Statement of Basis

Permit to Construct No. P-2015.0008
Project ID 61509

DePatco, Inc. - 00552
Portable throughout the state, Idaho

Facility ID 777-00552

Final

May 14, 2015
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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
CAS No.	Chemical Abstracts Service registry number
CBP	concrete batch plant
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
FEC	Facility Emissions Cap
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
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
iwg	inches of water gauge
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
psig	pounds per square inch gauge
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
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TEQ	toxicity equivalent
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd^3	cubic yards
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

DePatco, Inc. 00552 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, and #2 diesel fuel. Next, aggregate travels through the rotating drum mixer, and when dried and heated, it is mixed with hot liquid asphaltic oil. The asphaltic oil is heated by the asphalt tank heater to allow it to flow and be mixed with the hot, dry aggregate. The resulting asphalt is conveyed to hot storage bins until it can be loaded into trucks for transport off-site or transferred to silos for temporary storage prior to transport off-site. As part of the operation, the Applicant has proposed that a portable rock crusher be allowed to be collocated at the facility.

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

Permitting History

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

Application Scope

This is the initial PTC for a new facility.

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

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

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

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

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

Particulate emissions will be controlled by maintaining the moisture content at 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 or natural gas/LPG-fired 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 300 tons per hour, 3,750 tons per day, and 660,000 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 28, 2015	DEQ received an application and an application/processing fee.
Feb. 10 – Feb. 25, 2015	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
February 26, 2015	DEQ determined that the application was complete.
April 29, 2015	DEQ made available the draft permit and statement of basis for peer and regional office review.
April 30, 2015	DEQ made available the draft permit and statement of basis for applicant review.
May 14, 2015	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 Industries, Inc. Model: 300 Ultradrum Type: Counter-flow Manufacture Date: 2013 Max. production: 300 T/hr, 3,750 T/day, and 660,000 T/yr Fuel(s): Natural gas, LPG/Propane, and #2 fuel oil Liquid fuel sulfur content: 0.05% by weight	Asphalt Drum Mixer Baghouse: Manufacturer: Gencor Industries, Inc. Model: Ultraflo Type: Reverse pulse-jet Flow rate: 28,336 dscf PM_{10} emissions conc.: 0.04 gr/dscf	Exit height: 37.92 ft (11.56 m) Exit diameter: 3.9 ft (1.19 m) Exit flow rate: 50,727 acfm Exit temperature: 275 °F (135 °C)
Asphaltic Oil Tank Heater	Asphaltic Oil Tank Heater: Heat input rating: 1.0 MMBtu/hr Fuel(s): Natural gas, LPG/Propane, and #2 fuel oil Liquid fuel sulfur content: 0.05% by weight	N/A	Exit height: 8 ft (2.44 m) Exit diameter: 1 ft (0.30 m) Exit flow rate: 95 acfm Exit temperature: 400 °F (204 °C)
Primary IC Engine	Primary IC Engine: Manufacturer: Caterpillar Model: XQ 800 Manufacture Date: 2006 Max. power rating: 1,105 bhp Fuel: LSD (0.05% S by weight) Daily use limit: 12.5 hrs/day Annual use limit: 2,200 hrs/yr	N/A	Exit height: 13 ft (3.96 m) Exit diameter: 0.83 ft (0.25 m) Exit flow rate: 6,271 acfm Exit temperature: 933 °F (501 °C)
Secondary IC Engine	Secondary IC Engine: Manufacturer: Isuzu Model: BU-4JJ1T Manufacture Date: 2011 Max. power rating: 67 bhp Fuel: LSD 0.05% S by weight Daily use limit: 12.5 hrs/day Annual use limit: 2,200 hrs/yr	N/A	Exit height: 5 ft (1.52 m) Exit diameter: 0.21 ft (0.064 m) Exit flow rate: 414 acfm Exit temperature: 612 °F (322 °C)

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 300 ton HMA/hour, 3,750 ton HMA/day, and 660,000 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.
- Emissions from a portable rock crusher were included in the emissions modeling analysis with the assumption that when the collocated rock crusher is operating, the asphalt plant is operating at half its maximum capacity.
- Any emissions unit outside a 1,000 ft radius from the asphalt plant was not included in the emissions modeling analysis for this project.
- The primary IC engine powering a generator has a maximum brake-horsepower rating of less than less than or equal to 1,105 bhp, and proposed operation of up to 12.5 hour/day and 2,200 hour/year (per the Applicant).
- The secondary IC engine powering a generator has a maximum brake-horsepower rating of less than less than or equal to 67 bhp and proposed operation of up to 12.5 hour/day and 2,200 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 660,000 T/yr = 2,640,000 T/yr).
- For the asphaltic oil tank heater controlled emissions were scaled up from 2,200 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 2,200 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 2,200 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
Point Sources						
Asphalt drum mixer	30.36	11.75	72.6	171.6	42.24	56,385
Asphaltic oil tank heater	0.074	0.23	0.76	0.36	0.024	
Primary IC engine and Secondary IC engine	2.03	1.72	54.5	30.3	11.2	
Load-out and silo filling	1.46	0.00	0.00	3.34	5.32	
Materials handling	3.96	0.00	0.00	0.00	0.00	
Total, Point Sources	**37.88**	**13.70**	**127.86**	**205.60**	**58.78**	**56,385.0**

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	1.11E-07
	Furans	1.66E-07
	Acrolein	4.57E-04
	Antimony	4.05E-04
	Barium	7.74E-03
	Chromium	7.29E-03
	Cobalt	2.27E-04
	Copper	4.15E-03
	Ethyl benzene	3.17E-01
	Hexane	1.22
	Manganese	1.03E-02
	Methyl chloroform	6.34E-02
	Methyl ethyl ketone (MEK)	0.0
	Molybdenum	2.52E-05
	Naphthalene	8.63
	Pentane	1.2E-02
	Phosphorus	3.73E-02
	Propionaldehyde	0.0
	Quinone	0.0
	Selenium	4.84E-04
	Silver	6.34E-04
	Thallium	5.41E-06
	Toluene	3.84
	Vanadium	1.02E-03
	Xylene	2.71E-01
	Zinc	8.15E-02
586	Acetaldehyde	2.43E-03
	Arsenic	7.81E-04
	Benzene	5.43E-01
	Benzo(a)anthracene	3.02E-04
	Benzo(a)pyrene	2.20E-05
	Benzo(b)fluoranthene	1.73E-04
	Benzo(k)fluoranthene	6.18E-05
	Beryllium	8.89E-07
	1,3-Butadiene	8.03E-05
	Cadmium	5.54E-04
	Chrysene	2.90E-04
	Dibenzo(a,h)anthracene	1.29E-05
	Formaldehyde	4.10
	Hexavalent Chromium	6.02E-04
	Indeno(1,2,3-cd)pyrene	2.40E-05
	3-Methylchloranthrene	7.73E-09
	Nickel	8.59E-02
Not listed	Acenaphthene	2.03E-03
	Acenaphthylene	2.94E-02
	Anthracene	4.14E-03
	Benzo(e)pyrene	2.20E-05
	Benzo(g,h,l)perylene	7.26E-05
	Dichlorobenzene	5.15E-06
	Fluoranthene	9.59E-04
	Fluorene	1.50E-02
	Isooctane	5.28E-02
	Mercury	3.44E-03
	2-Methylnaphthalene	2.24E-01
	Perylene	1.16E-05
	Phenanthrene	3.20E-02
	Pyrene	4.10E-03
	Total	**4.55**

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	6.90	7.59	2.67	2.94	16.50	18.15	39.0	42.90	9.60	10.56	15,507
Asphaltic oil tank heater	0.017	0.0034	0.052	0.10	0.175	0.35	0.082	0.165	0.0054	0.011	
Primary IC engine and Secondary IC engine	0.46	0.509	0.40	0.43	12.5	13.7	6.91	7.60	2.57	2.82	
Load-out and silo filling	0.33	0.367	0.00	0.00	0.00	0.00	0.76	0.835	1.21	1.33	
Post Project Totals	**7.71**	**8.47**	**3.12**	**3.47**	**29.18**	**32.20**	**46.75**	**51.50**	**13.39**	**14.72**	**15,507.0**

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.

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	7.71	8.47	3.12	3.47	29.18	32.20	46.75	51.50	13.39	14.72	15,507
Changes in Potential to Emit	**7.71**	**8.47**	**3.12**	**3.47**	**29.18**	**32.20**	**46.75**	**51.50**	**13.39**	**14.72**	**15,507.0**

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	1.35E-03	**0.0014**	**119**	**No**
Acrolein	0.00E-03	5.43E-05	**0.00005.**	**0.017**	**No**
Antimony	0.00E-03	2.81E-05	**0.0000281**	**0.033**	**No**
Barium	0.00E-03	9.06E-04	**0.0009**	**2**	**No**
Carbon disulfide	0.00E-03	3.89E-04	**0.0009**	**0.033**	**No**
Chromium metal (II and III)	0.00E-03	8.59E-04	**0.0009**	**0.033**	**No**
Cobalt metal dust, and fume	0.00E-03	4.06E-06	**0.000004**	**0.0033**	**No**
Copper (fume)	0.00E-03	4.84E-04	**0.0005**	**0.013**	**No**
Crotonaldehyde	0.00E-03	0.00	**0.0000**	**0.38**	**No**
Cumene	0.00E-03	7.15E-04	**0.00072**	**16.3**	**No**
Ethyl benzene	0.00E-03	4.00E-02	**0.0400**	**29**	**No**
Ethyl chloride (Chloroethane)	0.00E-03	0.00	**0.0000**	**176**	**No**
Heptane	0.00E-03	1.47	**1.4700**	**109**	**No**
Hexane	0.00E-03	1.47E-01	**0.1470**	**12**	**No**
Manganese as Mn (fume)	0.00E-03	1.20E-03	**0.0012**	**0.067**	**No**
Mercury (alkyl compounds as Hg)	0.00E-03	4.06E-04	**0.0004**	**0.001**	**No**
Methyl bromide	0.00E-03	1.56E-04	**0.00016**	**1.27**	**No**
Methyl chloride (Chloromethane)	0.00E-03	5.14E-06	**0.0000051**	**6.867**	**No**
Methyl chloroform	0.00E-03	7.50E-03	**0.0075**	**127**	**No**
Methyl ethyl ketone (MEK)	0.00E-03	1.06E-03	**0.0011**	**39.3**	**No**
Molybdenum (soluble)	0.00E-03	0.00	**0.0000**	**0.333**	**No**
Pentane	0.00E-03	0.00	**0.0000**	**118**	**No**
Phenol	0.00E-03	6.29E-04	**0.0006**	**1.27**	**No**
Phosphorous	0.00E-03	4.38E-03	**0.0044**	**0.007**	**No**
Propionaldehyde	0.00E-03	0.00	**0.0000**	**0.0287**	**No**
Quinone	0.00E-03	0.00	**0.0000**	**0.027**	**No**
Selenium	0.00E-03	5.47E-05	**0.000055**	**0.013**	**No**
Silver as Ag (soluble)	0.00E-03	7.50E-05	**0.000075**	**0.001**	**No**
Styrene monomer	0.00E-03	1.50E-04	**0.00015**	**6.67**	**No**
Thallium	0.00E-03	6.41E-07	**0.0000006**	**0.007**	**No**
Toluene	0.00E-03	4.57E-01	**0.4570**	**25**	**No**
Trichloroethylene	0.00E-03	7.50E-03	**0.0075**	**17.93**	**No**
Vanadium as V_2O_5, (respirable dust and fume)	0.00E-03	0.00	**0.0000**	**0.003**	**No**
Xylene	0.00E-03	4.49E-02	**0.0449**	**29**	**No**
Zinc metal	0.00E-03	9.53E-03	**0.0095**	**0.667**	**No**

None of the PTEs for non-carcinogenic TAPs were exceeded as a result of this project. Therefore, modeling is not required for any non-carcinogenic TAP because none of the 24-hour average 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	1.39E-04	**0.0001**	**3.0E-03**	**No**
Arsenic	**0.00E-03**	**4.66E-05**	**0.000047**	**1.5E-06**	**Yes**
Benzene	**0.00E-03**	**3.15E-02**	**0.0315**	**8.0E-04**	**Yes**
Beryllium and compounds	0.00E-03	9.26E-08	**0.0000001**	**2.8E-05**	**No**
Cadmium and compounds	**0.00E-03**	**3.22E-05**	**0.0000347**	**3.7E-06**	**Yes**
Chromium (VI)	0.00E-03	3.47E-05	**0.000035**	**5.6E-07**	**No**
Dichloromethane	0.00E-03	5.14E-06	**0.000005**	**1.6E-03**	**No**
Formaldehyde	**0.00E-03**	**2.40E-01**	**0.2400**	**5.1E-04**	**Yes**
Nickel	**0.00E-03**	**5.03E-03**	**0.0050**	**2.7E-05**	**Yes**
PAHs Total	**0.00E-03**	**1.44E-02**	**0.0144**	**9.1E-05**	**Yes**
POM Total[a]	**0.00E-03**	**1.36E-04**	**0.000136**	**2.0E-06**	**Yes**
Tetrachloroethylene	0.00E-03	5.00E-05	**0.0001**	**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 Arsenic, Benzene, Cadmium and compounds, Formaldehyde, Nickel, PAHs, and POM because the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

Post Project HAP Emissions

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

Table 8 POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS EMISSIONS

IDAPA Listing	Hazardous Air Pollutants	PTE (T/yr)
585	Dioxins	1.11E-07
	Furans	1.66E-07
	Acrolein	4.57E-04
	Antimony	4.05E-04
	Barium	7.74E-03
	Chromium	7.29E-03
	Cobalt	2.27E-04
	Copper	4.15E-03
	Ethyl benzene	3.17E-01
	Hexane	1.22
	Manganese	1.03E-02
	Methyl chloroform	6.34E-02
	Methyl ethyl ketone (MEK)	0.0
	Molybdenum	2.52E-05
	Naphthalene	8.63
	Pentane	1.2E-02
	Phosphorus	3.73E-02
	Propionaldehyde	0.0
	Quinone	0.0
	Selenium	4.84E-04
	Silver	6.34E-04
	Thallium	5.41E-06
	Toluene	3.84
	Vanadium	1.02E-03
	Xylene	2.71E-01
	Zinc	8.15E-02
586	Acetaldehyde	2.43E-03
	Arsenic	7.81E-04
	Benzene	5.43E-01
	Benzo(a)anthracene	3.02E-04
	Benzo(a)pyrene	2.20E-05
	Benzo(b)fluoranthene	1.73E-04
	Benzo(k)fluoranthene	6.18E-05
	Beryllium	8.89E-07
	1,3-Butadiene	8.03E-05
	Cadmium	5.54E-04
	Chrysene	2.90E-04
	Dibenzo(a,h)anthracene	1.29E-05
	Formaldehyde	4.10
	Hexavalent Chromium	6.02E-04
	Indeno(1,2,3-cd)pyrene	2.40E-05
	3-Methylchloranthrene	7.73E-09
	Nickel	8.59E-02
Not listed	Acenaphthene	2.03E-03
	Acenaphthylene	2.94E-02
	Anthracene	4.14E-03
	Benzo(e)pyrene	2.20E-05
	Benzo(g,h,I)perylene	7.26E-05
	Dichlorobenzene	5.15E-06
	Fluoranthene	9.59E-04
	Fluorene	1.50E-02
	Isooctane	5.28E-02
	Mercury	3.44E-03
	2-Methylnaphthalene	2.24E-01
	Perylene	1.16E-05
	Phenanthrene	3.20E-02
	Pyrene	4.10E-03
	Total	**19.61**

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).

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 Reduced Asphalt Production Limits permit condition,
- The Allowable Raw Materials permit condition,
- The Asphalt Operation Setback Distance Requirements permit condition, and
- The Seasonal Operation 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 1.7.

Facility Classification

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

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

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

Pollutant	Uncontrolled PTE (T/yr)	PTE (T/yr)	Major Source Thresholds (T/yr)	Uncontrolled PTE Exceeds the Major Source Threshold and PTE Exceeds the Major Source Threshold?
$PM_{10}/PM_{2.5}$	37.88	8.47	100	No
$PM_{2.5}$	37.88	8.47	100	No
SO_2	13.70	3.47	100	No
NO_X	127.86	32.20	100	Yes, No
CO	205.60	51.50	100	Yes, No
VOC	58.78	14.72	100	No
CO_2e	56,385	15,507	100,000	No

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

Table 10 UNCONTROLLED PTE AND PTE FOR HAPs COMPARED TO THE MAJOR SOURCE THRESHOLDS

HAP Pollutant	Uncontrolled PTE (T/yr)	PTE (T/yr)	Major Source Thresholds (T/yr)	Uncontrolled PTE Exceeds the Major Source Threshold and PTE Exceeds the Major Source Threshold?
Dioxins	1.11E-07	1.11E-07	10	No
Furans	1.66E-07	1.66E-07	10	No
Acrolein	4.57E-04	4.57E-04	10	No
Antimony	4.05E-04	4.05E-04	10	No
Barium	7.74E-03	7.74E-03	10	No
Chromium	7.29E-03	7.29E-03	10	No
Cobalt	2.27E-04	2.27E-04	10	No
Copper	4.15E-03	4.15E-03	10	No
Ethyl benzene	3.17E-01	3.17E-01	10	No
Hexane	1.22	1.22	10	No
Manganese	1.03E-02	1.03E-02	10	No
Methyl chloroform	6.34E-02	6.34E-02	10	No
Methyl ethyl ketone (MEK)	0.0	0.0	10	No
Molybdenum	2.52E-05	2.52E-05	10	No
Naphthalene	8.63	8.63	10	No
Pentane	1.2E-02	1.2E-02	10	No
Phosphorus	3.73E-02	3.73E-02	10	No
Propionaldehyde	0.0	0.0	10	No
Quinone	0.0	0.0	10	No
Selenium	4.84E-04	4.84E-04	10	No
Silver	6.34E-04	6.34E-04	10	No
Thallium	5.41E-06	5.41E-06	10	No
Toluene	3.84	3.84	10	No
Vanadium	1.02E-03	1.02E-03	10	No
Xylene	2.71E-01	2.71E-01	10	No
Zinc	8.15E-02	8.15E-02	10	No
Acetaldehyde	2.43E-03	2.43E-03	10	No
Arsenic	7.81E-04	7.81E-04	10	No
Benzene	5.43E-01	5.43E-01	10	No
Benzo(a)anthracene	3.02E-04	3.02E-04	10	No
Benzo(a)pyrene	2.20E-05	2.20E-05	10	No
Benzo(b)fluoranthene	1.73E-04	1.73E-04	10	No
Benzo(k)fluoranthene	6.18E-05	6.18E-05	10	No
Beryllium	8.89E-07	8.89E-07	10	No
1,3-Butadiene	8.03E-05	8.03E-05	10	No
Cadmium	5.54E-04	5.54E-04	10	No

Chrysene	2.90E-04	2.90E-04	10	No
Dibenzo(a,h)anthracene	1.29E-05	1.29E-05	10	No
Formaldehyde	4.10	4.10	10	No
Hexavalent Chromium	6.02E-04	6.02E-04	10	No
Indeno(1,2,3-cd)pyrene	2.40E-05	2.40E-05	10	No
3-Methylchloranthrene	7.73E-09	7.73E-09	10	No
Nickel	8.59E-02	8.59E-02	10	No
Acenaphthene	2.03E-03	2.03E-03	10	No
Acenaphthylene	2.94E-02	2.94E-02	10	No
Anthracene	4.14E-03	4.14E-03	10	No
Benzo(e)pyrene	2.20E-05	2.20E-05	10	No
Benzo(g,h,I)perylene	7.26E-05	7.26E-05	10	No
Dichlorobenzene	5.15E-06	5.15E-06	10	No
Fluoranthene	9.59E-04	9.59E-04	10	No
Fluorene	1.50E-02	1.50E-02	10	No
Isooctane	5.28E-02	5.28E-02	10	No
Mercury	3.44E-03	3.44E-03	10	No
2-Methylnaphthalene	2.24E-01	2.24E-01	10	No
Perylene	1.16E-05	1.16E-05	10	No
Phenanthrene	3.20E-02	3.20E-02	10	No
Pyrene	4.10E-03	4.10E-03	10	No
Total	**19.61**	**19.61**	**25**	No

As demonstrated in Table 11, this facility has an uncontrolled potential to emit for PM_{10}, SO_2, VOC, and CO_2e emissions less than the Major Source threshold of 100 T/yr and 100,000 T/yr respectively, with NO_X and CO emissions being above the Major Source threshold of 100 T/yr. In addition, this facility has 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. Also, as demonstrated in Table 10, this facility has an uncontrolled and controlled 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 Synthetic Minor facility for NO_X and CO emissions.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

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

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

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

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM_{10} emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.5 and 3.4.

