable emission rates. Emission calculations are described in more detail in Attachment 1.

3.1.1 Criteria Pollutant Emissions Rates and Modeling Applicability

Exclusion of BRC Sources from NAAQS Compliance Demonstration Requirements

A criteria pollutant-specific NAAQS compliance demonstration may not be required where facility-wide potential to emit (PTE) values for that criteria pollutant would qualify for a BRC permit exemption as per Idaho Air Rules Section 221 (equal to 10 percent of the emissions defined as significant) if it were not for potential emissions of other criteria pollutants or TAPs. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant.[1]" The interpretation policy also states that the exemption criteria of uncontrolled PTE not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year.

The DEQ emission inventory asserts that facility-wide controlled PTE emissions of certain criteria pollutants are above BRC levels, as listed in Table 3. The only emissions considered in this calculation are non-fugitive emissions from the HMA plant, including: the drum dryer, asphalt heater, and asphalt silo loading. Emissions from material handling of aggregate and asphalt are considered fugitive, and as such were excluded from permit-applicability PTE.

Table 3. CRITERIA POLLUTANT NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY

Criteria Pollutant	BRC Level (ton/year)	Applicable Facility Wide PTE Emissions (ton/year)	Air Impact Analyses Required?
PM_{10}[a]	1.5	5.6	Yes
$PM_{2.5}$[b]	1.0	5.5	Yes
Carbon Monoxide (CO)	10.0	40.0	Yes
Sulfur Dioxide (SO_2)	4.0	18.0	Yes
Nitrogen Oxides (NOx)	4.0	23.4	Yes
Lead (Pb)	0.06	0.0030	No
Ozone (as VOC)	4.0	8.1	Yes

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

Table 4 lists criteria pollutant emission rates used in the DEQ site-specific impact modeling analyses for the specified HMA Plant. Attachment 1 provides additional details of DEQ emission calculations used in the impact modeling analyses.

Fugitive particulate emissions from frontend loader handling of aggregate materials and three conveyor transfers were designated as volume source emissions point LOADCONV in the model. Two transfers were included for the frontend loader source: 1) transfer of aggregate from truck unloading or other transfer means to a storage pile; 2) transfer of aggregate from the storage pile to a hopper. Three transfers were included with this source for aggregate conveyors. 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.

Exclusion from Impact Analyses by Modeling Thresholds

DEQ may determine that reasonably expected impacts from specific criteria pollutant emissions, for those pollutants not excluded from analysis by DEQ's regulatory interpretation policy of exemption provisions (discussed above), are so minimal that NAAQS compliance is assured without the need to perform a project-specific impact analysis. Modeling applicability threshold emission values were established to evaluate the level below which NAAQS compliance is effectively assured. These thresholds are established in the *Idaho Air Quality Modeling Guideline*[2] (http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf). Modeling thresholds, for criteria pollutants other than Pb, were developed to ensure modeled impacts are less than the SIL for sources with good dispersion characteristics (at least as good as those associated with the source modeled for generation of the thresholds). The modeling threshold for Pb was set to assure compliance with the NAAQS, since there is no SIL for Pb.

Table 4. HMA PLANT EMISSIONS USED IN DEQ ANALYSES

Emissions Point in Model	Pollutant	Averaging Period	Emissions Rate (lb/hr)[a]
DRYER – asphalt drum dryer/mixer - emissions controlled by a baghouse	$PM_{2.5}$	24-hour	5.854[b]
		Annual	1.018[c]
	PM_{10}	24-hour	6.038[b]
	NOx	1-hour	24.75
		Annual	2.511[c]
	SO_2	1-hour	40.05
	CO	1-hour	58.50
GEN1 – IC engine powering main generator	$PM_{2.5}$	24-hour	0.7632[b]
		Annual	0.06334[c]
	PM_{10}	24-hour	1.741[b]
	NOx	1-hour	29.66
		Annual	2.461[c]
	SO_2	1-hour	0.02080
	CO	1-hour	36.75
GEN2 – IC engine powering secondary generator	$PM_{2.5}$	24-hour	0.0[d]
		Annual	0.02971[c]
	PM_{10}	24-hour	0.0[d]
	NOx	1-hour	0.0[d]
		Annual	0.2071 [c]
	SO_2	1-hour	0.0[d]
	CO	1-hour	0.0[d]
SILOFILL – loading of asphalt storage silo	$PM_{2.5}$	24-hour	0.1538[b]
		Annual	0.02675[c]
	PM_{10}	24-hour	0.1538[b]
	CO	1-hour	0.5310
LOAD – asphalt loadout from silo to truck	$PM_{2.5}$	24-hour	0.1370[b]
		Annual	0.02383[c]
	PM_{10}	24-hour	0.1370[b]
	CO	1-hour	0.6072
HOTOIL – asphalt oil heater	$PM_{2.5}$	24-hour	0.02248[b]
		Annual	0.01026[c]
	PM_{10}	24-hour	0.03357[b]
	NOx	1-hour	0.3503
		Annual	0.01599[c]
	SO_2	1-hour	0.1036
	CO	1-hour	0.07298
LOADCONV – aggregate handling by frontend loader and conveyor transfers	$PM_{2.5}$	24-hour	0.1372[b,e]
		Annual	0.02386[c,e]
	PM_{10}	24-hour	0.9061[b,e]
HMA_SCREEN – scalping screen	$PM_{2.5}$	24-hour	0.003276[b]
		Annual	0.0005699[c]
	PM_{10}	24-hour	0.2192[b]

a. Pounds per hour emission rate used in impact modeling analyses for specified averaging periods.
b. Calculated by multiplying the daily throughput or daily operational hours by the emission factor, then

dividing by 24hours/day.

c. Emissions rate is equal to annual emissions divided over 8,760 hours/year.

d. GEN2 will not operate when GEN1 and the other sources of the HMA plant are operating. Therefore, it's emissions only contribute to annual impacts.

e. Emissions are varied in the model according to wind speed category (see Attachment 1). Emissions listed are based on a 10 miles/hour (mph) wind speed.

Total project emissions are provided in Table 5 along with Level I and Level II Modeling Applicability Thresholds.