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 1.2, 1.3, and 1.9.

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

IDAPA 58.01.01.701 Particulate Matter – New Equipment Process Weight Limitations

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

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

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

IDAPA 58.01.01.701.01.b: If PW is ≥ 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 300 T/hr, E is calculated as follows:

Proposed throughput = 300 T/hr x 2,000 lb/1 T = 600,000 lb/hr

Therefore, E is calculated as:

$E = 1.10 \times PW^{0.25} = 1.10 \times (600{,}000)^{0.25} = 30.6$ lb-PM/hr

As presented previously in the Emissions Inventories Section of this evaluation the post project PTE for this emissions unit is 6.90 lb-PM_{10}/$PM_{2.5}$ per hour. Assuming PM is 50% PM_{10}/$PM_{2.5}$ means that PM emissions will be 13.80 lb-PM/hr (6.90 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 30.6 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 1.8 and 1.12.

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 1.2 and 1.3.

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}, $PM_{2.5}$, SO_2, NO_X, CO, and VOC, 100,000 tons per year for CO_2e, or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

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

NSPS Applicability (40 CFR 60)

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

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

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 2.4 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 2.14 and 2.15 includes the requirements of this section.

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

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

§ 60.4200 Am I subject to this subpart?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 60.4201 Emissions Standards for Manufacturers

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

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

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

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

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

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

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

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

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

The Subpart requires that the Permittee comply with Table 1 of IIII if the engine is pre-2007 and has a displacement of less than 10 liters/cylinder. By installing Tier certified 2007 or later model year IC engines, as proposed by the Applicant, the emissions requirements of this Section of the Subpart have been met. These requirements are assured by Permit Conditions 3.5 and 3.6.

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

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

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

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

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

This requirement is assured by Permit Condition 3.11.

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

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

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

(c) [Reserved]

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

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

The Applicant has stated that they will fuel the IC engines with diesel fuel with a maximum sulfur content of 15 ppm or 0.0015% by weight which meets the requirements of this Section of the Subpart. This requirement is assured by Permit Condition 3.10.

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

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

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

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

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

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

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

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

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

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

For the Primary IC Engine the Applicant has proposed to install a 2006 model Tier certified 2 engine that meets the applicable requirements of this Section of the Subpart for that model year IC engine. In addition, for the Secondary IC Engine the Applicant has proposed to install a 2010 model Tier certified 2 engine that meets the applicable requirements of this Section of the Subpart for that model year IC engine. These requirements are assured by Permit Condition 3.5 and 3.6.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

By installing Tier certified 2007 or later model year IC engines, as proposed by the Applicant, the emissions requirements of this Section of the Subpart have been met. These requirements are assured by Permit Conditions 3.5 and 3.6.

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

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

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

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

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

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

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

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

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

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

(ii) The address of the affected source;

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

(iv) Emission control equipment; and

(v) Fuel used.

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

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

(ii) Maintenance conducted on the engine.

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

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

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

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

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

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

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

These requirements are assured by Permit Condition 3.15.

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, as discussed previously in the NSPS Applicability (40 CFR 60) section, Subpart IIII applies to the two proposed Tier certified IC engines. Therefore, the requirements of NESHAP Subpart ZZZZ 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 1.2 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 1.3 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 1.4 establishes that the asphalt plant may collocate with one rock crushing plant and shall not locate with 1,000 ft. of another rock crushing plant, any other asphalt plant, or a concrete batch plant as requested by the Applicant.

Permit condition 1.5 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 1.6 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 1.7 establishes a restriction on locating the portable asphalt plant to non-attainment areas. The location restrictions are based upon parameters used during the ambient air quality modeling analysis performed for this project.

Permit condition 1.8 establishes that there are to be no emissions of odorous gases, liquids, or solids from the permit equipment into the atmosphere in such quantities that cause air pollution.

As discussed previously, permit condition 1.9 establishes that the permittee shall monitor fugitive dust emissions on a daily basis to demonstrate compliance with the facility-wide permit requirements.

Permit condition 1.10 establishes that the permittee measure and record the distances to equipment that will be collocated with the asphalt plant to demonstrate compliance with the Collocation Restrictions permit condition.

Permit condition 1.11 establishes that the permittee record the date and location of the HMA plant each time it is relocated to demonstrate compliance with the Relocation Restriction permit condition.

Permit condition 1.12 establishes that the permittee monitor and record odor complaints to demonstrate compliance with the facility-wide permit requirements.

Permit Condition 1.13 establishes that the permittee shall maintain records as required by the Recordkeeping General Provision.

Asphalt Production Equipment

Permit condition 2.1 provides a process description of the asphalt production process at this facility.

Permit condition 2.2 provides a description of the control devices used on the asphalt production equipment at this facility.

Permit condition 2.3 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 2.4 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 2.5 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 2.6 establishes an hourly, a daily, and an annual asphalt production limit for the asphalt production operation as proposed by the Applicant.

Permit Condition 2.7 establishes a daily asphalt production limit for the asphalt production operation when operated on days when a collocated portable rock crusher is operated. This requirement was based upon the air quality modeling analysis performed for this application.

Permit Condition 2.8 establishes limits for the raw materials used in the asphalt production operation as proposed by the Applicant.

Permit condition 2.9 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 2.10 establishes that a baghouse be used to control emissions from the asphalt drum mixer as proposed by the Applicant.

Permit Condition 2.11 establishes that the HMA plant will not be operated December 1st through March 31st of the following year. 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 year-round operation was requested.

Permit Condition 2.12 establishes fuel use restrictions for combustion in the asphalt drum mixer. These fuel use restrictions were based on the fuels proposed by the Applicant to be combusted in the asphalt drum mixer.

Permit Condition 2.13 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 2.14 establishes PM performance testing requirements as required by 40 CFR 60, Subpart I for Hot Mix Asphalt Plants.

Permit Condition 2.15 establishes PM testing methods and procedures as required by 40 CFR 60, Subpart I for Hot Mix Asphalt Plants.

Permit Condition 2.16 establishes $PM_{2.5}$ performance testing requirements required by DEQ on asphalt plants located in the state of Idaho.

Permit Condition 2.17 establishes $PM_{2.5}$ performance testing methods and procedures required by DEQ on asphalt plants located in the state of Idaho.

Permit condition 2.18 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 2.19 establishes that the Permittee monitor and record hourly and daily asphalt production to demonstrate compliance with the Asphalt Production Limits permit condition.

Permit condition 2.20 establishes that the Permittee calculate and record RAP use to demonstrate compliance with the Allowable Raw Materials permit condition.

Permit condition 2.21 establishes that the Permittee measure and record asphalt production equipment setback distances to demonstrate compliance with operating permit requirements.

Permit condition 2.22 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 2.23 establishes that the permittee monitor distillate fuel oil shipments to demonstrate compliance with operating permit requirements.

Permit condition 2.24 establishes that the permittee shall record daily operation of the HMA plant to demonstrate compliance with the Seasonal Operation permit requirement.

Permit Condition 2.25 establishes that the permittee shall maintain records as required by the Recordkeeping General Provision.

Permit Condition 2.26 establishes that the permittee shall submit the results of the performance tests to the appropriate DEQ office.

Permit condition 2.27 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 2.28 incorporates 40 CFR 60, Subpart A – General Provisions.

Internal Combustion Engines

Permit condition 3.1 provides a process description of the IC engines process at this facility.

Permit condition 3.2 provides a description of the control devices used on the IC engines at this facility.

Permit condition 3.3 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 3.4 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 3.5 establishes that the Primary IC engine shall be EPA Tier certified to the certification proposed by the Applicant.

Permit condition 3.6 establishes that the Secondary IC engine shall be EPA Tier certified to the certification proposed by the Applicant.

Permit Condition 3.7 establishes a daily and an annual operation limit for the Primary IC Engine as proposed by the Applicant.

Permit Condition 3.8 establishes a daily and an annual operation limit for the Secondary IC Engine as proposed by the Applicant.

Permit Condition 3.9 establishes fuel use restrictions for combustion in the Primary IC Engine and the Secondary IC Engine. These fuel use restrictions were based on the fuel proposed by the Applicant to be combusted in the Primary IC Engine and the Secondary IC Engine.

As discussed previously, Permit Condition 3.10 establishes operation and maintenance requirements for the Primary and Secondary IC engines as required by 40 CFR 60, Subpart IIII for Stationary Compression Ignition Internal Combustion Engines.

As discussed previously, Permit Condition 3.11 establishes recordkeeping requirements of notifications and maintenance performed for the Primary and Secondary IC engines as required by 40 CFR 60, Subpart IIII for Stationary Compression Ignition Internal Combustion Engines.

As discussed previously, Permit Condition 3.12 establishes where the notifications for the Primary and Secondary IC engines as required by 40 CFR 60, Subpart IIII for Stationary Compression Ignition Internal Combustion Engines should be sent.

Permit condition 3.13 establishes that the federal requirements of 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines are incorporated by reference into the requirements of this permit per current DEQ guidance.

Permit Condition 3.14 incorporates 40 CFR 60, Subpart A – General Provisions as required by 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Permit condition 3.15 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 3.16 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 3.17 establishes that the permittee monitor distillate fuel oil shipments to demonstrate compliance with the distillate fuel oil requirements of the permit.

Permit Condition 3.18 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 02/27/2012

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).
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, 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 tons = 96% of total HMA tons.

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.	777-00552	Spreadsheet Date	5/12/2015 7:03
Permit No.	P-2015.0008	DEQ Version Date	7/20/2011
Facility Owner/Company Name:	DePatco, Inc. - 00552		
Address:	Portable		
City, State, Zip:	N/A		
Facility Contact:	Greg Stoddard		
Contact Number/ e-mail:	208-458-4000/greg@depatco.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 Industries/300 Ultradrum	Distallate (#2) Fuel Oil	1
Rated heat input capacity, MMBtu/hr	100	Used Oil or RFO4 Oil	0
Drum Dryer Hourly HMA Production, Tons/hour	300	Natural Gas	1
Max Production Per day, Tons per day	3,750	LPG or Propane	1
Max Annual HMA Production, Tons/year	2,640,000	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)	8,800	#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	1.000	**Fuel Type(s)**	**Fuel Toggle**
Hours of operation per day	24	#2 Fuel Oil	1
Operation, days per year (DEQ Assumption)	365.00	Fuel oil sulfur content	0.050%
Max Hours of operation per year (DEQ Assumption)	8,760	Natural Gas	1

Asphaltic Oil Tank Heater Fuel Consumption Calculations	**#2 Fuel Oil**	**Natural Gas**
Heat Input Rating, MMBtu/hr	1.000	1.000
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]	7.30	980
Max Operational Hours per Year	8,760	8,760
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	Isuzu/BU-4JJ1T	**Fuel Type(s)**	**IC Engine Toggle**
IC Engine Max Rated Power (bhp)	67	#2 Fuel Oil (Diesel)	1
IC Engine Max Rated Capacity (kW)	50	Max Sulfur weight percentage	0.0500%
		Max Operational Hours/Day	13
IC Engine 1 EPA Certification:	2	Max Operational Hours/Year	8,760
Not EPA-certified: Enter "0" (zero)		Calculated Max Fuel Use Rate, gal/hr	3.42
Certified Tier I, Tier 2, or Tier 3: Enter 1, 2, or 3		Calculated MMBtu/hr	0.47
Certified "BLUE SKY" engine: Enter 4			

IC Engine 2 > 600 bhp (447 kW) AP-42 Section 3.4 (diesel fueled)			
IC Engine Make/Model	Caterpillar/XQ 800	**Fuel Type(s)**	**IC Engine Toggle**
IC Engine Rated Capacity (bhp)	1,105	#2 Fuel Oil (Diesel)	1
IC Engine Max Rated Capacity (kW)	824	Max Sulfur weight percentage	0.0500%
		Max Operational Hours per Day	13
IC Engine 2 EPA Certification:	2	Max Operational Hours per Year	8,760
Not EPA-certified: Enter "0" (zero)		Calculated Max Fuel Use Rate, gal/hr	56.45
Certified Tier I, Tier 2, or Tier 3: Enter 1, 2, or 3		Calculated MMBtu/hr	7.74
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 conveyc
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% cor
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 scalping screen
Number of scalping screens (DEQ Assumption)	1	Includes all aggregate and RAP tonnage.
Aggregate conveyor transfer to drum (DEQ Assumption)	1	Includes all aggregate and RAP tonnage.

Facility: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID:** P-2015.0008 777-00552

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

Fuel Type Toggle = 0
Max Hourly Production 300 T/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 2,640,000 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	0.00	0.00	
PM-10 (total) [b]	0.023	0.00	0.00	
PM-2.5 [b1]	0.0223	0.00	0.00	
CO [c]	0.13	0.00	0.00	
NOx [c]	0.055	0.00	0.00	
SO_2 [c]	0.089	0.00	0.00	
VOC [d]	0.032	0.00	0.00	
Lead	1.50E-05	0.00E+00	0.00E+00	
HCl [d,e]	0.00021	0	0.00E+00	
Dioxins[e,f]				
2,3,7,8-TCDD	2.10E-13	0.00E+00	0.00E+00	**0.00E+00**
Total TCDD	9.30E-13	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,7,8-PeCDD	3.10E-13	0.00E+00	0.00E+00	**0.00E+00**
Total PeCDD	2.20E-11	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,7,8-HxCDD	4.20E-13	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,6,7,8-HxCDD	1.30E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,7,8,9-HxCDD	9.80E-13	0.00E+00	0.00E+00	**0.00E+00**
Total HxCDD	1.20E-11	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,6,7,8-Hp-CDD	4.80E-12	0.00E+00	0.00E+00	**0.00E+00**
Total HpCDD	1.90E-11	0.00E+00	0.00E+00	**0.00E+00**
Octa CDD	2.50E-11	0.00E+00	0.00E+00	**0.00E+00**
Total PCDD[h]	7.90E-11	0.00E+00	0.00E+00	**0.00E+00**
Furans[e,f]				
2,3,7,8-TCDF	9.70E-13	0.00E+00	0.00E+00	**0.00E+00**
Total TCDF	3.70E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,7,8-PeCDF	4.30E-12	0.00E+00	0.00E+00	**0.00E+00**
2,3,4,7,8-PeCDF	8.40E-13	0.00E+00	0.00E+00	**0.00E+00**
Total PeCDF	8.40E-11	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,7,8-HxCDF	4.00E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,6,7,8-HxCDF	1.20E-12	0.00E+00	0.00E+00	**0.00E+00**
2,3,4,6,7,8-HxCDF	1.90E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,7,8,9-HxCDF	8.40E-12	0.00E+00	0.00E+00	**0.00E+00**
Total HxCDF	1.30E-11	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,6,7,8-HpCDF	6.50E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,7,8,9-HpCDF	2.70E-12	0.00E+00	0.00E+00	**0.00E+00**
Total HpCDF	1.00E-11	0.00E+00	0.00E+00	**0.00E+00**
Octa CDF	4.80E-12	0.00E+00	0.00E+00	**0.00E+00**
Total PCDF[h]	4.00E-11	0.00E+00	0.00E+00	**0.00E+00**
Total PCDD/PCDF[h]	1.20E-10	0.00E+00	0.00E+00	**0.00E+00**
Non-PAH HAPs[f]				
Acetaldehyde[e]	1.30E-03	0.00E+00	0.00E+00	**0.00E+00**
Acrolein[e]	2.60E-05	0.00E+00	0.00E+00	0.00E+00
Benzene[e]	3.90E-04	0.00E+00	0.00E+00	**0.00E+00**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	0.00E+00	0.00E+00	0.00E+00
Formaldehyde[e]	3.10E-03	0.00E+00	0.00E+00	**0.00E+00**
Hexane[e]	9.20E-04	0.00E+00	0.00E+00	0.00E+00
Isooctane	4.00E-05	0.00E+00	0.00E+00	0.00E+00
Methyl Ethyl Ketone[e]	2.00E-05	0.00E+00	0.00E+00	0.00E+00
Pentane[e]				
Propionaldehyde[e]	1.30E-04	0.00E+00	0.00E+00	0.00E+00
Quinone[e]	1.60E-04	0.00E+00	0.00E+00	0.00E+00
Methyl chloroform[e]	4.80E-05	0.00E+00	0.00E+00	0.00E+00
Toluene[e]	2.90E-03	0.00E+00	0.00E+00	0.00E+00
Xylene[e]	2.00E-04	0.00E+00	0.00E+00	0.00E+00
POM (7-PAH Group)		0.00E+00		**0.00E+00**