Estimated emissions exceed Level I Modeling Thresholds by a considerable margin. Level II Modeling Thresholds are not appropriate for PM_{10} and $PM_{2.5}$ because of the poor dispersion characteristics of fugitive particulate emissions. Level II Modeling Thresholds are questionably appropriate for CO, NOx, and SO_2 emissions from the dryer stack. Compared to parameters in the modeling analyses used to develop Level II thresholds, the HMA sources have a slightly shorter stack height, but will still achieve good dispersion from the high volume of hot exhaust from the drum dryer. Emissions are also distributed among three different sources rather than a single, concentrated point. Additionally, the thresholds are designed to assure an impact below the SIL, and estimated emissions are facility-wide. Therefore, impacts slightly above the SIL would almost certainly still result in a cumulative impact well below NAAQS. Allowable emissions of 1-hour CO were substantially below the 175 pound/hour Level II Modeling Threshold and project-specific air impact analyses were not performed for CO.

Table 5. EMISSION COMPARISONS TO MODELING THRESHOLDS

Pollutant / Averaging Period	Emission Rate[a]	Level I Threshold[b]	Level II Threshold[c]	Project-Specific Air Impact Analyses Required
PM_{10}[d] 24-hour	9.2 lb/hr	0.22 lb/hr	2.6 lb/hr	Yes
$PM_{2.5}$[d] 24-hour	7.1 lb/hr	0.054 lb/hr	0.63 lb/hr	Yes
$PM_{2.5}$[d] annual	5.3 ton/yr	0.35 ton/yr	4.1 ton/yr	Yes
CO[e] 1-hour, 8-hour	96.5 lb/hr	15 lb/hr	175 lb/hr	No[h]
NOx[f] 1-hour	54.8 lb/hr	0.20 lb/hr	2.4 lb/hr	Yes
NOx[f] annual	23.4 ton/yr	1.2 ton/yr	14 ton/yr	Yes
SO_2[g] 1-hour	40.2 lb/hr	0.21 lb/hr	2.5 lb/hr	Yes

a. Emission rate in either pounds/hour (lb/hr) over the specified time period or ton/year (ton/yr) over the specified time period.

b. Level I Modeling Applicability Thresholds are unconditional.

c. Level II Modeling Applicability Thresholds require DEQ approval and approval is dependent on the use of parameters that would result in dispersion as good or better than parameters in modeling analyses used to generate Level II thresholds. DEQ determined Level II thresholdsare not appropriate for $PM_{2.5}$ and PM_{10} emissions.

d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

f. Nitrogen oxides.

g. Sulfur dioxide.

h. DEQ determined Level II thresholds were appropriate for this pollutant.

Ozone (O_3) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O_3 is formed in the atmosphere through reactions of VOCs, NOx, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses (see Section 3.3.3) cannot be used to estimate O_3 impacts resulting from VOC and NOx emissions from an industrial facility.

O_3 concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting.

Addressing secondary formation of O_3 has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

> *. . . footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."*
>
> *The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."*

Allowable emissions estimates of VOCs and NOx are below the 100 tons/year threshold, and DEQ determined it was not appropriate or necessary to require a quantitative source specific O_3 impact analysis.

Secondary Particulate Formation

The impact from secondary particulate formation resulting from emissions of NOx, SO_2, and/or VOCs was assumed by DEQ to be negligible on the basis of the magnitude of emissions and the short distance from emissions sources to modeled receptors where maximum PM_{10} and $PM_{2.5}$ impacts would be anticipated.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 220 are only applicable for new or modified sources constructed after July 1, 1995. Table 6 lists emission rates used in the TAP impact analyses performed for those TAPs with potential emissions exceeding the TAP-specific ELs. Polyaromatic hydrocarbons (PAHs) are regulated by DEQ on an individual compound basis rather than a collective impact of all PAH compounds. Emissions of the PAH naphthalene are far greater than any other PAH. Therefore, impacts of naphthalene will be greater than other PAHs and demonstrating compliance of naphthalene with the PAH AACC will assure compliance with the other PAHs without the need to model those PAHs.

3.1.3 Emissions Release Parameters

Table 7 provides emission release parameters for the HMA plant used in the analyses, including stack height, stack diameter, exhaust temperature, and exhaust velocity. Additional details are provided in Attachment 1.

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

- Release point of asphalt silo filling was set to a typical height of a storage silo (30 feet) and the 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.

Fugitive sources of aggregate handling and screening were modeled as volume sources. The initial horizontal and vertical dispersion coefficients were calculated using methods outlined in the *User's Guide for the AMS/EPA Regulatory Model – AERMOD*.[3]

Table 6. TAP EMISSIONS USED IN DEQ ANALYSES

TAP	Averaging Period[a]	Emissions (lb/hr)[b]			
		DRYER[c]	HOTOIL[d]	SILOFILL[e]	LOAD[f]
Acetaldehyde	Annual	5.94 E-2			
Benzene	Annual	1.78 E-2		1.78 E-4	9.88 E-5
Formaldehyde	Annual	1.42 E-1	2.33 E-5	3.84 E-3	1.67 E-4
POM[g]	Annual	2.50 E-5	6.67 E-7	3.08 E-5	2.10 E-5
Arsenic	Annual	2.56 E-5	8.79 E-6		
Cadmium	Annual	1.87 E-5	2.65 E-6		
Chromium 6+	Annual	2.06 E-5	1.65 E-6		
Nickle	Annual	2.88 E-3	5.63 E-4		
propionaldehyde	24-hour	3.41 E-2			
Quinone	24-hour	4.20 E-2			
Phosphorus	24-hour	7.35 E-3	1.38 E-4		
PAH compounds[h]					
Naphthalene (PAH)	Annual	2.97 E-2	1.13 E-4	2.11 E-4	1.95 E-4
2-Methylnaphthalene	Annual	7.76 E-3		6.11 E-4	3.71 E-4
Acenaphthene	Annual	6.39 E-5	3.53 E-6	5.50 E-5	4.05 E-5
Acenaphthylene	Annual	1.01 E-3	1.33 E-6	1.62 E-6	4.36 E-6
Anthracene	Annual	1.42 E-4	1.20 E-6	1.51 E-5	1.09 E-5
Fluorene	Annual	5.02 E-4	2.13 E-7	1.17 E-4	1.20 E-4
Phenanthrene	Annual	1.05 E-3	3.27 E-5	2.09 E-4	1.26 E-4
Pyrene	Annual	1.37 E-4	2.13 E-7	5.10 E-5	2.34 E-5

a. Maximum annual emissions are used for carcinogenic TAPs listed in Idaho Air Rules Section 586, and maximum 24-hour emissions are used for noncarcinogenic TAPs listed in Idaho Air Rules Section 585.
b. Maximum emissions for the averaging period of the TAP increment, expressed as pounds/hour.
c. Drum dryer.
d. Asphalt oil heater.
e. Loading of asphalt storage silo.
f. Asphalt loadout from storage silo.
g. Polycyclic Organic Matter consisting of a group of seven polyaromatic hydrocarbons (PAHs) as listed in Idaho Air Rules Section 586.

h. Polyaromatic hydrocarbons. PAHs are regulated on an individual PAH basis with the impact of each separate PAH compared to the PAH EL or AACC.

Table 7. HMA PLANT EMISSION RELEASE PARAMETERS					
Release Point /Location	**Source Type**	**Stack Height (m)[a]**	**Modeled Diameter (m)[a]**	**Stack Gas Temp. (K)[b]**	**Stack Gas Flow Velocity (m/sec)[c]**
DRYER	Point	9.6 (32 ft)	1.4 (4.6 ft)	408 (275 °F)	20.3 (67 fps)
HOTOIL	Point	4.6 (15 ft)	0.3 (1.0 ft)	339 (150 °F)	0.97 (3.2 fps)
SILOFILL	Point	9.0 (30 ft)	3.0 (9.8 ft)	346 (163 °F)	0.1
LOAD	Point	3.5 (11.5 ft)	3.0 (9.8 ft)	346 (163 °F)	0.1
GEN1	Point	4.1 (13.5 ft)	0.46 (1.5 ft)	679 (762 °F)	26 (86 fps)
GEN2	Point	1.7 (5.6 ft)	0.15 (0.48 ft)	700 (800 °F)	44.6 (146 fps)
Volume Sources					
Release Point /Location	**Source Type**	**Release Height (m)[a]**	**Initial Horizontal Dispersion Coefficient σ_{y0} (m)**	**Initial Vertical Dispersion Coefficient σ_{z0} (m)**	
LOADCONV	Volume	2.5 (8.2)	4.65	1.16	
SCREEN	Volume	3.0 (9.8)	0.93	2.33	

a. Meters. Values in parentheses are in feet.
b. Kelvin. Values in parentheses are in degrees Fahrenheit.
c. Meters per second. Values in parentheses are in feet/second.

3.2 Background Concentrations

Background concentrations are used if a cumulative NAAQS impact analysis is needed to demonstrate compliance with applicable NAAQS. A background concentration tool was used to establish ambient air background concentrations for this project. The design value (DV) background concentration tool is accessed from the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST: https://arcg.is/1jXmHH) using the location-specific coordinates. These background air pollutant levels are based on regional-scale air impact modeling of criteria pollutants in Washington, Oregon, and Idaho. The modeling was performed for years 2014-2017 using updated air pollutant emissions inventories. Modeled background values were adjusted by the tool according to available ambient monitoring data and improved interpolation techniques.

DEQ used the background concentration tool to determine DV concentrations at the following locations: Boise, Nampa, Coeur d’Alene, McCall, St. Maries, Pocatello, Soda Springs, Payette, Kamiah, Rathdrum, Lewiston, Grangeville, Star, Twin Falls, Blackfoot, Plummer, Sandpoint, Kamiah, Idaho Falls, Burley, Caldwell, and Mountain Home. The statewide background concentration for each pollutant and applicable averaging period was then determined by using the mean of all locations plus the standard deviation.

The applicable DV background concentrations for these impact analyses are listed in Table 8.

Table 8. AMBIENT BACKGROUND CONCENTRATIONS AT THE LINKONE FACILITY.		
Pollutant	**Averaging Period**	**Background Concentration ($\mu g/m^3$)[a,b]**
$PM_{2.5}$[c]	24-hour	27.0
	Annual	7.94
PM_{10}[d]	24-hour	93.1
NO_2[e]	1-hour	71.3 (37.9 ppb[f])
	Annual	16.7 (8.86 ppb)
SO_2[g]	1-hour	38.6 (19.7 ppb)

a. Micrograms per cubic meter, except where noted otherwise.
b. NW AIRQUEST ambient background lookup tool, 2014-2017.
c. Particulate matter with an aerodynamic diameter of 2.5 microns or less.
d. Particulate matter with an aerodynamic diameter of 10 microns or less.
e. Nitrogen dioxide.
f. Parts per billion by volume.
g. Sulfur dioxide.

3.3 Impact Modeling Methodology

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

3.3.1 General Overview of Analyses

DEQ performed the project-specific air pollutant emissions inventory and air impact analyses based on information submitted from the POE facility and general knowledge of HMA plants. The submitted information/analyses, in combination with results from DEQ's air impact analyses, demonstrate compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

The POE HMA plant is a portable facility that may locate anywhere within Idaho. Therefore, site-specific data/characteristics used in air impact analyses, such as meteorological data, site layout, and terrain, cannot be represented as accurately as can be achieved for one fixed site. This increases the uncertainty in analytical results. DEQ used several methods to account for and offset this increased uncertainty, and these methods are described in subsequent sections of this memorandum. The general method used for portable sources was the following:

1. Use a polar receptor grid with the emission points located at the center in a conservatively tight grouping.

2. Run the model for numerous meteorological datasets, collected throughout Idaho.

3. For each model run and pollutant, identify the controlling receptor. The controlling receptor is the one just beyond (further from the emission points) the most distant receptor showing a concentration value over the applicable standard when combined with the DV background level.

4. Determine the distance between the controlling receptor and the emission points for each model run.

5. The minimum setback requirement distance is the furthest distance between the controlling receptor and key emission points (the drum dryer and stacks of the IC engines), considering all model runs.