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	0.00E+00	0.00E+00	**0.00E+00**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	0.00E+00	0.00E+00	**0.00E+00**
Acenaphthylene	2.20E-05	0.00E+00	0.00E+00	**0.00E+00**
Anthracene	3.10E-06	0.00E+00	0.00E+00	**0.00E+00**
Benzo(a)anthracene	2.10E-07	0.00E+00	0.00E+00	**0.00E+00**
Benzo(a)pyrene[e]	9.80E-09	0.00E+00	0.00E+00	**0.00E+00**
Benzo(b)fluoranthene	1.00E-07	0.00E+00	0.00E+00	**0.00E+00**
Benzo(e)pyrene	1.10E-07	0.00E+00	0.00E+00	**0.00E+00**
Benzo(g,h,i)perylene	4.00E-08	0.00E+00	0.00E+00	**0.00E+00**
Benzo(k)fluoranthene	4.10E-08	0.00E+00	0.00E+00	**0.00E+00**
Chrysene	1.80E-07	0.00E+00	0.00E+00	**0.00E+00**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	0.00E+00	0.00E+00	**0.00E+00**
Fluorene	1.10E-05	0.00E+00	0.00E+00	**0.00E+00**
Indeno(1,2,3-cd)pyrene	7.00E-09	0.00E+00	0.00E+00	**0.00E+00**
Naphthalene[e]	6.50E-04	0.00E+00	0.00E+00	**0.00E+00**
Perylene	8.80E-09	0.00E+00	0.00E+00	**0.00E+00**
Phenanthrene	2.30E-05	0.00E+00	0.00E+00	**0.00E+00**
Pyrene	3.00E-06	0.00E+00	0.00E+00	**0.00E+00**
Non-HAP Organic Compounds[f]				
Acetone[e]	8.30E-04	0.00E+00	0.00E+00	0.00E+00
Benzaldehyde	1.10E-04	0.00E+00	0.00E+00	0.00E+00
Butane	6.70E-04	0.00E+00	0.00E+00	0.00E+00
Butyraldehyde	1.60E-04	0.00E+00	0.00E+00	0.00E+00
Crotonaldehyde[e]	8.60E-05	0.00E+00	0.00E+00	0.00E+00
Ethylene	7.00E-03	0.00E+00	0.00E+00	0.00E+00
Heptane	9.40E-03	0.00E+00	0.00E+00	0.00E+00
Hexanal	1.10E-04	0.00E+00	0.00E+00	0.00E+00
Isovaleraldehyde	3.20E-05	0.00E+00	0.00E+00	0.00E+00
2-Methyl-1-pentene	4.00E-03	0.00E+00	0.00E+00	0.00E+00
2-Methyl-2-butene	5.80E-04	0.00E+00	0.00E+00	0.00E+00
3-Methylpentane	1.90E-04	0.00E+00	0.00E+00	0.00E+00
1-Pentene	2.20E-03	0.00E+00	0.00E+00	0.00E+00
n-Pentane	2.10E-04	0.00E+00	0.00E+00	0.00E+00
Valeraldehyde[e]	6.70E-05	0.00E+00	0.00E+00	0.00E+00
Metals[g]				
Antimony[e]	1.80E-07	0.00E+00	0.00E+00	0.00E+00
Arsenic[e]	5.60E-07	0.00E+00	0.00E+00	**0.00E+00**
Barium[e]	5.80E-06	0.00E+00	0.00E+00	0.00E+00
Beryllium[e]				
Cadmium[e]	4.10E-07	0.00E+00	0.00E+00	**0.00E+00**
Chromium[e]	5.50E-06	0.00E+00	0.00E+00	0.00E+00
Cobalt[e]	2.60E-08	0.00E+00	0.00E+00	0.00E+00
Copper[e]	3.10E-06	0.00E+00	0.00E+00	0.00E+00
Hexavalent Chromium[e]	4.50E-07	0.00E+00	0.00E+00	**0.00E+00**
Manganese[e]	7.70E-06	0.00E+00	0.00E+00	0.00E+00
Mercury[e]	2.60E-06	0.00E+00	0.00E+00	0.00E+00
Molybdenum[e]				
Nickel[e]	6.30E-05	0.00E+00	0.00E+00	**0.00E+00**
Phosphorus[e]	2.80E-05	0.00E+00	0.00E+00	0.00E+00
Silver[e]	4.80E-07	0.00E+00	0.00E+00	0.00E+00
Selenium[e]	3.50E-07	0.00E+00	0.00E+00	0.00E+00
Thallium[e]	4.10E-09	0.00E+00	0.00E+00	0.00E+00
Vanadium[e]				
Zinc[e]	6.10E-05	0.00E+00	0.00E+00	0.00E+00

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: DePatco, Inc. - 00552
5/12/2015 7:03 Permit/ Facility ID: P-2015.0008 777-00552

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

Fuel Type Toggle = 1
Max Hourly Production 300 Tons/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 2,640,000 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	9.90	43.56	
PM-10 (total)[b]	0.023	6.90	30.36	
PM-2.5 [b1]	0.0223	6.69	29.44	
CO [c]	0.13	39.00	171.60	
NOx [c]	0.026	7.80	34.32	
SO_2 [c]	0.0034	1.02	4.49	
VOC [d]	0.032	9.60	42.24	
Lead	6.20E-07	1.86E-04	8.18E-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	1.17E-01	5.15E-01	**1.18E-01**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	7.20E-02	3.17E-01	3.75E-02
Formaldehyde[e]	3.10E-03	9.30E-01	4.09E+00	**9.34E-01**
Hexane[e]	9.20E-04	2.76E-01	1.21E+00	1.44E-01
Isooctane	4.00E-05	1.20E-02	5.28E-02	6.25E-03
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	1.44E-02	6.34E-02	7.50E-03
Toluene[e]	1.50E-04	4.50E-02	1.98E-01	2.34E-02
Xylene[e]	2.00E-04	6.00E-02	2.64E-01	3.13E-02
POM (7-PAH Group)		3.40E-02		**3.42E-02**

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	2.22E-02	9.77E-02	**2.23E-02**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	4.20E-04	1.85E-03	**4.22E-04**
Acenaphthylene	8.60E-06	2.58E-03	1.14E-02	**2.59E-03**
Anthracene	2.20E-07	6.60E-05	2.90E-04	**6.63E-05**
Benzo(a)anthracene	2.10E-07	6.30E-05	2.77E-04	**6.33E-05**
Benzo(a)pyrene[e]	9.80E-09	2.94E-06	1.29E-05	**2.95E-06**
Benzo(b)fluoranthene	1.00E-07	3.00E-05	1.32E-04	**3.01E-05**
Benzo(e)pyrene	1.10E-07	3.30E-05	1.45E-04	**3.32E-05**
Benzo(g,h,I)perylene	4.00E-08	1.20E-05	5.28E-05	**1.21E-05**
Benzo(k)fluoranthene	4.10E-08	1.23E-05	5.41E-05	**1.24E-05**
Chrysene	1.80E-07	5.40E-05	2.38E-04	**5.42E-05**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	1.83E-04	8.05E-04	**1.84E-04**
Fluorene	3.80E-06	1.14E-03	5.02E-03	**1.15E-03**
Indeno(1,2,3-cd)pyrene	7.00E-09	2.10E-06	9.24E-06	**2.11E-06**
Naphthalene[e]	9.00E-05	2.70E-02	1.19E-01	**2.71E-02**
Perylene	8.80E-09	2.64E-06	1.16E-05	**2.65E-06**
Phenanthrene	7.60E-06	2.28E-03	1.00E-02	**2.29E-03**
Pyrene	5.40E-07	1.62E-04	7.13E-04	**1.63E-04**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	2.01E-01	8.84E-01	1.05E-01
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	2.10E+00	9.24E+00	1.09E+00
Heptane	9.40E-03	2.82E+00	1.24E+01	1.47E+00
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	1.20E+00	5.28E+00	6.25E-01
2-Methyl-2-butene	5.80E-04	1.74E-01	7.66E-01	9.06E-02
3-Methylpentane	1.90E-04	5.70E-02	2.51E-01	2.97E-02
1-Pentene	2.20E-03	6.60E-01	2.90E+00	3.44E-01
n-Pentane	2.10E-04	6.30E-02	2.77E-01	3.28E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	5.40E-05	2.38E-04	2.81E-05
Arsenic[e]	5.60E-07	1.68E-04	7.39E-04	**1.69E-04**
Barium[e]	5.80E-06	1.74E-03	7.66E-03	9.06E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	1.23E-04	5.41E-04	**1.24E-04**
Chromium[e]	5.50E-06	1.65E-03	7.26E-03	8.59E-04
Cobalt[e]	2.60E-08	7.80E-06	3.43E-05	4.06E-06
Copper[e]	3.10E-06	9.30E-04	4.09E-03	4.84E-04
Hexavalent Chromium[e]	4.50E-07	1.35E-04	5.94E-04	**1.36E-04**
Manganese[e]	7.70E-06	2.31E-03	1.02E-02	1.20E-03
Mercury[e]	2.40E-07	7.20E-05	3.17E-04	3.75E-05
Molybdenum[e]				
Nickel[e]	6.30E-05	1.89E-02	8.32E-02	**1.90E-02**
Phosphorus[e]	2.80E-05	8.40E-03	3.70E-02	4.38E-03
Silver[e]	4.80E-07	1.44E-04	6.34E-04	7.50E-05
Selenium[e]	3.50E-07	1.05E-04	4.62E-04	5.47E-05
Thallium[e]	4.10E-09	1.23E-06	5.41E-06	6.41E-07
Vanadium[e]				
Zinc[e]	6.10E-05	1.83E-02	8.05E-02	9.53E-03

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: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID: P-2015.0008 777-00552**

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

Fuel Type Toggle = 1
Hourly Production 300 T/hr
Daily Production 3,750 Tons/day
Max Annual Production 2,640,000 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	9.90	43.56	
PM-10 (total)[b]	0.023	6.90	30.36	
PM-2.5[b1]	0.0223	6.69	29.44	
CO[c]	0.13	39.00	171.60	
NOx[c]	0.055	16.50	72.60	
SO_2[c]	0.089	2.67	11.75	
VOC[d]	0.032	9.60	42.24	
Lead	1.50E-05	4.50E-03	1.98E-02	
HCl[d,e]	No Data			
Dioxins[e]				
2,3,7,8-TCDD	2.10E-13	6.3E-11	2.77E-10	**6.33E-11**
Total TCDD	9.30E-13	2.79E-10	1.23E-09	**2.80E-10**
1,2,3,7,8-PeCDD	3.10E-13	9.3E-11	4.09E-10	**9.34E-11**
Total PeCDD	2.20E-11	6.6E-09	2.90E-08	**6.63E-09**
1,2,3,4,7,8-HxCDD	4.20E-13	1.26E-10	5.54E-10	**1.27E-10**
1,2,3,6,7,8-HxCDD	1.30E-12	3.9E-10	1.72E-09	**3.92E-10**
1,2,3,7,8,9-HxCDD	9.80E-13	2.94E-10	1.29E-09	**2.95E-10**
Total HxCDD	1.20E-11	3.6E-09	1.58E-08	**3.62E-09**
1,2,3,4,6,7,8-Hp-CDD	4.80E-12	1.44E-09	6.34E-09	**1.45E-09**
Total HpCDD	1.90E-11	5.7E-09	2.51E-08	**5.73E-09**
Octa CDD	2.50E-11	7.5E-09	3.30E-08	**7.53E-09**
Total PCDD[h]	7.90E-11	2.37E-08	1.04E-07	**2.38E-08**
Furans[e]				
2,3,7,8-TCDF	9.70E-13	2.91E-10	1.28E-09	**2.92E-10**
Total TCDF	3.70E-12	1.11E-09	4.88E-09	**1.12E-09**
1,2,3,7,8-PeCDF	4.30E-12	1.29E-09	5.68E-09	**1.30E-09**
2,3,4,7,8-PeCDF	8.40E-13	2.52E-10	1.11E-09	**2.53E-10**
Total PeCDF	8.40E-11	2.52E-08	1.11E-07	**2.53E-08**
1,2,3,4,7,8-HxCDF	4.00E-12	1.2E-09	5.28E-09	**1.21E-09**
1,2,3,6,7,8-HxCDF	1.20E-12	3.6E-10	1.58E-09	**3.62E-10**
2,3,4,6,7,8-HxCDF	1.90E-12	5.7E-10	2.51E-09	**5.73E-10**
1,2,3,7,8,9-HxCDF	8.40E-12	2.52E-09	1.11E-08	**2.53E-09**
Total HxCDF	1.30E-11	3.9E-09	1.72E-08	**3.92E-09**
1,2,3,4,6,7,8-HpCDF	6.50E-12	1.95E-09	8.58E-09	**1.96E-09**
1,2,3,4,7,8,9-HpCDF	2.70E-12	8.1E-10	3.56E-09	**8.14E-10**
Total HpCDF	1.00E-11	3E-09	1.32E-08	**3.01E-09**
Octa CDF	4.80E-12	1.44E-09	6.34E-09	**1.45E-09**
Total PCDF[h]	4.00E-11	1.2E-08	5.28E-08	**1.21E-08**
Total PCDD/PCDF[h]	1.20E-10	3.6E-08	1.58E-07	**3.62E-08**
Non-PAH HAPs[f]				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]	3.90E-04	1.17E-01	5.15E-01	**1.18E-01**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	7.20E-02	3.17E-01	3.75E-02
Formaldehyde[e]	3.10E-03	9.30E-01	4.09E+00	**9.34E-01**
Hexane[e]	9.20E-04	2.76E-01	1.21E+00	1.44E-01
Isooctane	4.00E-05	1.20E-02	5.28E-02	6.25E-03
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	1.44E-02	6.34E-02	7.50E-03
Toluene[e]	2.90E-03	8.70E-01	3.83E+00	4.53E-01
Xylene[e]	2.00E-04	6.00E-02	2.64E-01	3.13E-02
POM (7-PAH Group)		1.64E-04		**1.65E-04**

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	5.10E-02	2.24E-01	**5.12E-02**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	4.20E-04	1.85E-03	**4.22E-04**
Acenaphthylene	2.20E-05	6.60E-03	2.90E-02	**6.63E-03**
Anthracene	3.10E-06	9.30E-04	4.09E-03	**9.34E-04**
Benzo(a)anthracene	2.10E-07	6.30E-05	2.77E-04	**6.33E-05**
Benzo(a)pyrene[e]	9.80E-09	2.94E-06	1.29E-05	**2.95E-06**
Benzo(b)fluoranthene	1.00E-07	3.00E-05	1.32E-04	**3.01E-05**
Benzo(e)pyrene	1.10E-07	3.30E-05	1.45E-04	**3.32E-05**
Benzo(g,h,I)perylene	4.00E-08	1.20E-05	5.28E-05	**1.21E-05**
Benzo(k)fluoranthene	4.10E-08	1.23E-05	5.41E-05	**1.24E-05**
Chrysene	1.80E-07	5.40E-05	2.38E-04	**5.42E-05**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	1.83E-04	8.05E-04	**1.84E-04**
Fluorene	1.10E-05	3.30E-03	1.45E-02	**3.32E-03**
Indeno(1,2,3-cd)pyrene	7.00E-09	2.10E-06	9.24E-06	**2.11E-06**
Naphthalene[e]	0.00065	1.95E-01	8.58E-01	**1.96E-01**
Perylene	8.80E-09	2.64E-06	1.16E-05	**2.65E-06**
Phenanthrene	2.30E-05	6.90E-03	3.04E-02	**6.93E-03**
Pyrene	3.00E-06	9.00E-04	3.96E-03	**9.04E-04**
Non-HAP Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	2.01E-01	8.84E-01	1.05E-01
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	2.10E+00	9.24E+00	1.09E+00
Heptane	9.40E-03	2.82E+00	1.24E+01	1.47E+00
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	1.20E+00	5.28E+00	6.25E-01
2-Methyl-2-butene	5.80E-04	1.74E-01	7.66E-01	9.06E-02
3-Methylpentane	1.90E-04	5.70E-02	2.51E-01	2.97E-02
1-Pentene	2.20E-03	6.60E-01	2.90E+00	3.44E-01
n-Pentane	2.10E-04	6.30E-02	2.77E-01	3.28E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	5.40E-05	2.38E-04	2.81E-05
Arsenic[e]	5.60E-07	1.68E-04	7.39E-04	**1.69E-04**
Barium[e]	5.80E-06	1.74E-03	7.66E-03	9.06E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	1.23E-04	5.41E-04	**1.24E-04**
Chromium[e]	5.50E-06	1.65E-03	7.26E-03	8.59E-04
Cobalt[e]	2.60E-08	7.80E-06	3.43E-05	4.06E-06
Copper[e]	3.10E-06	9.30E-04	4.09E-03	4.84E-04
Hexavalent Chromium[e]	4.50E-07	1.35E-04	5.94E-04	**1.36E-04**
Manganese[e]	7.70E-06	2.31E-03	1.02E-02	1.20E-03
Mercury[e]	2.60E-06	7.80E-04	3.43E-03	4.06E-04
Molybdenum[e]				
Nickel[e]	6.30E-05	1.89E-02	8.32E-02	**1.90E-02**
Phosphorus[e]	2.80E-05	8.40E-03	3.70E-02	4.38E-03
Silver[e]	4.80E-07	1.44E-04	6.34E-04	7.50E-05
Selenium[e]	3.50E-07	1.05E-04	4.62E-04	5.47E-05
Thallium[e]	4.10E-09	1.23E-06	5.41E-06	6.41E-07
Vanadium[e]				
Zinc[e]	6.10E-05	1.83E-02	8.05E-02	9.53E-03

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: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/ Facility ID: P-2015.0008 777-00552**

LPG or Propane Fired Drum Mix Asphalt Plant With Fabric Filter

Fuel Type Toggle = 1
Max Hourly Production 300 Tons/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 2,640,000 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	9.90	43.56	
PM-10 (total)[b]	0.023	6.90	30.36	
PM-2.5 [b1]	0.0223	6.69	29.44	
CO [c]	0.13	39.00	171.60	
NOx [c1] (Natural Gas EF x 1.5)	0.039	11.70	51.48	
SO_2 [c]	0.0034	1.02	4.49	
VOC [d]	0.032	9.60	42.24	
Lead	6.20E-07	0.000186	8.18E-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	1.17E-01	5.15E-01	**1.18E-01**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	7.20E-02	3.17E-01	3.75E-02
Formaldehyde[e]	3.10E-03	9.30E-01	4.09E+00	**9.34E-01**
Hexane[e]	9.20E-04	2.76E-01	1.21E+00	1.44E-01
Isooctane	4.00E-05	1.20E-02	5.28E-02	6.25E-03
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	1.44E-02	6.34E-02	7.50E-03
Toluene[e]	1.50E-04	4.50E-02	1.98E-01	2.34E-02
Xylene[e]	2.00E-04	6.00E-02	2.64E-01	3.13E-02
POM (7-PAH Group)		1.64E-04		**1.65E-04**