6. Compliance with identified applicable standards is assured provided the HMA plant operates as described and the minimum setback between emission sources and the nearest point of ambient air is maintained.

Setback distances were calculated for possible scenarios involving two operational options: 1) operations with diesel-fired generators to supply electrical power; 2) operations without generators.

DEQ's air impact analyses addressed various operational scenarios. Scenerio-specific property boundary setback requirements were estimated for the following scenarios: 1) at any site for $\leq$ 12 months and using diesel-fired generators; 2) at any site for $\leq$ 12 months and not using diesel-fired generators; 3) at any site > 12 months and using diesel-fired generators; 4) at any site for > 12 months and not using diesel-fired generators.

Table 9 provides a brief description of parameters used in the modeling analyses.

Table 9. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Portable in Idaho	Air impact modeling was performed to determine a setback distance needed between emission sources and the nearest point of ambient air for any location where the HMA plant may locate. The HMA plant may not locate within NAAQS non-attainment areas.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 19191.
Meteorological Data	Multiple Areas	See Section 3.3.5 of this memorandum for additional details of the meteorological data.
Terrain	Not Considered	Flat terrain was assumed in the analyses.
Building Downwash	Considered	BPIP-PRIME was used to evaluate building/structure dimensions for consideration of downwash effects in AERMOD.
NOx chemistry	ARM2	NO to NO_2 conversion was addressed using the ARM2 method with default NO_2/NOx ratios (see Section 3.3.4).
Receptor Grid	Polar Grid	Adequate to resolve maximum modeled impacts.

3.3.2 Modeling protocol and Methodology

A modeling protocol was not submitted to DEQ prior to the application because DEQ performed the required air impact analyses. Site-specific modeling was generally conducted using data and methods described in the *State of Idaho Air Quality Modeling Guideline*.[2]

3.3.3 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 version 19191 was used for the modeling analyses to evaluate impacts of the facility. This version was the current version at the time the application was received by DEQ.

3.3.4 Data and Parameters used for Modeling 1-Hour NO_2 with ARM2

The atmospheric chemistry of NO, NO_2, and O_3 complicates accurate prediction of NO_2 impacts resulting from NOx emissions. The conversion of NO to NO_2 can be conservatively addressed through the use of several methods as outlined in a *2014 EPA NO_2 Modeling Clarification Memorandum*.[4] The guidance outlines a three-tiered approach:

- Tier 1 – assume full conversion of NO to NO_2 where total NOx emissions are modeled and modeled impacts are assumed to be 100 percent NO_2.
- Tier 2 – use an ambient ratio to adjust impacts from the Tier 1 analysis.
- Tier 3 – use a detailed screening method to account for $NO/NO_2/O_3$ chemistry such as the Ozone Limiting Method (OLM) or the Plume Volume Molar Ratio Method (PVMRM).

DEQ used the Ambient Ratio Method 2 (ARM2) method, a Tier 2 analysis method which assumes an ambient equilibrium between NO and NO_2, in which the conversion of NO to NO_2 is predicted using hourly ambient NOx monitoring data. ARM2 has been adopted by the EPA as a default regulatory Tier 2 option. A minimum and maximum NO_2/NOx ratio of 0.5 and 0.9, respectively, were specified in the model.

3.3.5 Meteorological Data

DEQ air impact analyses used processed meteorological data from numerous locations throughout Idaho. DEQ determined that NAAQS compliance is reasonably assured for all areas of Idaho when compliance is demonstrated by multiple analyses using the following 21 meteorological datasets: Boise, Coeur d'Alene, Grangeville, Twin Falls, Pocatello (DEQ tower in the downtown area), Pocatello airport, Idaho Falls, Rexburg, Burley, Lewiston, McCall, Spokane, Challis, Pullman/Moscow, Jerome, INL, Mountain Home, Soda Springs, Salmon, Bonners Ferry, and Sandpoint. All data were processed using the option in AERMET to adjust the surface friction velocity (u*) to address AERMOD's tendency to over-predict concentrations from some sources under stable, low wind speed conditions.

3.3.6 Effects of Terrain on Modeled Impacts

Terrain effects on dispersion were not considered in the non-site-specific analyses. DEQ contends that assuming flat terrain is not a critical limitation of the analyses because most emission 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 effect of surrounding terrain to influence the magnitude of maximum modeled impacts. Also, other conservative assumptions and data used in the analyses will offset the potential underestimation of impacts to elevated terrain.

3.3.7 Facility Layout

DEQ's analyses for portable HMA plants use a conservative generic facility layout. This is done because the specific layout will vary depending on product needs and specific characteristics of the site and equipment. To provide conservative results, DEQ uses a tight grouping of emissions sources. Sources are positioned within 7 meters of the center of the facility. The drum dryer stack is placed at the center of the facility and the center of the polar grid. Table 10 lists the emission point configuration used in the impact modeling analyses.

Table 10. UTM COORDINATES OF MODELED RELEASE POINTS

Release Point	Description	Source Type	Modeled Coordinates[a]	
			Easting (m)	Northing (m)
DRYER[b]	Asphalt drum dryer	Point	0.0	0.0
GEN1[b]	IC engine powering main generator	Point	5.0	5.0
GEN2[b]	IC engine powering secondary engine	Point	5.0	-5.0
SILOFILL	Loading of asphalt storage silo	Point	-5.0	-5.0
LOAD	Asphalt loadout from silo to truck	Point	-5.0	-5.0
HOTOIL	Asphalt oil heater	Point	-5.0	-5.0
LOADCONV[c]	Aggregate handling by loader/conveyors	Volume	0.0	0.0
SCREEN[c]	Scalping screen	Volume	-5.0	5.0

a. Coordinates in the model.
b. Key release point from which setback distances are established.
c. Coordinates for volume sources are at the center point of the volume source.

3.3.8 Effects of Building Downwash on Modeled Impacts

The housing of the large generator was assessed for potential plume downwash effects, modeled as a 40-foot (12-meter) by 8.2-foot (2.5-meter) structure, 14 feet (2.5-meters) high. This was based on information provided in the application. The structure was centered over the large generator statck. 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 to wind, thereby minimizing downwash effects.

3.3.9 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access." Ambient air is typically considered areas external to the identified property boundary where the facility is located, assuming that reasonable measures will be taken to preclude public access.

DEQ's non-site-specific analysis methods, using a generic facility layout, were used to generate minimum setback distances between key emissions points and the property boundary or the established boundary to ambient air (if not the same as the property boundary). Setback distances were specified as the distance between the drum dryer stack and the closest point of potential public access. The setback distance will also apply to the IC engines because they are a substantial contributor to NO_2 impacts. Compliance with applicable air quality standards and increments is not demonstrated unless setback distances are maintained.

3.3.10 Receptor Network

The polar grid included a total of over 3,000 receptors, provided good resolution of the maximum DV concentrations for the project, and provided extensive coverage. DEQ determined that the receptor grid used in the analyses was adequate to resolve maximum modeled impacts.

The receptor grid used in the impact modeling analyses met the minimum recommendations specified in the *Idaho Air Quality Modeling Guideline*[2], and DEQ determined that the receptor network was effective in determining setback distances needed to reasonably assure compliance with applicable air quality standards at all ambient air locations.

3.3.11 Setback Analysis for Operations of less than One Year

Design value impacts for 1-hour NO_2, 24-hour PM_{10}, and 24-hour $PM_{2.5}$ are drivers in the determination of required setbacks. The NO_2, SO_2, and $PM_{2.5}$ standards are "probabilistic," based on three-year averages of design values. If the HMA plant will only remain at one specific location less than or equal to one year, then the design value impact will be substantially lowered because only background concentrations will be averaged with the single-year impacts.

The design value at any receptor is given by: $y = (m_1 + x_1 + x_2 + x_3) / 3$

where: m_1 = modeled design value
x_1 = background concentration occurring with modeled design value
x_2, x_3 = background concentration for years 2 and 3

A Background x_1, x_2, and x_3 value of 71.3 $\mu g/m^3$ was used for 1-hour NO_2, a value of 38.6 $\mu g/m^3$ was used for 1-hour SO_2, and a value of 27.0 $\mu g/m^3$ was used for 24-hour $PM_{2.5}$. These values represent design value background concentrations as described in Section 3.2.

The 1-hour NO_2 model results for the portable scenario were in the form of a maximum 98th percentile of daily maximum 1-hour concentrations for a single year, with background included in the model output results. This value was converted to a design value that accounts for two additional years without operation of the HMA plant by using the following equation for NO_2:

$$y = ((m_1 + 71.3) + 71.3\ \mu g/m^3 + 71.3\ \mu g/m^3) / 3$$
$$= (m_1 + 213.9\ \mu g/m^3) / 3$$
$$= m_1 /3 + 71.3\ \mu g/m^3$$

The 1-hour SO_2 model results for the portable scenario were in the form of a maximum 99th percentile of daily maximum 1-hour concentrations for a single year, with background not included in the model output results. This value was converted to a design value that accounts for two additional years without operation of the HMA plant by using the following equation for SO_2:

$$y = ((m_1 + 38.6\ \mu g/m^3) + 38.6\ \mu g/m^3 + 38.6\ \mu g/m^3) / 3$$
$$= (m_1 + 115.8\ \mu g/m^3) / 3$$
$$= (m_1/3 + 38.6\ \mu g/m^3$$

The 24-hour $PM_{2.5}$ model results were in the form of a maximum 98th percentile of 24-hour concentrations for a single year, with background not included in the model output results. This value was converted to a design value that accounts for two additional years without operation of the HMA plant by using the following equation for $PM_{2.5}$:

$$y = ((m_1 + 27.0\ \mu g/m^3) + 27.0\ \mu g/m^3 + 27.0\ \mu g/m^3) / 3$$
$$= (m_1 + 81.0\ \mu g/m^3) / 3$$
$$= m_1/3 + 27.0\ \mu g/m^3$$

The annual $PM_{2.5}$ model results were in the form of maximum annual average concentrations for a single year, with background not included in the model output results. This value was converted to a design value that accounts for two additional years without operation of the HMA plant by using the following equation for $PM_{2.5}$:

$$y = (m_1 + 7.94\ \mu g/m^3 + 7.94\ \mu g/m^3 + 7.94\ \mu g/m^3) / 3$$
$$= (m_1 + 23.82\ \mu g/m^3) / 3$$
$$= m_1/3 + 7.94\ \mu g/m^3$$

Compliance with the 24-hour PM_{10} standard is based on expected exceedances of not more than once per year over a 3-year period. When modeling for 1 year of operation, this translates into a design value of the 4^{th} highest 24-hour concentration at a specific receptor.

Carcinogenic TAP emissions may be adjusted by a Short Term (defined as no greater than 5 years) Source Factor, as specified by Idaho Air Rules Section 210.15. This section allows Carcinogenic TAP ELs or AACCs (in Idaho Air Rules Section 586) to be increased by a factor of 10.

3.3.12 Crucial HMA Plant Characteristics Affecting Air Quality Impacts

Table 11 lists characteristics of the HMA plant that are critical to the NAAQS and TAPs compliance demonstrations.

Table 11. IMPORTANT CHARACTERISTIC OF HMA PLANT USED IN DEQ ANALYSES

Parameter	Value or Description
HMA Plant	
HMA Plant Throughput Rates	450 ton/hr, 6,300 ton/day, 400,000 ton/yr
Co-Contributing Sources	Analyses assumed there were no co-contributing emission sources within 1,000 ft of the HMA plant (distances determined from the closer of either the drum dryer stack or the stack of the IC engine powering the main generator). The HMA plant will not move to a location within 1,000 ft of another permitted facility, including a CBP, rock crushing plant, or another HMA plant (see Table 1 and Section 4.2 for more details). Also, other permitted plants will not be brought onto the permittee's site within 1,000 ft of the HMA.
Drum Dryer	Drum dryer fueled by natural gas, propane, diesel, or residual fuel oil (RFO) with a baghouse for emissions control.
Dryer Stack Parameters	Stack height ≥32 ft, stack diameter ≈4.6 ft (effective diameter), gas temp ≥ 275^o F, flow velocity ≥67 ft/sec.
Main IC Engine Stack Parameters	Stack height ≥13.5 ft, stack diameter ≈1.5 ft, gas temp ≥ 762^o F, flow velocity ≥67 ft/sec.
Asphalt Silo Filling	It was conservatively assumed that emissions are not captured and routed back to the drum dryer.
Conveyor Transfers	≤3 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)

Table 11. IMPORTANT CHARACTERISTIC OF HMA PLANT USED IN DEQ ANALYSES	
Parameter	**Value or Description**
	aggregate to storage pile; 2) aggregate from pile to hopper.
Portability	The HMA plant was modeled as a permanent source with the ability to locate at any location in Idaho that is not a non-attainment area.
Seasonal Restriction	No seasonal restrictions were considered in the analyses.