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	2.22E-02	9.77E-02	**2.23E-02**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	4.20E-04	1.85E-03	**4.22E-04**
Acenaphthylene	8.60E-06	2.58E-03	1.14E-02	**2.59E-03**
Anthracene	2.20E-07	6.60E-05	2.90E-04	**6.63E-05**
Benzo(a)anthracene	2.10E-07	6.30E-05	2.77E-04	**6.33E-05**
Benzo(a)pyrene[e]	9.80E-09	2.94E-06	1.29E-05	**2.95E-06**
Benzo(b)fluoranthene	1.00E-07	3.00E-05	1.32E-04	**3.01E-05**
Benzo(e)pyrene	1.10E-07	3.30E-05	1.45E-04	**3.32E-05**
Benzo(g,h,i)perylene	4.00E-08	1.20E-05	5.28E-05	**1.21E-05**
Benzo(k)fluoranthene	4.10E-08	1.23E-05	5.41E-05	**1.24E-05**
Chrysene	1.80E-07	5.40E-05	2.38E-04	**5.42E-05**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	1.83E-04	8.05E-04	**1.84E-04**
Fluorene	3.80E-06	1.14E-03	5.02E-03	**1.15E-03**
Indeno(1,2,3-cd)pyrene	7.00E-09	2.10E-06	9.24E-06	**2.11E-06**
Naphthalene[e]	9.00E-05	2.70E-02	1.19E-01	**2.71E-02**
Perylene	8.80E-09	2.64E-06	1.16E-05	**2.65E-06**
Phenanthrene	7.60E-06	2.28E-03	1.00E-02	**2.29E-03**
Pyrene	5.40E-07	1.62E-04	7.13E-04	**1.63E-04**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	2.01E-01	8.84E-01	1.05E-01
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	2.10E+00	9.24E+00	1.09E+00
Heptane	9.40E-03	2.82E+00	1.24E+01	1.47E+00
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	1.20E+00	5.28E+00	6.25E-01
2-Methyl-2-butene	5.80E-04	1.74E-01	7.66E-01	9.06E-02
3-Methylpentane	1.90E-04	5.70E-02	2.51E-01	2.97E-02
1-Pentene	2.20E-03	6.60E-01	2.90E+00	3.44E-01
n-Pentane	2.10E-04	6.30E-02	2.77E-01	3.28E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	5.40E-05	2.38E-04	2.81E-05
Arsenic[e]	5.60E-07	1.68E-04	7.39E-04	**1.69E-04**
Barium[e]	5.80E-06	1.74E-03	7.66E-03	9.06E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	1.23E-04	5.41E-04	**1.24E-04**
Chromium[e]	5.50E-06	1.65E-03	7.26E-03	8.59E-04
Cobalt[e]	2.60E-08	7.80E-06	3.43E-05	4.06E-06
Copper[e]	3.10E-06	9.30E-04	4.09E-03	4.84E-04
Hexavalent Chromium[e]	4.50E-07	1.35E-04	5.94E-04	**1.36E-04**
Manganese[e]	7.70E-06	2.31E-03	1.02E-02	1.20E-03
Mercury[e]	2.40E-07	7.20E-05	3.17E-04	3.75E-05
Molybdenum[e]				
Nickel[e]	6.30E-05	1.89E-02	8.32E-02	**1.90E-02**
Phosphorus[e]	2.80E-05	8.40E-03	3.70E-02	4.38E-03
Silver[e]	4.80E-07	1.44E-04	6.34E-04	7.50E-05
Selenium[e]	3.50E-07	1.05E-04	4.62E-04	5.47E-05
Thallium[e]	4.10E-09	1.23E-06	5.41E-06	6.41E-07
Vanadium[e]				
Zinc[e]	6.10E-05	1.83E-02	8.05E-02	9.53E-03

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.

5/12/2015 7:03 **Permit/Facility ID: P-2015.0008 777-00552**

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
Fuel Consumption Rate 7.30 gal/hr
Max Daily Operation 24 hr/day
Max Annual Operation 8,760 hrs/yr

User Input Weight % Sulfur = 0.0500%
AP-42 1.3-1 EF is 0.142S lb SO2 per gallon of fuel oil

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	2.41E-02	0.11	
PM-10 (total)[b] (filterable+cond)	0.0023	1.68E-02	0.07	
PM-2.5 (total)[b] (filterable+cond)	0.00154	0.011	0.05	
CO[b] ("C" EF Rating Factor)	0.005	3.65E-02	0.16	
NOx[b]	0.024	1.75E-01	0.77	
SO_2[b]	0.0071	0.05	0.23	
VOC[d] (NMTOC EF)	5.56E-04	4.06E-03	1.78E-02	
Lead[f]	1.51E-06	1.10E-05	4.83E-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	5.04E-12	2.21E-11	**5.04E-12**
1,2,3,6,7,8-HxCDD				
1,2,3,7,8,9-HxCDD[c]	7.60E-13	5.55E-12	2.43E-11	**5.55E-12**
Total HxCDD				
1,2,3,4,6,7,8-Hp-CDD[c]	1.50E-11	1.09E-10	4.79E-10	**1.09E-10**
Total $HpCDD_c$	2.00E-11	1.46E-10	6.39E-10	**1.46E-10**
Octa CDD[c]	1.60E-10	1.17E-09	5.11E-09	**1.17E-09**
Total PCDD[c]	2.00E-10	1.46E-09	6.39E-09	**1.46E-09**
Furans[e]				
2,3,7,8-TCDF				
Total TCDF[c]	3.30E-12	2.41E-11	1.05E-10	**2.41E-11**
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF[c]	4.80E-13	3.50E-12	1.53E-11	**3.50E-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	1.46E-11	6.39E-11	**1.46E-11**
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF[c]	9.70E-12	7.08E-11	3.10E-10	**7.08E-11**
Octa CDF[c]	1.20E-11	8.76E-11	3.84E-10	**8.76E-11**
Total PCDF[c]	3.10E-11	2.26E-10	9.91E-10	**2.26E-10**
Total PCDD/PCDF[c]	2.30E-10	1.68E-09	7.35E-09	**1.68E-09**
Non-PAH HAPs				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]				
1,3-Butadiene[e]				
Ethylbenzene[e]				
Formaldehyde[c,e]	3.50E-06	2.55E-05	1.12E-04	**2.55E-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)		7.30E-07		**7.30E-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	3.87E-06	1.69E-05	**3.87E-06**
Acenaphthylene[c]	2.00E-07	1.46E-06	6.39E-06	**1.46E-06**
Anthracene[c]	1.80E-07	1.31E-06	5.75E-06	**1.31E-06**
Benzo(a)anthracene				
Benzo(a)pyrene[e]				
Benzo(b)fluoranthene[c]	1.00E-07	7.30E-07	3.20E-06	**7.30E-07**
Benzo(e)pyrene				
Benzo(g,h,I)perylene				
Benzo(k)fluoranthene				
Chrysene				
Dibenzo(a.h)anthracene				
Dichlorobenzene				
Fluoranthene[c]	4.40E-08	3.21E-07	1.41E-06	**3.21E-07**
Fluorene[c]	3.20E-08	2.34E-07	1.02E-06	**2.34E-07**
Indeno(1,2,3-cd)pyrene				
Naphthalene[c,e]	1.70E-05	1.24E-04	5.43E-04	**1.24E-04**
Perylene				
Phenanthrene[c]	4.90E-06	3.58E-05	1.57E-04	**3.58E-05**
Pyrene[c]	3.20E-08	2.34E-07	1.02E-06	**2.34E-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	3.83E-05	1.68E-04	3.83E-05
Arsenic[e]	1.32E-06	9.63E-06	4.22E-05	**9.63E-06**
Barium[e]	2.57E-06	1.88E-05	8.21E-05	1.88E-05
Beryllium[e]	2.78E-08	2.03E-07	8.89E-07	**2.03E-07**
Cadmium[e]	3.98E-07	2.90E-06	1.27E-05	**2.90E-06**
Chromium[e]	8.45E-07	6.17E-06	2.70E-05	6.17E-06
Cobalt[e]	6.02E-06	4.39E-05	1.92E-04	4.39E-05
Copper[e]	1.76E-06	1.28E-05	5.63E-05	1.28E-05
Hexavalent Chromium[c]	2.48E-07	1.81E-06	7.93E-06	**1.81E-06**
Manganese[e]	3.00E-06	2.19E-05	9.59E-05	2.19E-05
Mercury[e]	1.13E-07	8.25E-07	3.61E-06	8.25E-07
Molybdenum[e]	7.87E-07	5.74E-06	2.52E-05	5.74E-06
Nickel[e]	8.45E-05	6.17E-04	2.70E-03	**6.17E-04**
Phosphorus[e]	9.46E-06	6.90E-05	3.02E-04	6.90E-05
Silver[e]				
Selenium[e]	6.83E-07	4.98E-06	2.18E-05	4.98E-06
Thallium[e]				
Vanadium[e]	3.18E-05	2.32E-04	1.02E-03	2.32E-04
Zinc[e]	2.91E-05	2.12E-04	9.30E-04	2.12E-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 g
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: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID:** P-2015.0008 777-00552

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

Fuel Type Toggle = 1
Fuel Consumption Rate 980 scf/hr
Max Daily Operation 24 hr/day
Max Annual Operation 8,760 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	8.73E-03	3.82E-02	
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	2.55E-05	1.12E-04	**2.55E-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)		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,I)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: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID:** P-2015.0008 777-00552

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

Fuel Type Toggle = 1
Fuel Consumption Rate 980 scf/hr
Max Daily Operation 24 hr/day
Max Annual Operation 8,760 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	7.45E-03	3.26E-02	
PM-10 (total)[c]	7.6	7.45E-03	3.26E-02	
PM-2.5	7.6	7.45E-03	3.26E-02	
CO[b]	84	8.24E-02	3.61E-01	
NOx[b]	100	9.80E-02	4.29E-01	
SO_2[c]	0.6	5.88E-04	2.58E-03	
VOC[c]	5.5	5.39E-03	2.36E-02	
Lead[c]	5.00E-04	4.90E-07	2.15E-06	
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	2.06E-06	9.02E-06	**2.06E-06**
1,3-Butadiene[e]				
Ethylbenzene[e]				
Formaldehyde[e]	7.50E-02	7.35E-05	3.22E-04	**7.35E-05**
Hexane[e]	1.80E+00	1.76E-03	7.73E-03	1.76E-03
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[c1, e]	2.60E+00	2.55E-03	1.12E-02	2.55E-03
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c1, e]	3.40E-03	3.33E-06	1.46E-05	3.33E-06
Xylene[e]				
POM (7-PAH Group)		1.12E-08		**1.12E-08**

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	2.35E-08	1.03E-07	**2.35E-08**
3-Methylchloranthrene[c1, e]	1.80E-06	1.76E-09	7.73E-09	**1.76E-09**
Acenaphthene[c1]	1.80E-06	1.76E-09	7.73E-09	**1.76E-09**
Acenaphthylene[c1]	1.80E-06	1.76E-09	7.73E-09	**1.76E-09**
Anthracene[c1]	2.40E-06	2.35E-09	1.03E-08	**2.35E-09**
Benzo(a)anthracene[c1]	1.80E-06	1.76E-09	7.73E-09	**1.76E-09**
Benzo(a)pyrene[c1, e]	1.20E-06	1.18E-09	5.15E-09	**1.18E-09**
Benzo(b)fluoranthenec[1]	1.80E-06	1.76E-09	7.73E-09	**1.76E-09**
Benzo(e)pyrene				
Benzo(g,h,i)perylene[c1]	1.20E-06	1.18E-09	5.15E-09	**1.18E-09**
Benzo(k)fluoranthene[c1]	1.80E-06	1.76E-09	7.73E-09	**1.76E-09**
Chrysene[c1]	1.80E-06	1.76E-09	7.73E-09	**1.76E-09**
Dibenzo(a,h)anthracene[c1]	1.20E-06	1.18E-09	5.15E-09	**1.18E-09**
Dichlorobenzene[c1]	1.20E-03	1.18E-06	5.15E-06	**1.18E-06**
Fluoranthene[c1]	3.00E-06	2.94E-09	1.29E-08	**2.94E-09**
Fluorene[c1]	2.80E-06	2.75E-09	1.20E-08	**2.75E-09**
Indeno(1,2,3-cd)pyrene[c1]	1.80E-06	1.76E-09	7.73E-09	**1.76E-09**
Naphthalene[c1, e]	6.10E-04	5.98E-07	2.62E-06	**5.98E-07**
Perylene				
Phenanthrene[c1]	1.70E-05	1.67E-08	7.30E-08	**1.67E-08**
Pyrene[c1]	5.00E-06	4.90E-09	2.15E-08	**4.90E-09**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane[c1]	2.10E+00	2.06E-03	9.02E-03	2.06E-03
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	1.96E-07	8.59E-07	**1.96E-07**
Barium[d,e]	4.40E-03	4.31E-06	1.89E-05	4.31E-06
Beryllium[e]	1.20E-05	1.18E-08	5.15E-08	**1.18E-08**
Cadmium[d,e]	1.10E-03	1.08E-06	4.72E-06	**1.08E-06**
Chromium[d,e]	1.40E-03	1.37E-06	6.01E-06	1.37E-06
Cobalt[d,e]	8.40E-05	8.24E-08	3.61E-07	8.24E-08
Copper[d,e]	8.50E-04	8.33E-07	3.65E-06	8.33E-07
Hexavalent Chromium[e]				
Manganese[d,e]				
Mercury[d,e]				
Molybdenum[d,e]	1.10E-03	1.08E-06	4.72E-06	1.08E-06
Nickel[d,e]				
Phosphorus[e]				
Silver[e]				
Selenium[d,e]				
Thallium[e]				
Vanadium[d,e]	2.30E-03	2.25E-06	9.88E-06	2.25E-06
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: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID: P-2015.0008 777-00552**

Silo Filling Operations AP-42 Section 11.1

Emissions Toggle = 1
Max Hourly Production 300 T/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 2,640,000 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	0.1758	0.7734	
PM-10 (total)[b]	5.86E-04	0.1758	0.7734	
PM-2.5[b]	5.86E-04	0.1758	0.7734	
CO[b]	1.18E-03	0.3540	1.5576	
NOx				
SO_2				
VOC[d,g]	1.22E-04	3.66E-02	0.1609	
Lead				
HCl[a,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	1.17E-03	5.15E-03	0.0012
1,3-Butadiene[e]				
Ethylbenzene[e]	4.63E-06	1.39E-03	6.11E-03	7.24E-04
Formaldehyde[e]	8.41E-05	2.52E-02	1.11E-01	0.0253
Hexane[e]	1.22E-05	3.66E-03	1.61E-02	1.90E-03
Isooctane	3.78E-08	1.13E-05	4.99E-05	5.90E-06
Methyl Ethyl Ketone[e]	4.75E-06	1.43E-03	6.27E-03	7.43E-04
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]		0.00E+00	0.00E+00	
Toluene[e]	7.56E-06	2.27E-03	9.97E-03	1.18E-03
Xylene[e]	3.13E-05	9.40E-03	4.13E-02	4.89E-03
POM (7-PAH Group)		2.03E-04		2.04E-04

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	4.01E-03	1.77E-02	4.03E-03
3-Methylchloranthrene[e]				
Acenaphthene	1.19E-06	3.58E-04	1.58E-03	3.60E-04
Acenaphthylene	3.55E-08	1.07E-05	4.69E-05	1.07E-05
Anthracene	3.30E-07	9.90E-05	4.36E-04	9.95E-05
Benzo(a)anthracene	1.42E-07	4.27E-05	1.88E-04	4.28E-05
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	7.24E-06	3.18E-05	7.27E-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	1.60E-04	7.04E-04	1.61E-04
Dibenzo(a,h)anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dichlorobenzene				
Fluoranthene	3.81E-07	1.14E-04	5.03E-04	1.15E-04
Fluorene	2.56E-06	7.69E-04	3.38E-03	7.73E-04
Indeno(1,2,3-cd)pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene[e]	4.62E-06	1.39E-03	6.10E-03	1.39E-03
Perylene	7.62E-08	2.29E-05	1.01E-04	2.30E-05
Phenanthrene	4.57E-06	1.37E-03	6.03E-03	1.38E-03
Pyrene	1.12E-06	3.35E-04	1.47E-03	3.37E-04
Non-HAP Organic Compounds				
Acetone[e]	6.70E-06	2.01E-03	0.0088	1.05E-03
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	1.34E-04	4.02E-02	0.1770	2.09E-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 (°F) = 325

		LOADOUT	SILO FILL	
Total PM EF = $0.000181+0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ + $000332+ 0.00105(-V)e^{((0.0251)(T+460)-20.}$	=	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: DePatco, Inc. - 00552
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Silo Filling Operations AP-42 Section 11.1, Page 2

Fuel Type Toggle =	1	
Max Hourly Production	300	T/hr
Max Daily Production	3,750	Tons/day
Max Annual Production	2,640,000	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[g]				
Bromomethane[e]	5.97E-07	1.79E-04	0.0008	9.33E-05
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	1.95E-06	5.85E-04	0.0026	3.05E-04
Chloroethane (Ethyl chloride[e])	4.87E-07	1.46E-04	0.0006	7.62E-05
Chloromethane (Methyl chloride[e])	2.80E-06	8.41E-04	0.0037	4.38E-04
Cumene[e]				
n-Hexane (see Hexane[e])				
Methylene chloride (Dichloromethane[e])	3.29E-08	9.87E-06	4.34E-05	5.14E-06
MTBE				
Styrene[e]	6.58E-07	1.97E-04	8.69E-04	1.03E-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	7.31E-03	0.0322	3.81E-03
o-Xylene[e] (added into Xylene[e])	6.95E-06	2.08E-03	0.0092	1.09E-03
Phenol[e,f]				
Non-HAP Organic Compounds				
Methane	3.17E-03	9.51E-01	4.1825	4.95E-01

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

Facility: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID: P-2015.0008 777-00552**

Load-out Operations AP-42 Section 11.1

Emissions Toggle = 1
Max Hourly Production 300 T/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 2,640,000 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	0.157	0.69	
PM-10 (total)[b]	5.22E-04	0.157	0.69	
PM-2.5[b]	5.22E-04	0.157	0.69	
CO[b]	1.35E-03	0.405	1.78	
NOx				
SO_2				
VOC[d,g]	3.91E-03	1.173	5.16	
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	6.49E-04	2.85E-03	**6.52E-04**
1,3-Butadiene[e]				
Ethylbenzene[e]	1.16E-05	3.49E-03	1.54E-02	1.82E-03
Formaldehyde[e]	3.66E-06	1.10E-03	4.83E-03	**1.10E-03**
Hexane[e]	6.24E-06	1.87E-03	8.23E-03	9.75E-04
Isooctane	7.49E-08	2.25E-05	9.88E-05	1.17E-05
Methyl Ethyl Ketone[e]	2.04E-06	6.11E-04	2.69E-03	3.18E-04
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[e]	8.73E-06	2.62E-03	1.15E-02	1.36E-03
Xylene[e]	5.03E-05	1.51E-02	6.64E-02	7.86E-03
POM (7-PAH Group)		1.38E-04		**1.39E-04**