4.0 Impact Modeling Results

4.1 Results for NAAQS Cumulative Impact and TAP 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 12 lists controlling setback distances for each operational scenario. Setback distances are the closest allowable distance between the property boundary and the center of the facility, which is taken to be the drum dryer or IC engine stack location. Attachment 2 provides calculated setback distances for individual impact analyses.

Table 12. SETBACK DISTANCES AS A FUNCTION OF THROUGHPUT AND OPERATIONAL CONFIGURATION		
HMA Configuration Scenario	**Setback (feet (meters))**	**Controlling Pollutant**
450 ton HMA/hour, 6,300 ton HMA/day, 400,000 ton HMA/year, operation with IC engine powering a generator, operating at any one site ≤ 12 months.	787 (240)	24-hr PM_{10}[a]
450 ton HMA/hour, 6,300 ton HMA/day, 400,000 ton HMA/year, operation without IC engine powering a generator, operating at any one site ≤ 12 months.	755 (230)	24-hr PM_{10}[a]
450 ton HMA/hour, 6,300 ton HMA/day, 400,000 ton HMA/year, operation with IC engine powering a generator, operating at any one site > 12 months.	1,640 (500)	1-hr NO_2[b]
450 ton HMA/hour, 6,300 ton HMA/day, 400,000 ton HMA/year, operation without IC engine powering a generator, operating at any one site > 12 months.	1,150 (350)	24-hr $PM_{2.5}$[c]

c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
d. Nitrogen dioxide.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

4.2 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 CBP, 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 too distant to have a measurable impact on receptors substantially impacted by the HMA plant.

HMA plants commonly co-locate with rock crushing plants. Since the short-term impacts are the governing criteria, 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 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 of the HMA plant for that day is half that assumed for the modeling analyses used to generate setback distances.

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 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.

5.0 Conclusions

The ambient air impact analyses and other air quality analyses performed in support of the PTC application demonstrated to DEQ’s satisfaction that emissions from the POE HMA plant as described in this memorandum will not cause or significantly contribute to a violation of any ambient air quality standard.

References

1. *Policy on NAAQS Compliance Demonstration Requirements.* Idaho Department of Environmental Quality Policy Memorandum. July 11, 2014.

2. *State of Idaho Guideline for Performing Air Quality Impact Analyses.* Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

3. *User's Guide for the AMS/EPA Regulatory Model – AERMOD*. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division. EPA-454/B-03-001. September 2004. (Section 3.3.2.2).

4. *Clarification on the Use of AERMOD Dispersion Modeling for Demonstrating Compliance with the NO_2 National Ambient Air Quality Standard.* U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Air Quality Modeling Group. Memorandum from R. Chris Owen and Roger Brode, to Regional Dispersion Modeling Contacts. September 30, 2014.

ATTACHMENT 1

EMISSIONS CALCULATIONS AND MODELING PARAMETERS FOR

DEQ’S AIR IMPACT ANALYSES

HMA Plant Modeled Emissions Rates

Compliance determination is linked to throughput levels and the equipment configuration at the site.

Emissions from Drum Dryer, Asphalt Loadout, Asphalt Silo Filling, and Asphalt Tank Heater

DEQ's HMA plant spreadsheet to calculate emissions rates for various averaging periods.

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} and $PM_{2.5}$ 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	=	3% 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. The lower level of moisture combined with 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: $0.053\ (0.0032)\frac{(10/5)^{1.3}}{(3/2)^{1.4}} = 2.367\text{ E-4 lb/ton}$

Adjustment factors to put in the model:

Cat 1: $(1.72/5)^{1.3}$ (9.614 E-5) = 2.401 E-5 lb/ton
Factor = 2.401 E-5/2.367 E-4 = 0.1014

Cat 2: $(5.18/5)^{1.3}$ (9.614 E-5) = 1.007 E-4 lb/ton
Factor = 1.007 E-4 /2.367 E-4 = 0.4253

Cat 3: $(9.20/5)^{1.3}$ (9.614 E-5) = 2.124 E-4 lb/ton
Factor = 2.124 E-4/2.367 E-4 = 0.8974

Cat 4: $(14.95/5)^{1.3}$ (9.614 E-5) = 3.993 E-4 lb/ton
Factor = 3.993 E-4/2.367 E-4 = 1.687

Cat 5: $(21.28/5)^{1.3}$ (9.614 E-5) = 6.318 E-4 lb/ton
Factor = 6.318 E-4/2.367 E-4 = 2.669

Cat 6: $(27.74/5)^{1.3}$ (9.614 E-5) = 8.918 E-4 lb/ton
Factor = 8.918 E-4/2.367 E-4 = 3.768

For the operational scenario for 6,300 ton/day HMA and 400,000 ton/year HMA, emissions from the loader are as follows (daily and annual throughputs were based on aggregate being 96% of the total HMA production):

Daily $PM_{2.5}$:

2.367 E-4 lb $PM_{2.5}$	6,048 ton	day	2 transfers	=	0.1193 lb
ton	day	24 hr			hr

Annual $PM_{2.5}$:

2.367 E-4 lb $PM_{2.5}$	384,000 ton	yr	2 transfers	=	0.02075 lb
ton	yr	8,760 hour			hr

Emissions from the three conveyor transfers are as follows (with an additional 90% control):

Daily $PM_{2.5}$:

2.367 E-4 lb $PM_{2.5}$	6,048 ton	day	3 transfers	(1-0.90)	=	0.01789 lb
ton	day	24 hr				hr

Annual $PM_{2.5}$:

2.367 E-4 lb $PM_{2.5}$	384,000 ton	yr	3 transfers	(1-0.90)	=	0.003113 lb
ton	yr	8,760 hour				hr

Total aggregate handling emissions:

Daily $PM_{2.5}$: 0.1193 lb/hr + 0.01789 lb/hr = 0.1372 lb/hr
Annual $PM_{2.5}$: 0.02075 lb/hr + 0.003113 lb/hr = 0.02386 lb/hr

Screening Emissions

This HMA plant uses one scalping screen. A $PM_{2.5}$ factor for uncontrolled emissions was not available in AP42. A $PM_{2.5}$ factor was estimated by DEQ permit writers and entered into the HMA calculation spreadsheet. 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 1,800 ton/day HMA and 175,000 ton/year HMA, emissions are as follows:

Scalping Screen (controlled emissions):

Daily $PM_{2.5}$:

0.000130 lb PM_{10}	6,048 ton	day	(1-0.90)	=	0.003276 lb
ton	day	24 hour			hr

Annual $PM_{2.5}$:

0.000130 lb PM_{10}	384,000 ton	yr	(1-0.90)	=	0.0005699 lb
ton	yr	8,760 hour			hr

HMA Plant Modeling Parameters

Dryer baghouse Stack

Release height = 9.6 meters; effective diameter of release area = 1.4 meters;
typical stack gas temperature = 408 K; typical flow velocity = 20.3 meters/second

Asphalt Silo Filling

DEQ modeled this source as a point source.
- release height of 9 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^{o} F / 2 = 163^{o} F (346 K)
- stack velocity of 0.1 m/sec to account for convective air flow.

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^{o} F / 2 = 163^{o} F (346 K)
- 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.

Scalping Screen

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:

σ_{yo} = 4 m / 4.3 = 0.93 m
σ_{zo} = 5 m / 2.15 = 2.33 m

Asphalt Oil Heater

Parameters were provided by Dixie River. Release height = 4.6 meters; effective diameter of release area = 0.3 meters; typical stack gas temperature = 339 K; typical flow velocity = 1.0 meters/second.

ATTACHMENT 2

CALCULATED SETBACK DISTANCES FOR

DEQ'S AIR IMPACT ANALYSES

Required Setback Distances for Specific Pollutants, Averaging Periods, and Meteorological Datasets

Meteorological Data	Setback (m)		
NO_2 1-hour Modeling Results	**450 ton/hr production, with engines**	**450 ton/hr production, without engines[a]**	**450 ton/hr production ≤ 1 yr, with engines[b]**
Burley	**500**	70	130
Sandpoint	400	<50	
McCall	375	<50	
Boise	400	<50	
Mountain Home	400	<50	
Jerome	450	<50	
Spokane	475	<50	
Twin Falls	450	<50	
Coeur d'Alene	500	80	150, 150
Pocatello (DEQ tower)	325	<50	
Pocatello (airport)	400	<50	
Soda Springs (P4 plant)	500	100	120, 100, 110, 110, 110
Bonners Ferry	325	<50	
Idaho Falls	450	<50	
Lewiston	400	<50	
Rexburg	475	<50	
Grangeville	375	<50	
Moscow	500	<50	140, 160
Challis	350	<50	
Salmon	>700[c]	100	
INL	375	<50	

SO_2 1-hour Modeling Results[c]	450 ton/hr production, with engines[a]	450 ton/hr production, without engines[a]
Burley	<50	<50
Boise	170	170
Jerome	190	190
Spokane	<50	<50
Coeur d'Alene	<50	<50
Soda Springs (P4 plant)	190	190
Idaho Falls	200	200
Rexburg	170	170
Grangeville	180	180
Moscow	<50	<50
Salmon	>700[b]	>700[b]

NO_2 Annual Modeling Results[c]	400,000 ton/yr production, with engines[a,d]
Jerome	<50 (max = 36.3 $\mu g/m^3$)
Boise	<50 (max = 24.0 $\mu g/m^3$)
Soda Springs (P4 plant)	<50 (max = 23.2 $\mu g/m^3$)

a. This scenario for operations at any location for ≤ 1 year were not performed because impacts for operations > 1 year were already below setbacks obtained for other pollutants.

b. Additional analyses were not performed because much larger setback distances have been calculated for this operational scenario for other pollutants.

c. This large setback seems to be an outlier, with modeled impacts far exceeding analyses using other meteorological data. Therefore, these results were disregarded for the setback calculation.

d. The scenario without engines was not analyzed because the scenario with engines already has a very small setback distance compared to other pollutant scenarios without engines.

Required Setback Distances for Specific Pollutants, Averaging Periods, and Meteorological Datasets			
Meteorological Data	**Setback (m)**		
$PM_{2.5}$ 24-hour Modeling Results	**6,300 ton/hr production, with engines**	**6,300 ton/hr production, without engines**	**6,300 ton/hr production, with engines, ≤ 1 yr[a,b]**
Burley	300	225	115, 115, 120, 115, 110
Sandpoint	325	275	105, 115,
McCall	180	160	
Boise	250	210	
Mountain Home	350	275	
Jerome	**400**	300	115, 120, 135, 120, 120
Spokane	300	275	
Twin Falls	300	230	
Coeur d'Alene	325	275	
Pocatello (DEQ tower)	275	225	
Pocatello (airport)	325	275	
Soda Springs (P4 facility)	375	**350**	105, 115, 120, 140, 105
Bonners Ferry	150	130	
Idaho Falls	375	300	125, 105, 115
Lewiston	160	150	
Rexburg	325	325	100, 115, 115
Grangeville	250	190	
Moscow	325	275	
Challis	145	135	
Salmon	300	300	
INL	275	250	