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	2.43E-03	1.07E-02	**2.45E-03**
3-Methylchloranthrene[e]				
Acenaphthene	8.86E-07	2.66E-04	1.17E-03	**2.67E-04**
Acenaphthylene	9.55E-08	2.86E-05	1.26E-04	**2.88E-05**
Anthracene	2.39E-07	7.16E-05	3.15E-04	**7.19E-05**
Benzo(a)anthracene	6.48E-08	1.94E-05	8.55E-05	**1.95E-05**
Benzo(a)pyrene[e]	7.84E-09	2.35E-06	1.04E-05	**2.36E-06**
Benzo(b)fluoranthene	2.59E-08	7.77E-06	3.42E-05	**7.81E-06**
Benzo(e)pyrene	2.66E-08	7.98E-06	3.51E-05	**8.01E-06**
Benzo(g,h,I)perylene	6.48E-09	1.94E-06	8.55E-06	**1.95E-06**
Benzo(k)fluoranthene	7.50E-09	2.25E-06	9.90E-06	**2.26E-06**
Chrysene	3.51E-07	1.05E-04	4.64E-04	**1.06E-04**
Dibenzo(a,h)anthracene	1.26E-09	3.78E-07	1.67E-06	**3.80E-07**
Dichlorobenzene				
Fluoranthene	1.70E-07	5.11E-05	2.25E-04	**5.14E-05**
Fluorene	2.63E-06	7.88E-04	3.47E-03	**7.91E-04**
Indeno(1,2,3-cd)pyrene	1.60E-09	4.81E-07	2.12E-06	**4.83E-07**
Naphthalene[e]	4.26E-06	1.28E-03	5.63E-03	**1.28E-03**
Perylene	7.50E-08	2.25E-05	9.90E-05	**2.26E-05**
Phenanthrene	2.76E-06	8.28E-04	3.65E-03	**8.32E-04**
Pyrene	5.11E-07	1.53E-04	6.75E-04	**1.54E-04**
Non-HAP Organic Compounds				
Acetone[e]	1.95E-06	5.84E-04	2.57E-03	3.04E-04
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	2.95E-05	8.86E-03	3.90E-02	4.61E-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 (°F) = 325

	LOADOUT	SILO FILL	
Total PM EF = $0.000181+0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ + 000332+ $0.00105(-V)e^{((0.0251)(T+460)-20}$ =	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: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID: P-2015.0008 777-00552**

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

Fuel Type Toggle =	1	
Max Hourly Production	300	T/hr
Max Daily Production	3,750	Tons/day
Max Annual Production	2,640,000	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[e]				
Bromomethane[e]	3.99E-07	1.20E-04	5.27E-04	6.24E-05
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	5.41E-07	1.62E-04	7.14E-04	8.45E-05
Chloroethane (Ethyl chloride[e])	8.73E-09	2.62E-06	1.15E-05	1.36E-06
Chloromethane (Methyl chloride[e])	6.24E-07	1.87E-04	8.23E-04	9.75E-05
Cumene[e]	4.57E-06	1.37E-03	6.04E-03	7.15E-04
n-Hexane (see Hexane[e])				
Methylene chloride (Dichloromethane[e])				
MTBE				
Styrene[e]	3.04E-07	9.11E-05	4.01E-04	4.74E-05
Tetrachloroethene (Tetrachloroethylene[e])	3.20E-07	9.61E-05	4.23E-04	5.00E-05
1,1,1-Trichloroethane (Methyl chloroform[e])				
Trichloroethene (Trichloroethylene[e])				
Trichlorofluoromethane	5.41E-08	1.62E-05	7.14E-05	8.45E-06
m-/p-Xylene[e] (added into Xylene[e])	1.71E-05	5.12E-03	2.25E-02	2.66E-03
o-Xylene[e] (added into Xylene[e])	3.33E-05	9.98E-03	4.39E-02	5.20E-03
Phenol[e,f]	4.02E-06	1.21E-03	5.31E-03	6.29E-04
Non-HAP Organic Compounds				
Methane	2.70E-04	8.11E-02	3.57E-01	4.22E-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: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit** P-2015.0008 **Facility ID:** 777-00552

G1 Electrical Generator < 600 hp (447 kW)

Fuel Type Toggle =	1	
Fuel Consumption Rate	3.42	gal/hr
Calculated MMBtu/hr	0.469	MMBtu/hr
Max Daily Operation	13	hr/day
Max Annual Operation	8,760	hrs/yr

Rated Power (kW):	50
Not EPA Certified:	No
Certified EPA Tier 1:	No
Certified EPA Tier 2:	Yes
Certified EPA Tier 3:	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

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM = PM10
EMISSION FACTORS USED FOR G1 (lb/MMBtu):	**1.76**	**0.36**		**1.17**	**0.094**

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 and 1039 (updated for <37 kW only), 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	0.19
kW < 8	4	0	2008	---	---	1.76	1.88	0.09
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	---	---	1.76	1.55	0.19
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	---	---	1.76	1.29	0.07
19 ≤ kW < 37	BlueSky	0	n/a	---	*0.36*	1.06	*1.29*	0.08
37 ≤ kW < 75	1	0	1998	2.16	*0.36*	---	*1.17*	*0.31*
37 ≤ kW < 75	2	1	2004	---	*0.36*	1.76	1.17	0.09
37 ≤ kW < 75	3	0	2008	---	*0.36*	1.10	1.17	0.09
37 ≤ kW < 75	BlueSky	0	n/a	---	*0.36*	1.10	*1.17*	0.06
75 ≤ kW < 130	1	0	1997	2.16	*0.36*	---	*1.17*	*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	BlueSky	0	n/a	---	*0.36*	0.94	*1.17*	0.04
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 ≤ 560	BlueSky	0	n/a	---	*0.31*	0.94	*0.82*	0.03
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
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
kW > 560	1	0	2000	2.16	0.31	---	2.68	0.13
kW > 560	2	0	2006	---	*0.31*	1.50	0.82	0.05
kW > 560	BlueSky	0	n/a	---	*0.31*	0.89	*0.82*	0.03

40 CFR 89 and 1039 (updated for <37 kW only), 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	0.00	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
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
19 ≤ kW < 37	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	1	0	1998	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	2	1	2004	0.00	0.36	1.76	1.17	0.09
37 ≤ kW < 75	3	0	2008	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	1	0	1997	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	2	0	2003	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	3	0	2007	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	1	0	1996	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	2	0	2003	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	3	0	2006	0.00	0.00	0.00	0.00	0.00
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
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
kW > 560	1	0	2000	0.00	0.00	0.00	0.00	0.00
kW > 560	2	0	2006	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 G1 (lb/MMBTU):				**0.00**	**0.36**	**1.76**	**1.17**	**0.094**

Facility: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID:** P-2015.0008 777-00552

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

Fuel Type Toggle = 1 50 kw
Fuel Consumption Rate 3.42 gal/hr
Calculated MMBtu/hr 0.469 MMBtu/hr
Max Daily Operation 13 hr/day
Max Annual Operation 8,760 hrs/yr

User Input Weight % Sulfur = 0.0500%
AP-42 3.3 SO2 EF = 0.29 for #2 fuel oil, presumed max 0.5%
SO2 emissions are multiplied by a factor: User Input Value/0.5% = 0.10
EPA Certified Generator (Tier 1, 2, 3, or Blue Sky)

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total) [b]	0.09	0.044	1.93E-01	
PM-10 (total) [b]	0.09	0.044	1.93E-01	
PM-2.5	0.07	0.033	1.44E-01	
CO [b]	1.17	0.551	2.41E+00	
NOx[b]	1.76	0.826	3.62E+00	
SO_2 [b] (total SOx presumed SO2)	0.29	1.36E-02	5.96E-03	
VOC [b] (total TOC--> VOCs)	0.36	0.169	7.40E-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	3.60E-04	1.58E-03	**3.60E-04**
Acrolein[c]	9.25E-05	4.34E-05	1.90E-04	2.26E-05
Benzene[c,e]	9.33E-04	4.38E-04	1.92E-03	**4.38E-04**
1,3-Butadiene[c,e]	3.91E-05	1.83E-05	8.03E-05	**1.83E-05**
Ethylbenzene[e]				
Formaldehyde[c,e]	1.18E-03	5.53E-04	2.42E-03	**5.53E-04**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c,e]	4.09E-04	1.92E-04	8.40E-04	9.99E-05
Xylene[c,e]	2.85E-04	1.34E-04	5.85E-04	6.96E-05
POM (7-PAH Group)		1.61E-06		**1.61E-06**

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	6.66E-07	2.92E-06	**6.66E-07**
Acenaphthylene[c]	5.06E-06	2.37E-06	1.04E-05	**2.37E-06**
Anthracene[c]	1.87E-06	8.77E-07	3.84E-06	**8.77E-07**
Benzo(a)anthracene[c]	1.68E-06	7.88E-07	3.45E-06	**7.88E-07**
Benzo(a)pyrene[c,e]	1.88E-07	8.82E-08	3.86E-07	**8.82E-08**
Benzo(b)fluoranthene[c]	9.91E-08	4.65E-08	2.04E-07	**4.65E-08**
Benzo(e)pyrene				
Benzo(g,h,I)perylene[c]	4.89E-07	2.29E-07	1.00E-06	**2.29E-07**
Benzo(k)fluoranthene[c]	1.55E-07	7.27E-08	3.18E-07	**7.27E-08**
Chrysene[c]	3.53E-07	1.66E-07	7.25E-07	**1.66E-07**
Dibenzo(a,h)anthracene[c]	5.83E-07	2.73E-07	1.20E-06	**2.73E-07**
Dichlorobenzene				
Fluoranthene[c]	7.61E-06	3.57E-06	1.56E-05	**3.57E-06**
Fluorene[c]	2.92E-05	1.37E-05	6.00E-05	**1.37E-05**
Indeno(1,2,3-cd)pyrene[c]	3.75E-07	1.76E-07	7.70E-07	**1.76E-07**
Naphthalene[c,e]	8.48E-05	3.98E-05	1.74E-04	**3.98E-05**
Perylene				
Phenanthrene[c]	2.94E-05	1.38E-05	6.04E-05	**1.38E-05**
Pyrene[c]	4.78E-06	2.24E-06	9.82E-06	**2.24E-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 3.3-1, 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: DePatco, Inc. - 00552
5/12/2015 7:03 Permit P-2015.0008 Facility ID: 777-00552

G2 Electrical Generator > 600 hp (447 kW)

Fuel Type Toggle =	1	
Fuel Consumption Rate	56.45	gal/hr
Calculated MMBtu/hr	7.74	MMBtu/hr
Max Daily Operation	13	hr/day
Max Annual Operation	8,760	hrs/yr

Rated Power (kW):	824
Not EPA Certified:	No
Certified EPA Tier 1:	No
Certified EPA Tier 2:	Yes
Certified EPA Tier 3:	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

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM=PM10
EMISSION FACTORS USED FOR G2 (lb/MMBtu):	1.50	0.31		0.82	0.047

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
kW< 8	1	0	2000	---	*0.36*	2.47	1.88	0.23
kW< 8	2	0	2005	---	*0.36*	1.76	1.88	0.19
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	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	BlueSky	0	n/a	---	*0.36*	1.06	*1.29*	0.085
37 < kW < 75	1	0	1998	2.16	*0.36*	---	*0.95*	*0.31*
37 < kW < 75	2	0	2004	---	*0.36*	1.76	1.17	0.09
37 < kW < 75	3	0	2008	---	*0.36*	1.10	1.17	0.09
37 < kW < 75	BlueSky	0	n/a	---	*0.36*	1.10	*1.17*	0.056
75 < kW < 130	1	0	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	BlueSky	0	n/a	---	*0.36*	0.94		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 < 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
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
kW > 560	1	0	2000	2.16	0.31	---	2.68	0.13
kW > 560	2	1	2006	---	*0.31*	1.50	0.82	0.05
kW > 560	BlueSky	0	n/a	---	*0.31*	0.89	*0.82*	0.028

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	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	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	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
37 < kW < 75	1	0	1998	0.00	0.00	0.00	0.00	0.00
37 < kW < 75	2	0	2004	0.00	0.00	0.00	0.00	0.00
37 < kW < 75	3	0	2008	0.00	0.00	0.00	0.00	0.00
37 < kW < 75	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
75 < kW < 130	1	0	1997	0.00	0.00	0.00	0.00	0.00
75 < kW < 130	2	0	2003	0.00	0.00	0.00	0.00	0.00
75 < kW < 130	3	0	2007	0.00	0.00	0.00	0.00	0.00
75 < kW < 130	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
130 < kW < 225	1	0	1996	0.00	0.00	0.00	0.00	0.00
130 < kW < 225	2	0	2003	0.00	0.00	0.00	0.00	0.00
130 < kW < 225	3	0	2006	0.00	0.00	0.00	0.00	0.00
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
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
kW > 560	1	0	2000	0.00	0.00	0.00	0.00	0.00
kW > 560	2	1	2006	0.00	0.31	1.50	0.82	0.05
kW > 560	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
EMISSION FACTORS FOR GENERATOR G2 (lb/MMBTU):				**0.00**	**0.31**	**1.50**	**0.82**	**0.047**

Facility: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID:** P-2015.0008 777-00552

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

Fuel Type Toggle = 1 824 kw
Fuel Consumption Rate 56.45 gal/hr
Calculated MMBtu/hr 7.74 MMBtu/hr
Max Daily Operation 13 hr/day
Max Annual Operation 8,760 hrs/yr

User Input Weight % Sulfur = 0.0500%
AP-42 3.4-1 SO2 EF = 1.01 x S

EPA Certified Generator (Tier 1, 2, 3, or Blue Sky)

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	0.774	3.39E+00	7.74E-01
PM-10 (total)[d]	0.05	0.363	1.59E+00	3.63E-01
PM-2.5	0.0556	0.430	1.88E+00	4.30E-01
CO[b]	0.82	6.358	2.78E+01	
NOx[b]	1.50	11.626	5.09E+01	1.16E+01
SO_2[b] (total SOx presumed SO2)	0.0505	0.391	1.711	3.91E-01
VOC[b] (total TOC--> VOCs)	0.31	2.398	10.503	
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	1.95E-04	8.54E-04	**1.95E-04**
Acrolein[c]	7.88E-06	6.10E-05	2.67E-04	3.17E-05
Benzene[c,e]	7.76E-04	6.00E-03	2.63E-02	**6.00E-03**
1,3-Butadiene[c,e]				
Ethylbenzene[e]				
Formaldehyde[c,e]	7.89E-05	6.10E-04	2.67E-03	**6.10E-04**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c,e]	2.81E-04	2.17E-03	9.52E-03	1.13E-03
Xylene[c,e]	1.93E-04	1.49E-03	6.54E-03	7.78E-04
POM (7-PAH Group)		3.48E-05		**3.48E-05**

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	3.62E-05	1.59E-04	**3.62E-05**
Acenaphthylene[c1]	9.23E-06	7.14E-05	3.13E-04	**7.14E-05**
Anthracene[c1]	1.23E-06	9.51E-06	4.17E-05	**9.51E-06**
Benzo(a)anthracene[c1]	6.22E-07	4.81E-06	2.11E-05	**4.81E-06**
Benzo(a)pyrene[c1,e]	2.57E-07	1.99E-06	8.71E-06	**1.99E-06**
Benzo(b)fluoranthene[c1]	1.11E-06	8.59E-06	3.76E-05	**8.59E-06**
Benzo(e)pyrene				
Benzo(g,h,I)perylene[c1]	5.56E-07	4.30E-06	1.88E-05	**4.30E-06**
Benzo(k)fluoranthene[c1]	2.18E-07	1.69E-06	7.39E-06	**1.69E-06**
Chrysene[c1]	1.53E-06	1.18E-05	5.18E-05	**1.18E-05**
Dibenzo(a,h)anthracene[c1]	3.46E-07	2.68E-06	1.17E-05	**2.68E-06**
Dichlorobenzene				
Fluoranthene[c1]	4.03E-06	3.12E-05	1.37E-04	**3.12E-05**
Fluorene[c1]	1.28E-05	9.90E-05	4.34E-04	**9.90E-05**
Indeno(1,2,3-cd)pyrene[c1]	4.14E-07	3.20E-06	1.40E-05	**3.20E-06**
Naphthalene[c1,e]	1.30E-04	1.01E-03	4.40E-03	**1.01E-03**
Perylene				
Phenanthrene[c1]	4.08E-05	3.16E-04	1.38E-03	**3.16E-04**
Pyrene[c1]	3.71E-06	2.87E-05	1.26E-04	**2.87E-05**
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: DePatco, Inc. - 00552
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Max Hourly Production	300 T/hr	96% T/hr is Aggregate & RAP =	**288 T/hr**
Max Daily Production	3,750 Tons/day	96% T/day is Aggregate & RAP =	**3,600 T/day**
Max Annual Production	2,640,000 Tons/yr	96% T/yr is Aggregate & RAP =	**2,534,400 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: **288 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	0.95	0.50	4.19	0.96	1.90	0.99	8.38	1.91
PM-10 (total)	1.56E-03	0.45	0.23	1.98	0.45	0.90	0.47	3.96	0.90
PM-2.5	2.37E-04	0.07	0.04	0.30	0.07	0.14	0.07	0.60	0.14

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: **288 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	9.52E-02	4.96E-02	4.19E-01	9.56E-02	1.90E-01	9.92E-02	8.38E-01	1.91E-01
PM-10 (total)	1.56E-03	4.50E-02	2.34E-02	1.98E-01	4.52E-02	9.00E-02	4.69E-02	3.96E-01	9.05E-02
PM-2.5	2.37E-04	6.82E-03	3.55E-03	3.00E-02	6.85E-03	1.36E-02	7.10E-03	6.00E-02	1.37E-02

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

Aggregate flow across scalping screen onto conveyor: **288 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	0.720	3.75E-01	3.17E+00	7.23E-01
PM-10 (total)	0.0087	0.251	1.31E-01	1.10E+00	2.52E-01
PM-2.5	1.30E-04	0.004	1.95E-03	1.65E-02	3.76E-03

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

Aggregate transfer from conveyor to drum dryer (1 transfer point): **288 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	9.52E-02	4.96E-02	4.19E-01	9.56E-02
PM-10 (total)	1.56E-03	4.50E-02	2.34E-02	1.98E-01	4.52E-02
PM-2.5	2.37E-04	6.82E-03	3.55E-03	3.00E-02	6.85E-03

Facility: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID: P-2015.0008 777-00552**

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) =	0
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) =	1

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	43,560.00	1.00	43,560.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	15.84	21.00	332.64
N_2O	0.26	$lb/10^3$ gal	AP-42 Table 1.3-8	0.834854	310.00	258.80

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			843.84	1	843.84
Methane	0.216	$lb/10^3$ gal	AP-42 Table 1.3-3	6.90E-03	21	0.14
N_2O	0.26	$lb/10^3$ gal	AP-42 Table 1.3-8	7.31E+01	310	22671.29

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	0.00	1.00	0.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	0.00	21.00	0.00
N_2O	0.53	$lb/10^3$ gal	AP-42 Table 1.3-8	0.000000	310.00	0.00

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	43,560.00	1.00	43,560.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	15.84	21.00	332.64
N_2O	0.26	$lb/10^3$ gal	AP-42 Table 1.3-8	0.834854	310.00	258.80

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	515.29	1	515.29
Methane	0.0000023	lb/scf	AP-42 Table 1.4-2	9.88E-03	21	0.21
N_2O	0.0000022	lb/scf	AP-42 Table 1.4-2	9.45E-03	310	2.93

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	43,560.00	1.00	43,560.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	15.84	21.00	332.64
N_2O	0.26	$lb/10^3$ gal	AP-42 Table 1.3-8	0.834854	310.00	258.80

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	340.41	1.00	340.41

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	5,614.28	1.00	5,614.28

Total Green House Gas Emissions

Total Emissions	CO_2e (T/yr)
CO_2	50,358.54
Methane	332.85
N_2O	22,930.09
Grand Total	**73,621.48**

Facility: DePatco, Inc. - 00552
5/12/2015 7:03 Permit/Facility ID: P-2015.0008 777-00552

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: 300 Tons/hour 8,800 Hours/year 2,640,000 Tons/year 3,750 Tons/day
Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Natural Gas LPG/Propane
B. Tank Heater: 1.0000 MMBtu/hr 8,760 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 Natural Gas
C1. IC Engine 1: 3.42 gal/hour 8760 Hours/year IC Engine < 600hp #2 Fuel Oil 13 hrs/day
C2. IC Engine 2: 56.45 gal/hour 8760 Hours/year IC Engine > 600hp #2 Fuel Oil 13 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)	9.90	2.41E-02	8.18E-01	3.32E-01	11.07
PM-10 (total)	6.90	1.68E-02	4.07E-01	3.32E-01	7.66
PM-2.5	6.69	1.12E-02	4.63E-01	3.32E-01	7.50
CO	39.00	8.24E-02	6.91E+00	7.59E-01	46.75
NOx	16.50	1.75E-01	1.25E+01		29.13
SO_2	2.67	5.18E-02	4.04E-01		3.13
VOC	9.60	5.39E-03	2.57E+00	1.21E+00	13.38
Lead	4.50E-03	1.10E-05	0.00E+00		4.51E-03
HCl [e]	0.00E+00	0.00E+00	0.00E+00		0.00E+00
Dioxins[e]					
2,3,7,8-TCDD	6.33E-11				6.33E-11
Total TCDD	2.80E-10				2.80E-10
1,2,3,7,8-PeCDD	9.34E-11				9.34E-11
Total PeCDD	6.63E-09				6.63E-09
1,2,3,4,7,8-HxCDD	1.27E-10	5.04E-12			1.32E-10
1,2,3,6,7,8-HxCDD	3.92E-10				3.92E-10
1,2,3,7,8,9-HxCDD	2.95E-10	5.55E-12			3.01E-10
Total HxCDD	3.62E-09				3.62E-09
1,2,3,4,6,7,8-Hp-CDD	1.45E-09	1.09E-10			1.56E-09
Total HpCDD	5.73E-09	1.46E-10			5.87E-09
Octa CDD	7.53E-09	1.17E-09			8.70E-09
Total PCDD[h]	2.38E-08	1.46E-09			2.53E-08
Furans[e]					
2,3,7,8-TCDF	2.92E-10				2.92E-10
Total TCDF	1.12E-09	2.41E-11			1.14E-09
1,2,3,7,8-PeCDF	1.30E-09				1.30E-09
2,3,4,7,8-PeCDF	2.53E-10				2.53E-10
Total PeCDF	2.53E-08	3.50E-12			2.53E-08
1,2,3,4,7,8-HxCDF	1.21E-09				1.21E-09
1,2,3,6,7,8-HxCDF	3.62E-10				3.62E-10
2,3,4,6,7,8-HxCDF	5.73E-10				5.73E-10
1,2,3,7,8,9-HxCDF	2.53E-09				2.53E-09
Total HxCDF	3.92E-09	1.46E-11			3.93E-09
1,2,3,4,6,7,8-HpCDF	1.96E-09				1.96E-09
1,2,3,4,7,8,9-HpCDF	8.14E-10				8.14E-10
Total HpCDF	3.01E-09	7.08E-11			3.08E-09
Octa CDF	1.45E-09	8.76E-11			1.53E-09
Total PCDF[h]	1.21E-08	2.26E-10			1.23E-08
Total PCDD/PCDF[h]	3.62E-08	1.68E-09	0.00E+00		3.78E-08
Non-PAH HAPs					
Acetaldehyde[e]	0.00E+00		5.55E-04		5.55E-04
Acrolein[e]	0.00E+00		5.43E-05		5.43E-05
Benzene[e]	1.18E-01	2.06E-06	6.44E-03	1.83E-03	1.26E-01
1,3-Butadiene[e]			1.83E-05		1.83E-05
Ethylbenzene[e]	3.75E-02			2.54E-03	4.00E-02
Formaldehyde[e]	9.34E-01	7.35E-05	1.16E-03	2.64E-02	9.62E-01
Hexane[e]	1.44E-01	1.76E-03		2.88E-03	1.48E-01
Isooctane	6.25E-03			1.76E-05	6.27E-03
Methyl Ethyl Ketone[e]	0.00E+00			1.06E-03	1.06E-03
Pentane[e]		2.55E-03			2.55E-03
Propionaldehyde[e]	0.00E+00				0.00E+00
Quinone[e]	0.00E+00				0.00E+00
Methyl chloroform[e]	7.50E-03				7.50E-03
Toluene[e]	4.53E-01	3.33E-06	1.23E-03	2.55E-03	4.57E-01
Xylene[e]	3.13E-02		8.47E-04	1.28E-02	4.49E-02
POM (7-PAH Group)[e]	1.65E-04	7.39E-07	3.64E-05	3.42E-04	5.44E-04
TOTAL PAH HAPs	2.67E-01	1.69E-04	1.72E-03	1.48E-02	2.83E-01

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	5.12E-02	2.35E-08		6.48E-03	5.77E-02
3-Methylchloranthrene[e]	0.00E+00	1.76E-09			1.76E-09
Acenaphthene	4.22E-04	3.87E-06	3.69E-05	6.27E-04	1.09E-03
Acenaphthylene	6.63E-03	1.46E-06	7.38E-05	3.95E-05	6.74E-03
Anthracene	9.34E-04	1.31E-06	1.04E-05	1.71E-04	1.12E-03
Benzo(a)anthracene[e]	6.33E-05	1.76E-09	5.60E-06	6.24E-05	1.31E-04
Benzo(a)pyrene[e]	2.95E-06	1.18E-09	2.08E-06	2.36E-06	7.39E-06
Benzo(b)fluoranthene[e]	3.01E-05	7.30E-07	8.63E-06	7.81E-06	4.73E-05
Benzo(e)pyrene	3.32E-05	0.00E+00		1.53E-05	4.84E-05
Benzo(g,h,i)perylene	1.21E-05	1.18E-09	4.53E-06	1.95E-06	1.85E-05
Benzo(k)fluoranthene[e]	1.24E-05	1.76E-09	1.76E-06	2.26E-06	1.64E-05
Chrysene[e]	5.42E-05	1.76E-09	1.20E-05	2.67E-04	3.33E-04
Dibenzo(a,h)anthracene[e]	0.00E+00	1.18E-09	2.95E-06	3.80E-07	3.33E-06
Dichlorobenzene	0.00E+00	1.18E-06			1.18E-06
Fluoranthene	1.84E-04	3.21E-07	3.47E-05	1.66E-04	3.85E-04
Fluorene	3.32E-03	2.34E-07	1.13E-04	1.56E-03	4.99E-03
Indeno(1,2,3-cd)pyrene[e]	2.11E-06	1.76E-09	3.38E-06	4.83E-07	5.97E-06
Naphthalene[e]	1.96E-01	1.24E-04	1.05E-03	2.68E-03	2.00E-01
Perylene	2.65E-06	0.00E+00		4.56E-05	4.82E-05
Phenanthrene	6.93E-03	3.58E-05	3.29E-04	2.21E-03	9.51E-03
Pyrene	9.04E-04	2.34E-07	3.09E-05	4.91E-04	1.43E-03
Non-HAP Organic Compounds					
Acetone[e]	0.00E+00	0.00E+00		1.35E-03	1.35E-03
Benzaldehyde	0.00E+00	0.00E+00			0.00E+00
Butane	1.05E-01	2.06E-03			1.07E-01
Butyraldehyde	0.00E+00	0.00E+00			0.00E+00
Crotonaldehyde[e]	0.00E+00	0.00E+00			0.00E+00
Ethylene	1.09E+00	0.00E+00		2.56E-02	1.12E+00
Heptane	1.47E+00	0.00E+00			1.47E+00
Hexanal	0.00E+00	0.00E+00			0.00E+00
Isovaleraldehyde	0.00E+00	0.00E+00			0.00E+00
2-Methyl-1-pentene	6.25E-01	0.00E+00			6.25E-01
2-Methyl-2-butene	9.06E-02	0.00E+00			9.06E-02
3-Methylpentane	2.97E-02	0.00E+00			2.97E-02
1-Pentene	3.44E-01	0.00E+00			3.44E-01
n-Pentane	3.28E-02	0.00E+00			3.28E-02
Valeraldehyde[e]	0.00E+00	0.00E+00			0.00E+00
Metals					
Antimony[e]	2.81E-05	3.83E-05			6.64E-05
Arsenic[e]	1.69E-04	9.63E-06			1.78E-04
Barium[e]	9.06E-04	1.88E-05			9.25E-04
Beryllium[e]	0.00E+00	2.03E-07			2.03E-07
Cadmium[e]	1.24E-04	2.90E-06			1.26E-04
Chromium[e]	8.59E-04	6.17E-06			8.66E-04
Cobalt[e]	4.06E-06	4.39E-05			4.80E-05
Copper[e]	4.84E-04	1.28E-05			4.97E-04
Hexavalent Chromium[e]	1.36E-04	1.81E-06			1.37E-04
Manganese[e]	1.20E-03	2.19E-05			1.23E-03
Mercury[e]	4.06E-04	8.25E-07			4.07E-04
Molybdenum[e]	0.00E+00	5.74E-06			5.74E-06
Nickel[e]	1.90E-02	6.17E-04			1.96E-02
Phosphorus[e]	4.38E-03	6.90E-05			4.44E-03
Silver[e]	7.50E-05	0.00E+00			7.50E-05
Selenium[e]	5.47E-05	4.98E-06			5.97E-05
Thallium[e]	6.41E-07	0.00E+00			6.41E-07
Vanadium[e]	0.00E+00	2.32E-04			2.32E-04
Zinc[e]	9.53E-03	2.12E-04			9.74E-03

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: **300** Tons/hour **8,800** Hours/year **2,640,000** Tons/year HMA throughput **3,750** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Natural Gas LPG/Propane

B. Tank Heater: **1.0000** MMBtu/hr **8,760** Hours/year **24** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Natural Gas

C1. IC Engine 1: **3.42** gal/hour **8760** Hours/year #2 Fuel Oil Generator < 600hp **13** hrs/day

C2. IC Engine 2: **56.45** gal/hour **8760** Hours/year #2 Fuel Oil Generator > 600hp **13** 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]				1.56E-04	1.56E-04
2-Butanone (see Methyl Ethyl Ketone)					
Carbon disulfide[e]				3.89E-04	3.89E-04
Chloroethane (Ethyl chloride[e])				7.75E-05	7.75E-05
Chloromethane (Methyl chloride[e])				5.35E-04	5.35E-04
Cumene				7.15E-04	7.15E-04
n-Hexane					
Methylene chloride (Dichloromethane[e])				5.14E-06	5.14E-06
MTBE					
Styrene[e]				1.50E-04	1.50E-04
Tetrachloroethene (Tetrachloroethylene[e])				5.00E-05	5.00E-05
1,1,1-Trichloroethane (Methyl chloroform[e])					
Trichloroethene (Trichloroethylene[e])					
Trichlorofluoromethane				8.45E-06	8.45E-06
m-/p-Xylene[e]				6.47E-03	6.47E-03
o-Xylene[e]				6.28E-03	6.28E-03
Phenol[e,f]				6.29E-04	6.29E-04
Non-HAP Organic Compounds					
Methane				5.37E-01	5.37E-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: DePatco, Inc. - 00552
5/12/2015 7:03 **Permit/Facility ID:** P-2015.0008 777-00552

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: **300** Tons/hour 8,800 Hours/year **2,640,000** Tons/year HMA throughput **3,750** hrs/day
Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Natural Gas LPG/Propane

B. Tank Heater: **1.0000** MMBtu/hr **8,760** 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 Natural Gas

C1. IC Engine 1: **3.42** gal/hour **8760** Hours/year IC Engine <600hp #2 Fuel Oil **13** hrs/day

C2. IC Engine 2: **56.45** gal/hour **8760** Hours/year IC Engine > 600hp #2 Fuel Oil **13** 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)	43.56	1.05E-01	3.58E+00	1.46E+00	47.25
PM-10 (total)	30.36	7.35E-02	1.78E+00	1.46E+00	32.22
PM-2.5	29.44	4.92E-02	2.03E+00	1.46E+00	31.51
CO	171.60	3.61E-01	3.03E+01	3.34E+00	202.22
NOx	72.60	7.67E-01	5.45E+01		127.91
SO_2	11.75	2.27E-01	1.72E+00		13.69
VOC	42.24	2.36E-02	1.12E+01	5.32E+00	53.51
Lead	1.98E-02	4.83E-05	0.00E+00		1.98E-02
HCl [e]	0.00E+00	0.00E+00	0.00E+00		0.00E+00
Dioxins[e]					
2,3,7,8-TCDD	2.77E-10				2.77E-10
Total TCDD	1.23E-09				1.23E-09
1,2,3,7,8-PeCDD	4.09E-10				4.09E-10
Total PeCDD	2.90E-08				2.90E-08
1,2,3,4,7,8-HxCDD	5.54E-10	2.21E-11			5.76E-10
1,2,3,6,7,8-HxCDD	1.72E-09				1.72E-09
1,2,3,7,8,9-HxCDD	1.29E-09	2.43E-11			1.32E-09
Total HxCDD	1.58E-08				1.58E-08
1,2,3,4,6,7,8-Hp-CDD	6.34E-09	4.79E-10			6.82E-09
Total HpCDD	2.51E-08	6.39E-10			2.57E-08
Octa CDD	3.30E-08	5.11E-09			3.81E-08
Total PCDD[h]	1.04E-07	6.39E-09			1.11E-07
Furans[e]					
2,3,7,8-TCDF	1.28E-09				1.28E-09
Total TCDF	4.88E-09	1.05E-10			4.99E-09
1,2,3,7,8-PeCDF	5.68E-09				5.68E-09
2,3,4,7,8-PeCDF	1.11E-09				1.11E-09
Total PeCDF	1.11E-07	1.53E-11			1.11E-07
1,2,3,4,7,8-HxCDF	5.28E-09				5.28E-09
1,2,3,6,7,8-HxCDF	1.58E-09				1.58E-09
2,3,4,6,7,8-HxCDF	2.51E-09				2.51E-09
1,2,3,7,8,9-HxCDF	1.11E-08				1.11E-08
Total HxCDF	1.72E-08	6.39E-11			1.72E-08
1,2,3,4,6,7,8-HpCDF	8.58E-09				8.58E-09
1,2,3,4,7,8,9-HpCDF	3.56E-09				3.56E-09
Total HpCDF	1.32E-08	3.10E-10			1.35E-08
Octa CDF	6.34E-09	3.84E-10			6.72E-09
Total PCDF[h]	5.28E-08	9.91E-10			5.38E-08
Total PCDD/PCDF[h]	1.58E-07	7.35E-09			1.66E-07
Non-PAH HAPs					
Acetaldehyde[e]	0.00E+00		2.43E-03		2.43E-03
Acrolein[e]	0.00E+00		4.57E-04		4.57E-04
Benzene[e]	5.15E-01	9.02E-06	2.82E-02	8.00E-03	5.43E-01
1,3-Butadiene[e]	0.00E+00		8.03E-05		8.03E-05
Ethylbenzene[e]	3.17E-01			2.15E-02	3.17E-01
Formaldehyde[e]	4.09E+00	3.22E-04	5.10E-03	1.16E-01	4.10E+00
Hexane[e]	1.21E+00	7.73E-03		2.43E-02	1.22E+00
Isooctane	5.28E-02			1.49E-04	5.28E-02
Methyl Ethyl Ketone[e]	0.00E+00			8.96E-03	0.00E+00
Pentane[e]	0.00E+00	1.12E-02			1.12E-02
Propionaldehyde[e]	0.00E+00				0.00E+00
Quinone[e]	0.00E+00				0.00E+00
Methyl chloroform[e]	6.34E-02				6.34E-02
Toluene[e]	3.83E+00	1.46E-05	1.04E-02	2.15E-02	3.84E+00
Xylene[e]	2.64E-01	0.00E+00	7.12E-03	1.08E-01	2.71E-01
TOTAL Federal HAPs (T/yr)=					**1.18E+01**