PM_{10} 24-hour Modeling Results	**6,300 ton/hr production, with engines[a,b]**	**6,300 ton/hr production, with engines, ≤ 1 yr[c]**	**6,300 ton/hr production, with/out engines, ≤ 1 yr[c]**
Burley	190	180, 160, 180, 140, 160	170, 145, 170, 125, 150
Sandpoint	225	160, 190, 225	160, 190, 225
Boise	140		
Mountain Home	140		
Jerome	190	150, 160, 190, 170, 180	135, 140, 150, 145, 150
Spokane	180		
Coeur d'Alene	200		
Pocatello (DEQ tower)	90		
Pocatello (airport)	150		
Soda Springs (P4 facility)	**300**	200, 230, 230, 240, 200	200, 230, 230, 230, 200
Bonners Ferry	160		
Idaho Falls	190		
Rexburg	225	225, 200,190, 190,210	225, 200, 190, 190, 210
Grangeville	130		
Moscow	205	200, 180, 190, 180, 190	190, 170, 180, 170, 190
Salmon	190		
INL	115		

a. Additional analyses were not performed because much larger setback distances have been calculated for this operational scenario for other pollutants.

b. The scenario without engines was not analyzed because the scenario with engines already has a very small setback distance compared to other pollutant scenarios without engines.

c. Analyses for some met data sets were not performed because the setback for the scenario of > 1 year with engines was already less than the controlling ≤ 1 year setback.

Required Setback Distances for Specific Pollutants, Averaging Periods, and Meteorological Datasets	
Meteorological Data	**Setback (m)**
$PM_{2.5}$ Annual Modeling Results	**400,000 ton/yr production,**

	with engines[a,b]
Jerome	<50 (max = 11.1 μg/m^3)
Rexburg	<50 (max = 11.4 μg/m^3)
Boise	55
Soda Springs (P4 facility)	<50 (max = 10.5 μg/m^3)
Moscow	<50 (max = 11.8 μg/m^3)
Idaho Falls	<50 (max = 11.9 μg/m^3)

a. Additional analyses were not performed because much larger setback distances have been calculated for this operational scenario for other pollutants.

b. The scenario without engines was not analyzed because the scenario with engines already has a very small setback distance compared to other pollutant scenarios without engines.

Setback Distances for Specific Pollutants, Averaging Periods, and Meteorological Datasets		
TAPs Modeled and Meteorological Dataset Used	**Setback (meters) With or Without Generators for 325,000 ton/year Throughput**	**Setback (meters) With or Without Generators, ≤ 1 yr, for 325,000 ton/year Throughput**
Acetaldehyde[a] AACC = 4.5 E-1 μg/m^3		
Boise	<50 (max = 9.2 E-3)	
Arsenic[a] AACC = 2.3 E-4 μg/m^3		
Boise	85	
Benzene[a] (AACC = 1.2 E-1 μg/m^3		
Boise	<50 (max = 1.3 E-2)	
Cadmium[a] AACC = 5.6 E-4 μg/m^3		
Boise	<50 (max = 7.3 E-2)	
Chromium 6+[a] AACC = 8.3 E-4 μg/m^3		
Boise	50	
Formaldehyde[a] AACC = 7.7 E-2 μg/m^3		
Boise	100	
Rexburg	75	
Naphthalene (PAH) [a] AACC = 1.4 E-2 μg/m^3		
Idaho Falls	70	
Boise	80	
Rexburg	60	
Soda Springs (P4 facility)	<50	
Nickle AACC = 4.2 E-3		
Burley	180	
Sandpoint	275	<50
McCall	200	
Boise	200	
Mountain Home	145	
Jerome	125	
Spokane	190	
Twin Falls	125	
Coeur d'Alene	180	
Pocatello (DEQ tower)	115	
Aberdeen	180	
Soda Springs (P4 facility)	**300**	**<50**
Bonners Ferry	190	
Idaho Falls	225	<50
Lewiston	170	
Rexburg	325	<50
Grangeville	170	
Moscow	300	<50
Challis	200	
INL	140	
POM AACC = 3.0 E-4 μg/m^3		
Burley	180	
Sandpoint	180	

Setback Distances for Specific Pollutants, Averaging Periods, and Meteorological Datasets		
TAPs Modeled and Meteorological Dataset Used	**Setback (meters) With or Without Generators for 325,000 ton/year Throughput**	**Setback (meters) With or Without Generators, ≤ 1 yr, for 325,000 ton/year Throughput**
McCall	140	
Boise	225	
Mountain Home	160	
Jerome	130	
Twin Falls	150	
Coeur d'Alene	180	
Pocatello (DEQ tower)	100	
Soda Springs (P4 facility)	275	<50
Bonners Ferry	105	
Idaho Falls	225	
Lewiston	160	
Rexburg	325	<50
Grangeville	140	
Moscow	190	
Challis	135	
INL	120	
Propionaldehyde[a] AAC = 21.5 μg/m^3		
Boise	<50 (max = 2.0 E-2)	
Quinone[a] AAC = 20 μg/m^3		
Boise	<50 (max = 2.0 E-2)	
Phosphorus[a] AAC = 5 μg/m^3		
Boise	<50 (max = 2.0 E-2)	

a. Additional meteorological datasets were not used in the analyses because impacts were so far below applicable standards that DEQ concluded that analysis of other datasets could not result in a modeled violation.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on March 19, 2020:

Facility Comment: "Currently the Draft PTC for the POE plant lists 2 Operating Configurations. Jeremy and I think there should be four (4 qty.) operating configurations, each with separate set back distances." *(Other configurations due to fuel type being used in the asphalt drum mixer.)*

DEQ Response: We don't allow a separate setback determination for different fuels, mainly because other options tend to drive the setback distances. We model using the worst-case fuel from the options the applicant selects on the application form and in the HMA spreadsheet.

Facility Comment: "I think the main thing is that we want to get POE as much Operating Flexibility as we can. Going to 40 foot on the Drum Mixer and 20 foot plus on both the ICE Engines would be a bit of cost, but it would sure help POE out from an Operating Point of View."

DEQ Response: Changing the stack height/parameters may get some more flexibility, but that would be another application (withdraw this one or accept it as is, and then resubmit another application and fee with the revised info). The increase drum dryer stack will help with NO_2, but not so much with PM_{10}.