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	2.24E-01	1.03E-07		2.84E-02	2.24E-01
3-Methylchloranthrene[e]	0.00E+00	7.73E-09			7.73E-09
Acenaphthene	1.85E-03	1.69E-05	1.61E-04	2.75E-03	2.03E-03
Acenaphthylene	2.90E-02	6.39E-06	3.23E-04	1.73E-04	2.94E-02
Anthracene	4.09E-03	5.75E-06	4.55E-05	7.51E-04	4.14E-03
Benzo(a)anthracene[e]	2.77E-04	7.73E-09	2.45E-05	2.73E-04	3.02E-04
Benzo(a)pyrene[e]	1.29E-05	5.15E-09	9.09E-06	1.04E-05	2.20E-05
Benzo(b)fluoranthene[e]	1.32E-04	3.20E-06	3.78E-05	3.42E-05	1.73E-04
Benzo(e)pyrene	1.45E-04	0.00E+00		6.69E-05	1.45E-04
Benzo(g,h,I)perylene	5.28E-05	5.15E-09	1.98E-05	8.55E-06	7.26E-05
Benzo(k)fluoranthene[e]	5.41E-05	7.73E-09	7.70E-06	9.90E-06	6.18E-05
Chrysene[e]	2.38E-04	7.73E-09	5.26E-05	1.17E-03	2.90E-04
Dibenzo(a,h)anthracene	0.00E+00	5.15E-09	1.29E-05	1.67E-06	1.29E-05
Dichlorobenzene	0.00E+00	5.15E-06			5.15E-06
Fluoranthene	8.05E-04	1.41E-06	1.52E-04	7.28E-04	9.59E-04
Fluorene	1.45E-02	1.02E-06	4.94E-04	6.85E-03	1.50E-02
Indeno(1,2,3-cd)pyrene[e]	9.24E-06	7.73E-09	1.48E-05	2.12E-06	2.40E-05
Naphthalene[e]	8.58E-01	5.43E-04	4.58E-03	1.17E-02	8.63E-01
Perylene	1.16E-05	0.00E+00		2.00E-04	1.16E-05
Phenanthrene	3.04E-02	1.57E-04	1.44E-03	9.68E-03	3.20E-02
Pyrene	3.96E-03	1.02E-06	1.36E-04	2.15E-03	4.10E-03
Non-HAP Organic Compounds					
Acetone[e]	0.00E+00	0.00E+00		1.14E-02	0.00E+00
Benzaldehyde	0.00E+00	0.00E+00			0.00E+00
Butane	8.84E-01	9.02E-03			8.93E-01
Butyraldehyde	0.00E+00	0.00E+00			0.00E+00
Crotonaldehyde[e]	0.00E+00	0.00E+00			0.00E+00
Ethylene	9.24E+00	0.00E+00		2.16E-01	9.24E+00
Heptane	1.24E+01	0.00E+00			1.24E+01
Hexanal	0.00E+00	0.00E+00			0.00E+00
Isovaleraldehyde	0.00E+00	0.00E+00			0.00E+00
2-Methyl-1-pentene	5.28E+00	0.00E+00			5.28E+00
2-Methyl-2-butene	7.66E-01	0.00E+00			7.66E-01
3-Methylpentane	2.51E-01	0.00E+00			2.51E-01
1-Pentene	2.90E+00	0.00E+00			2.90E+00
n-Pentane[e]	2.77E-01	0.00E+00			2.77E-01
Valeraldehyde[e]	0.00E+00	0.00E+00			0.00E+00
Metals					
Antimony[e]	2.38E-04	1.68E-04			4.05E-04
Arsenic[e]	7.39E-04	4.22E-05			7.81E-04
Barium[e]	7.66E-03	8.21E-05			7.74E-03
Beryllium[e]	0.00E+00	8.89E-07			8.89E-07
Cadmium[e]	5.41E-04	1.27E-05			5.54E-04
Chromium[e]	7.26E-03	2.70E-05			7.29E-03
Cobalt[e]	3.43E-05	1.92E-04			2.27E-04
Copper[e]	4.09E-03	5.63E-05			4.15E-03
Hexavalent Chromium[e]	5.94E-04	7.93E-06			6.02E-04
Manganese[e]	1.02E-02	9.59E-05			1.03E-02
Mercury[e]	3.43E-03	3.61E-06			3.44E-03
Molybdenum[e]	0.00E+00	2.52E-05			2.52E-05
Nickel[e]	8.32E-02	2.70E-03			8.59E-02
Phosphorus[e]	3.70E-02	3.02E-04			3.73E-02
Silver[e]	6.34E-04	0.00E+00			6.34E-04
Selenium[e]	4.62E-04	2.18E-05			4.84E-04
Thallium[e]	5.41E-06				5.41E-06
Vanadium[e]	0.00E+00	1.02E-03			1.02E-03
Zinc[e]	8.05E-02	9.30E-04			8.15E-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: **300** Tons/hour 8,800 Hours/year **2,640,000** Tons/year **3,750** Tons/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Natural Gas LPG/Propane
B. Tank Heater: **1.0000** MMBtu/hr **8,760** Hours/year **24** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Natural Gas
C1. Generator G1: **3.42** gal/hour **8760** Hours/year #2 Fuel Oil IC Engine <600hp **13** hrs/day
C2. Generator G2: **56.45** gal/hour **8760** Hours/year #2 Fuel Oil IC Engine > 600hp **13** 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[a]					
Bromomethane[e]				1.32E-03	0.00E+00
2-Butanone (see Methyl Ethyl Ketone)					0.00E+00
Carbon disulfide[e]				3.29E-03	0.00E+00
Chloroethane (Ethyl chloride[e])				6.55E-04	0.00E+00
Chloromethane (Methyl chloride[e])				4.52E-03	0.00E+00
Cumene				6.04E-03	0.00E+00
n-Hexane				0.00E+00	0.00E+00
Methylene chloride (Dichloromethane[e])				4.34E-05	0.00E+00
MTBE					0.00E+00
Styrene[e]				1.27E-03	0.00E+00
Tetrachloroethene (Tetrachloroethylene[e])				4.23E-04	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				7.14E-05	0.00E+00
m-/p-Xylene[e]				5.47E-02	0.00E+00
o-Xylene[e]				5.31E-02	0.00E+00
Phenol[e,r]				5.31E-03	0.00E+00
Non-HAP Organic Compounds					
Methane				4.54E+00	0.00E+00

e) IDAPA Toxic Air Pollutant

Facility: DePatco, Inc. - 00552

5/12/2015 7:03 Permit/Facility ID: P-2015.0008 777-00552

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: 300 Tons/hour 8,800 Hours/year 2,640,000 Tons/year 3,750 Tons/day 12.5 hr/day 8,800 hr/yr

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

B. Tank Heater: 1.0000 MMBtu Rate 8,760 Hours/year | 0.0500% S | #2 Fuel Oil | 0.5000% S | 24 hrs/day |

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

C1. IC Engine 1: 3.42 gal/hour 8760 Hours/year IC Engine < 600hp | 0.0500% S | #2 Fuel Oil | | 13 hrs/day |

C2. IC Engine 2: 56.45 gal/hour 8760 Hours/year IC Engine > 600hp | 0.0500% S | #2 Fuel Oil | | 13 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)	6.90	1.68E-02	4.41E-02	3.63E-01	1.76E-01	1.57E-01	
PM-2.5	6.69	1.12E-02	3.28E-02	4.30E-01	1.76E-01	1.57E-01	
CO	39.00	8.24E-02	5.51E-01	6.36E+00	3.54E-01	4.05E-01	
NOx	16.50	1.75E-01	8.26E-01	1.16E+01			
SO_2	2.67	5.18E-02	1.36E-02	3.91E-01			
VOC	9.60	5.39E-03	1.69E-01	2.40E+00	3.66E-02	1.17E+00	
Lead	4.50E-03	1.10E-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)	3.59	1.68E-02	2.29E-02	1.89E-01	9.15E-02	8.16E-02	
PM-2.5	3.48	1.12E-02	1.71E-02	0.223992708	9.15E-02	8.16E-02	
CO							
NOx							
SO_2	1.39	5.18E-02	7.08E-03	2.03E-01			
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)	6.93	1.68E-02	4.41E-02	3.63E-01	1.77E-01	1.57E-01	
PM-2.5	6.72	1.12E-02					
CO							
NOx	16.58	1.75E-01	0.83	11.63			
SO_2	2.68	0.05	1.36E-02	0.39			
VOC							
Lead							

Facility: DePatco, Inc. - 00552

5/12/2015 7:03 Permit/Facility ID: P-2015.0008 777-00552

TAPs EL Screen - ALL SOURCES

586 pollutants are shown in bold

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

A. Drum Mix Plant: 300 Tons/hour 8,800 Hours/year 2,640,000 Tons/year 3,750 Tons/day

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

B. Tank Heater: 1.0000 MMBtu Rated 8,760 Hours/year

Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet

C1. IC Engine G1: 3.42 gal/hour 8760 Hours/year

C2. IC Engine G2: 56.45 gal/hour 8760 Hours/year

D. Include all emissions from Load-out/Silo Filling? Yes

Short Term Source Factor 586 ELs? 1

IC Engine <600hp #2 Fuel Oil 13 hrs/day

IC Engine > 600hp #2 Fuel Oil 13 hrs/day

Pollutant	TOTAL of Max Emission Rates from A, B, C & D (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled? Meets AAC or AACC?
HCl[e]	0.000	0.05	No	
Dioxins		**Toxic Equivalency Factor[c]**	**Adjusted Emission Rate (lb/hr)**	
2,3,7,8-TCDD	6.33E-11	1.0	6.33E-11	
Total TCDD	2.80E-10	n/a		
1,2,3,7,8-PeCDD	9.34E-11	1.0	9.34E-11	
Total PeCDD	6.63E-09	n/a		
1,2,3,4,7,8-HxCDD	1.32E-10	0.1	1.32E-11	
1,2,3,6,7,8-HxCDD	3.92E-10	0.1	3.92E-11	
1,2,3,7,8,9-HxCDD	3.01E-10	0.1	3.01E-11	
Total HxCDD	3.62E-09	n/a		
1,2,3,4,6,7,8-Hp-CDD	1.56E-09	0.01	1.56E-11	
Total HpCDD	5.87E-09	n/a		
Octa CDD	8.70E-09	0.0003	2.61E-12	
Total PCDD	2.53E-08	n/a		
Furans				
2,3,7,8-TCDF	2.92E-10	0.1	2.92E-11	
Total TCDF	1.14E-09	n/a		
1,2,3,7,8-PeCDF	1.30E-09	0.03	3.89E-11	
2,3,4,7,8-PeCDF	2.53E-10	0.3	7.59E-11	
Total PeCDF	2.53E-08	n/a		
1,2,3,4,7,8-HxCDF	1.21E-09	0.1	1.21E-10	
1,2,3,6,7,8-HxCDF	3.62E-10	0.1	3.62E-11	
2,3,4,6,7,8-HxCDF	5.73E-10	0.1	5.73E-11	
1,2,3,7,8,9-HxCDF	2.53E-09	0.1	2.53E-10	
Total HxCDF	3.93E-09	n/a		
1,2,3,4,6,7,8-HpCDF	1.96E-09	0.01	1.96E-11	
1,2,3,4,7,8,9-HpCDF	8.14E-10	0.01	8.14E-12	
Total HpCDF	3.08E-09	n/a		
Octa CDF	1.53E-09	0.0003	4.60E-13	
Total PCDF	1.23E-08	n/a		
Total PCDD/PCDF	3.78E-08	n/a		
TOTAL Dioxin/Furans[c]	Adjusted lb/hr 8.97E-10	TAPs EL for 2,3,7,8 TCDD 1.50E-10	**Exceeds TAPs EL?** Exceeds	Modeled?
Non-PAH HAPs				
Acetaldehyde	5.55E-04	3.00E-03	No	
Acrolein	5.43E-05	0.017	No	
Benzene	1.26E-01	8.00E-04	Exceeds	
1,3-Butadiene				
Ethylbenzene	4.00E-02	29	No	
Formaldehyde	9.62E-01	5.10E-04	Exceeds	
Hexane	1.48E-01	12	No	
Isooctane	6.27E-03			
Methyl Ethyl Ketone	1.06E-03	39.3	No	
Pentane	2.55E-03	118	No	
Propionaldehyde	0.00E+00	0.0287	No	
Quinone	0.00E+00	0.027	No	
Methyl chloroform	7.50E-03	127	No	
Toluene	4.57E-01	25	No	
Xylene	4.49E-02	29	No	

Pollutant	TOTAL of Max Emission Rates from A, B, C & 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	5.77E-02	9.10E-05	Exceeds	
3-Methylchloranthrene	1.76E-09	2.50E-06	No	
Acenaphthene	1.09E-03	9.10E-05	Exceeds	
Acenaphthylene	6.74E-03	9.10E-05	Exceeds	
Anthracene	1.12E-03	9.10E-05	Exceeds	
Benzo(a)anthracene	1.31E-04			see POM
Benzo(a)pyrene	7.39E-06	2.00E-06	Exceeds	see POM
Benzo(b)fluoranthene	4.73E-05			see POM
Benzo(e)pyrene	4.84E-05	9.10E-05	No	
Benzo(g,h,I)perylene	1.85E-05	9.10E-05	No	
Benzo(k)fluoranthene	1.64E-05			see POM
Chrysene	3.33E-04			see POM
Dibenzo(a,h)anthracene	3.33E-06			see POM
Dichlorobenzene	1.18E-06	9.10E-05	No	
Fluoranthene	3.85E-04	9.10E-05	Exceeds	
Fluorene	4.99E-03	9.10E-05	Exceeds	
Indeno(1,2,3-cd)pyrene	5.97E-06			see POM
Naphthalene[e]	2.00E-01	9.10E-05	Exceeds	
Perylene	4.82E-05	9.10E-05	No	
Phenanthrene	9.51E-03	9.10E-05	Exceeds	
Pyrene	1.43E-03	9.10E-05	Exceeds	
PolycyclicOrganicMatter[d]	5.44E-04	2.00E-06	Exceeds	
Non-HAP Organic Compounds				
Acetone	1.35E-03	119	No	
Benzaldehyde	0.00E+00			
Butane	1.07E-01			
Butyraldehyde	0.00E+00			
Crotonaldehyde	0.00E+00	0.38	No	
Ethylene	1.12E+00			
Heptane	1.47E+00	109	No	
Hexanal	0.00E+00			
Isovaleraldehyde	0.00E+00			
2-Methyl-1-pentene	6.25E-01			
2-Methyl-2-butene	9.06E-02			
3-Methylpentane	2.97E-02			
1-Pentene	3.44E-01			
n-Pentane[e]	3.28E-02	118	No	
Valeraldehyde (n-Valeraldehyde)	0.00E+00	11.7	No	
Metals				
Antimony[a]	6.64E-05	0.033	No	
Arsenic	1.78E-04	1.50E-06	Exceeds	
Barium	9.25E-04	0.033	No	
Beryllium	2.03E-07	2.80E-05	No	
Cadmium	1.26E-04	3.70E-06	Exceeds	
Chromium	8.66E-04	0.033	No	
Cobalt	4.80E-05	0.0033	No	
Copper	4.97E-04	0.013	No	
Hexavalent Chromium	1.37E-04	5.60E-07	Exceeds	
Manganese	1.23E-03	0.067	No	
Mercury	4.07E-04	0.003	No	
Molybdenum	5.74E-06	0.333	No	
Nickel	1.96E-02	2.70E-05	Exceeds	
Phosphorus	4.44E-03	0.007	No	
Silver	7.50E-05	0.007	No	
Selenium	5.97E-05	0.013	No	
Thallium	6.41E-07	0.007	No	
Vanadium	2.32E-04	0.003	No	
Zinc	9.74E-03	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, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **300** Tons/hour 8,800 Hours/year **2,640,000** Tons/year **3,750** Tons/day
Maximum emission for each pollutant from any fuel-burning option selected in "Facility Data" worksheet.

B. Tank Heater: **1.0000** MMBtu Rated **8,760** 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: **3.42** gal/hour **8760** Hours/year #2 Fuel Oil **13** hrs/day
C2. IC Engine G2: **56.45** gal/hour **8760** Hours/year #2 Fuel Oil **13** hrs/day

Pollutant	TOTAL of Max Emission Rates from A, B, C & D (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled?
non-PAH HAPs[a]				
Bromomethane (Methyl bromide[e])	1.56E-04	1.27	No	
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	3.89E-04	2	No	
Chloroethane (Ethyl chloride[e])	7.75E-05	176	No	
Chloromethane (Methyl chloride[e])	5.35E-04	6.867	No	
Cumene[e]	7.15E-04	16.3	No	
n-Hexane[e] (see Hexane[e])				
Methylene chloride (Dichloromethane[e])	5.14E-06	1.60E-03	No	
MTBE	0.00E+00			
Styrene[e]	1.50E-04	6.67	No	
Tetrachloroethene (Tetrachloroethylene[e])	5.00E-05	1.30E-02	No	
1,1,1-Trichloroethane (see Methyl chloroform[e])				
Trichloroethene (Trichloroethylene[e])	0.00E+00	17.93	No	
Trichlorofluoromethane	8.45E-06			
m-/p-Xylene[e] (added into Xylene[e])				
o-Xylene[e] (added into Xylene[e])				
Phenol[e,f]	6.29E-04	1.27	No	
Non-HAP Organic Compounds				
Methane	5.37E-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: DePatco, Inc. - 00552

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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: 300 Tons/hour 8,800 Hours/year 2,640,000 Tons/year 3,750 Tons/day

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

B. Tank Heater: 1.0000 MMBtu Rated 8,760 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 Natural Gas

C1. IC Engine: 3.42 gal/hour 8760 Hours/year IC Engine < 600hp #2 Fuel Oil 13 hrs/day

C2. IC Engine: 56.45 gal/hour 8760 Hours/year IC Engine > 600h #2 Fuel Oil 13 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 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)
PM (total)						
PM-10 (total)						
PM-2.5						
CO						
NOx						
SO_2						
VOC						
Lead						
HCl [e]	0.00E+00	0.00E+00				
Dioxins[e]						
2,3,7,8-TCDD	6.33E-11					
Total TCDD	2.80E-10					
1,2,3,7,8-PeCDD	9.34E-11					
Total PeCDD	6.63E-09					
1,2,3,4,7,8-HxCDD	1.27E-10	5.04E-12				
1,2,3,6,7,8-HxCDD	3.92E-10					
1,2,3,7,8,9-HxCDD	2.95E-10	5.55E-12				
Total HxCDD	3.62E-09					
1,2,3,4,6,7,8-Hp-CDD	1.45E-09	1.09E-10				
Total HpCDD	5.73E-09	1.46E-10				
Octa CDD	7.53E-09	1.17E-09				
Total PCDD[h]	2.38E-08	1.46E-09				
Furans[e]						
2,3,7,8-TCDF	2.92E-10					
Total TCDF	1.12E-09	2.41E-11				
1,2,3,7,8-PeCDF	1.30E-09					
2,3,4,7,8-PeCDF	2.53E-10					
Total PeCDF	2.53E-08	3.50E-12				
1,2,3,4,7,8-HxCDF	1.21E-09					
1,2,3,6,7,8-HxCDF	3.62E-10					
2,3,4,6,7,8-HxCDF	5.73E-10					
1,2,3,7,8,9-HxCDF	2.53E-09					
Total HxCDF	3.92E-09	1.46E-11				
1,2,3,4,6,7,8-HpCDF	1.96E-09					
1,2,3,4,7,8,9-HpCDF	8.14E-10					
Total HpCDF	3.01E-09	7.08E-11				
Octa CDF	1.45E-09	8.76E-11				
Total PCDF[h]	1.21E-08	2.26E-10				
Total PCDD/PCDF[h]	3.62E-08	1.68E-09				
Non-PAH HAPs						
Acetaldehyde[e]	0.00E+00		3.60E-04	1.95E-04		
Acrolein[e]	0.00E+00		2.26E-05	3.17E-05		
Benzene[e]	**1.18E-01**	**2.06E-06**	**4.38E-04**	**6.00E-03**	**1.18E-03**	**6.52E-04**
1,3-Butadiene[e]			1.83E-05			
Ethylbenzene[e]	3.75E-02				7.24E-04	1.82E-03
Formaldehyde[e]	**9.34E-01**	**7.35E-05**	**5.53E-04**	**6.10E-04**	**2.53E-02**	**1.10E-03**
Hexane[e]	1.44E-01	1.76E-03			1.90E-03	9.75E-04
Isooctane	6.25E-03				5.90E-06	1.17E-05
Methyl Ethyl Ketone[e]	0.00E+00				7.43E-04	3.18E-04
Pentane[e]		2.55E-03				
Propionaldehyde[e]	0.00E+00					
Quinone[e]	0.00E+00					
Methyl chloroform[e]	7.50E-03					
Toluene[e]	4.53E-01	3.33E-06	9.99E-05	1.13E-03	1.18E-03	1.36E-03
Xylene[e]	3.13E-02		6.96E-05	7.78E-04	4.89E-03	7.86E-03
POM (7-PAH Group)	**1.65E-04**	**7.39E-07**		**3.48E-05**	**2.04E-04**	**1.39E-04**

Pollutant	A Drum Dryer 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)	D Silo Filling Emission Rate for Pollutant (lb/hr)	D2 Load-out Emission Rate for Pollutant (lb/hr)
PAH HAPs						
2-Methylnaphthalene	**5.12E-02**	**2.35E-08**			**4.03E-03**	**2.45E-03**
3-Methylchloranthrene[e]	**0.00E+00**	**1.76E-09**				
Acenaphthene	**4.22E-04**	**3.87E-06**	**6.66E-07**	**3.62E-05**	**3.60E-04**	**2.67E-04**
Acenaphthylene	**6.63E-03**	**1.46E-06**	**2.37E-06**	**7.14E-05**	**1.07E-05**	**2.88E-05**
Anthracene	**9.34E-04**	**1.31E-06**	**8.77E-07**	**9.51E-06**	**9.95E-05**	**7.19E-05**
Benzo(a)anthracene[e]	**6.33E-05**	**1.76E-09**	**7.88E-07**	**4.81E-06**	**4.28E-05**	**1.95E-05**
Benzo(a)pyrene[e]	**2.95E-06**	**1.18E-09**	**8.82E-08**	**1.99E-06**	**0.00E+00**	**2.36E-06**
Benzo(b)fluoranthene[e]	**3.01E-05**	**7.30E-07**	**4.65E-08**	**8.59E-06**	**0.00E+00**	**7.81E-06**
Benzo(e)pyrene	**3.32E-05**	**0.00E+00**		**0.00E+00**	**7.27E-06**	**8.01E-06**
Benzo(g,h,i)perylene	**1.21E-05**	**1.18E-09**	**2.29E-07**	**4.30E-06**	**0.00E+00**	**1.95E-06**
Benzo(k)fluoranthene[e]	**1.24E-05**	**1.76E-09**	**7.27E-08**	**1.69E-06**	**0.00E+00**	**2.26E-06**
Chrysene[e]	**5.42E-05**	**1.76E-09**	**1.66E-07**	**1.18E-05**	**1.61E-04**	**1.06E-04**
Dibenzo(a,h)anthracene[e]	**0.00E+00**	**1.18E-09**	**2.73E-07**	**2.68E-06**	**0.00E+00**	**3.80E-07**
Dichlorobenzene	**0.00E+00**	**1.18E-06**		**0.00E+00**		
Fluoranthene	**1.84E-04**	**3.21E-07**	**3.57E-06**	**3.12E-05**	**1.15E-04**	**5.14E-05**
Fluorene	**3.32E-03**	**2.34E-07**	**1.37E-05**	**9.90E-05**	**7.73E-04**	**7.91E-04**
Indeno(1,2,3-cd)pyrene[e]	**2.11E-06**	**1.76E-09**	**1.76E-07**	**3.20E-06**	**0.00E+00**	**4.83E-07**
Naphthalene[e]	**1.96E-01**	**1.24E-04**	**3.98E-05**	**1.01E-03**	**1.39E-03**	**1.28E-03**
Perylene	**2.65E-06**	**0.00E+00**			**2.30E-05**	**2.26E-05**
Phenanthrene	**6.93E-03**	**3.58E-05**	**1.38E-05**	**3.16E-04**	**1.38E-03**	**8.32E-04**
Pyrene	**9.04E-04**	**2.34E-07**	**2.24E-06**	**2.87E-05**	**3.37E-04**	**1.54E-04**
Non-HAP Organic Compounds						
Acetone[e]	0.00E+00	0.00E+00			1.05E-03	3.04E-04
Benzaldehyde	0.00E+00	0.00E+00				
Butane	1.05E-01	2.06E-03				
Butyraldehyde	0.00E+00	0.00E+00				
Crotonaldehyde[e]	0.00E+00	0.00E+00				
Ethylene	1.09E+00	0.00E+00			2.09E-02	4.61E-03
Heptane	1.47E+00	0.00E+00				
Hexanal	0.00E+00	0.00E+00				
Isovaleraldehyde	0.00E+00	0.00E+00				
2-Methyl-1-pentene	6.25E-01	0.00E+00				
2-Methyl-2-butene	9.06E-02	0.00E+00				
3-Methylpentane	2.97E-02	0.00E+00				
1-Pentene	3.44E-01	0.00E+00				
n-Pentane	3.28E-02	0.00E+00				
Valeraldehyde[e]	0.00E+00	0.00E+00				
Metals						
Antimony[e]	2.81E-05	3.83E-05				
Arsenic[e]	**1.69E-04**	**9.63E-06**				
Barium[e]	9.06E-04	1.88E-05				
Beryllium[e]	**0.00E+00**	**2.03E-07**				
Cadmium[e]	**1.24E-04**	**2.90E-06**				
Chromium[e]	8.59E-04	6.17E-06				
Cobalt[e]	4.06E-06	4.39E-05				
Copper[e]	4.84E-04	1.28E-05				
Hexavalent Chromium[e]	**1.36E-04**	**1.81E-06**				
Manganese[e]	1.20E-03	2.19E-05				
Mercury[e]	4.06E-04	8.25E-07				
Molybdenum[e]	0.00E+00	5.74E-06				
Nickel[e]	**1.90E-02**	**6.17E-04**				
Phosphorus[e]	4.38E-03	6.90E-05				
Silver[e]	7.50E-05	0.00E+00				
Selenium[e]	5.47E-05	4.98E-06				
Thallium[e]	6.41E-07	0.00E+00				
Vanadium[e]	0.00E+00	2.32E-04				
Zinc[e]	9.53E-03	2.12E-04				

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

Hot Mix Asphalt EI Spreadsheet

Idaho Department of Environmental Quality, Air Quality Division, Boise, Idaho — Version 02/27/2012

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).
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, 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 tons = 96% of total HMA tons.

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.	777-00552	Spreadsheet Date	5/12/2015 7:06
Permit No.	P-2015.0008	DEQ Version Date	7/20/2011
Facility Owner/Company Name:	DePatco, Inc. - 00552		
Address:	Portable		
City, State, Zip:	N/A		
Facility Contact:	Greg Stoddard		
Contact Number/ e-mail:	208-458-4000/greg@depatco.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 Industries/300 Ultradrum	Distallate (#2) Fuel Oil	1
Rated heat input capacity, MMBtu/hr	100	Used Oil or RFO4 Oil	0
Drum Dryer Hourly HMA Production, Tons/hour	300	Natural Gas	1
Max Production Per day, Tons per day	3,750	LPG or Propane	1
Max Annual HMA Production, Tons/year	660,000	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)	2,200	#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	1.000	Fuel Type(s)	Fuel Toggle
Hours of operation per day	0	#2 Fuel Oil	1
Operation, days per year (DEQ Assumption)	#DIV/0!	Fuel oil sulfur content	0.050%
Max Hours of operation per year (DEQ Assumption)	4,000	Natural Gas	1

Asphaltic Oil Tank Heater Fuel Consumption Calculations	#2 Fuel Oil	Natural Gas
Heat Input Rating, MMBtu/hr	1.000	1.000
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]	7.30	980
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	Isuzu/BU-4JJ1T	Fuel Type(s)	IC Engine Toggle
IC Engine Max Rated Power (bhp)	67	#2 Fuel Oil (Diesel)	1
IC Engine Max Rated Capacity (kW)	50	Max Sulfur weight percentage	0.0500%
		Max Operational Hours/Day	13
IC Engine 1 EPA Certification:	2	Max Operational Hours/Year	2,200
Not EPA-certified: Enter "0" (zero)		Calculated Max Fuel Use Rate, gal/hr	3.42
Certified Tier I, Tier 2, or Tier 3: Enter 1, 2, or 3		Calculated MMBtu/hr	0.47
Certified "BLUE SKY" engine: Enter 4			

IC Engine 2 > 600 bhp (447 kW) AP-42 Section 3.4 (diesel fueled)			
IC Engine Make/Model	Caterpillar/XQ 800	Fuel Type(s)	IC Engine Toggle
IC Engine Rated Capacity (bhp)	1,105	#2 Fuel Oil (Diesel)	1
IC Engine Max Rated Capacity (kW)	824	Max Sulfur weight percentage	0.0500%
		Max Operational Hours per Day	13
IC Engine 2 EPA Certification:	2	Max Operational Hours per Year	2,200
Not EPA-certified: Enter "0" (zero)		Calculated Max Fuel Use Rate, gal/hr	56.45
Certified Tier I, Tier 2, or Tier 3: Enter 1, 2, or 3		Calculated MMBtu/hr	7.74
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 conveyc
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% cor
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 scalping screen
Number of scalping screens (DEQ Assumption)	1	Includes all aggregate and RAP tonnage.
Aggregate conveyor transfer to drum (DEQ Assumption)	1	Includes all aggregate and RAP tonnage.

Facility: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/Facility ID:** P-2015.0008 777-00552

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

Fuel Type Toggle = 0
Max Hourly Production 300 T/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 660,000 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	0.00	0.00	
PM-10 (total) [b]	0.023	0.00	0.00	
PM-2.5 [b1]	0.0223	0.00	0.00	
CO [c]	0.13	0.00	0.00	
NOx [c]	0.055	0.00	0.00	
SO_2 [c]	0.089	0.00	0.00	
VOC [d]	0.032	0.00	0.00	
Lead	1.50E-05	0.00E+00	0.00E+00	
HCl [d,e]	0.00021	0	0.00E+00	
Dioxins[e,f]				
2,3,7,8-TCDD	2.10E-13	0.00E+00	0.00E+00	**0.00E+00**
Total TCDD	9.30E-13	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,7,8-PeCDD	3.10E-13	0.00E+00	0.00E+00	**0.00E+00**
Total PeCDD	2.20E-11	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,7,8-HxCDD	4.20E-13	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,6,7,8-HxCDD	1.30E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,7,8,9-HxCDD	9.80E-13	0.00E+00	0.00E+00	**0.00E+00**
Total HxCDD	1.20E-11	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,6,7,8-Hp-CDD	4.80E-12	0.00E+00	0.00E+00	**0.00E+00**
Total HpCDD	1.90E-11	0.00E+00	0.00E+00	**0.00E+00**
Octa CDD	2.50E-11	0.00E+00	0.00E+00	**0.00E+00**
Total PCDD[h]	7.90E-11	0.00E+00	0.00E+00	**0.00E+00**
Furans[e,f]				
2,3,7,8-TCDF	9.70E-13	0.00E+00	0.00E+00	**0.00E+00**
Total TCDF	3.70E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,7,8-PeCDF	4.30E-12	0.00E+00	0.00E+00	**0.00E+00**
2,3,4,7,8-PeCDF	8.40E-13	0.00E+00	0.00E+00	**0.00E+00**
Total PeCDF	8.40E-11	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,7,8-HxCDF	4.00E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,6,7,8-HxCDF	1.20E-12	0.00E+00	0.00E+00	**0.00E+00**
2,3,4,6,7,8-HxCDF	1.90E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,7,8,9-HxCDF	8.40E-12	0.00E+00	0.00E+00	**0.00E+00**
Total HxCDF	1.30E-11	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,6,7,8-HpCDF	6.50E-12	0.00E+00	0.00E+00	**0.00E+00**
1,2,3,4,7,8,9-HpCDF	2.70E-12	0.00E+00	0.00E+00	**0.00E+00**
Total HpCDF	1.00E-11	0.00E+00	0.00E+00	**0.00E+00**
Octa CDF	4.80E-12	0.00E+00	0.00E+00	**0.00E+00**
Total PCDF[h]	4.00E-11	0.00E+00	0.00E+00	**0.00E+00**
Total PCDD/PCDF[h]	1.20E-10	0.00E+00	0.00E+00	**0.00E+00**
Non-PAH HAPs[f]				
Acetaldehyde[e]	1.30E-03	0.00E+00	0.00E+00	**0.00E+00**
Acrolein[e]	2.60E-05	0.00E+00	0.00E+00	0.00E+00
Benzene[e]	3.90E-04	0.00E+00	0.00E+00	**0.00E+00**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	0.00E+00	0.00E+00	0.00E+00
Formaldehyde[e]	3.10E-03	0.00E+00	0.00E+00	**0.00E+00**
Hexane[e]	9.20E-04	0.00E+00	0.00E+00	0.00E+00
Isooctane	4.00E-05	0.00E+00	0.00E+00	0.00E+00
Methyl Ethyl Ketone[e]	2.00E-05	0.00E+00	0.00E+00	0.00E+00
Pentane[e]				
Propionaldehyde[e]	1.30E-04	0.00E+00	0.00E+00	0.00E+00
Quinone[e]	1.60E-04	0.00E+00	0.00E+00	0.00E+00
Methyl chloroform[e]	4.80E-05	0.00E+00	0.00E+00	0.00E+00
Toluene[e]	2.90E-03	0.00E+00	0.00E+00	0.00E+00
Xylene[e]	2.00E-04	0.00E+00	0.00E+00	0.00E+00
POM (7-PAH Group)		0.00E+00		**0.00E+00**

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	0.00E+00	0.00E+00	**0.00E+00**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	0.00E+00	0.00E+00	**0.00E+00**
Acenaphthylene	2.20E-05	0.00E+00	0.00E+00	**0.00E+00**
Anthracene	3.10E-06	0.00E+00	0.00E+00	**0.00E+00**
Benzo(a)anthracene	2.10E-07	0.00E+00	0.00E+00	**0.00E+00**
Benzo(a)pyrene[e]	9.80E-09	0.00E+00	0.00E+00	**0.00E+00**
Benzo(b)fluoranthene	1.00E-07	0.00E+00	0.00E+00	**0.00E+00**
Benzo(e)pyrene	1.10E-07	0.00E+00	0.00E+00	**0.00E+00**
Benzo(g,h,i)perylene	4.00E-08	0.00E+00	0.00E+00	**0.00E+00**
Benzo(k)fluoranthene	4.10E-08	0.00E+00	0.00E+00	**0.00E+00**
Chrysene	1.80E-07	0.00E+00	0.00E+00	**0.00E+00**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	0.00E+00	0.00E+00	**0.00E+00**
Fluorene	1.10E-05	0.00E+00	0.00E+00	**0.00E+00**
Indeno(1,2,3-cd)pyrene	7.00E-09	0.00E+00	0.00E+00	**0.00E+00**
Naphthalene[e]	6.50E-04	0.00E+00	0.00E+00	**0.00E+00**
Perylene	8.80E-09	0.00E+00	0.00E+00	**0.00E+00**
Phenanthrene	2.30E-05	0.00E+00	0.00E+00	**0.00E+00**
Pyrene	3.00E-06	0.00E+00	0.00E+00	**0.00E+00**
Non-HAP Organic Compounds[f]				
Acetone[e]	8.30E-04	0.00E+00	0.00E+00	0.00E+00
Benzaldehyde	1.10E-04	0.00E+00	0.00E+00	0.00E+00
Butane	6.70E-04	0.00E+00	0.00E+00	0.00E+00
Butyraldehyde	1.60E-04	0.00E+00	0.00E+00	0.00E+00
Crotonaldehyde[e]	8.60E-05	0.00E+00	0.00E+00	0.00E+00
Ethylene	7.00E-03	0.00E+00	0.00E+00	0.00E+00
Heptane	9.40E-03	0.00E+00	0.00E+00	0.00E+00
Hexanal	1.10E-04	0.00E+00	0.00E+00	0.00E+00
Isovaleraldehyde	3.20E-05	0.00E+00	0.00E+00	0.00E+00
2-Methyl-1-pentene	4.00E-03	0.00E+00	0.00E+00	0.00E+00
2-Methyl-2-butene	5.80E-04	0.00E+00	0.00E+00	0.00E+00
3-Methylpentane	1.90E-04	0.00E+00	0.00E+00	0.00E+00
1-Pentene	2.20E-03	0.00E+00	0.00E+00	0.00E+00
n-Pentane	2.10E-04	0.00E+00	0.00E+00	0.00E+00
Valeraldehyde[e]	6.70E-05	0.00E+00	0.00E+00	0.00E+00
Metals[g]				
Antimony[e]	1.80E-07	0.00E+00	0.00E+00	0.00E+00
Arsenic[e]	5.60E-07	0.00E+00	0.00E+00	**0.00E+00**
Barium[e]	5.80E-06	0.00E+00	0.00E+00	0.00E+00
Beryllium[e]				
Cadmium[e]	4.10E-07	0.00E+00	0.00E+00	**0.00E+00**
Chromium[e]	5.50E-06	0.00E+00	0.00E+00	0.00E+00
Cobalt[e]	2.60E-08	0.00E+00	0.00E+00	0.00E+00
Copper[e]	3.10E-06	0.00E+00	0.00E+00	0.00E+00
Hexavalent Chromium[e]	4.50E-07	0.00E+00	0.00E+00	**0.00E+00**
Manganese[e]	7.70E-06	0.00E+00	0.00E+00	0.00E+00
Mercury[e]	2.60E-06	0.00E+00	0.00E+00	0.00E+00
Molybdenum[e]				
Nickel[e]	6.30E-05	0.00E+00	0.00E+00	**0.00E+00**
Phosphorus[e]	2.80E-05	0.00E+00	0.00E+00	0.00E+00
Silver[e]	4.80E-07	0.00E+00	0.00E+00	0.00E+00
Selenium[e]	3.50E-07	0.00E+00	0.00E+00	0.00E+00
Thallium[e]	4.10E-09	0.00E+00	0.00E+00	0.00E+00
Vanadium[e]				
Zinc[e]	6.10E-05	0.00E+00	0.00E+00	0.00E+00

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: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/ Facility ID: P-2015.0008 777-00552**

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

Fuel Type Toggle = 1
Max Hourly Production 300 Tons/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 660,000 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	9.90	10.89	
PM-10 (total)[b]	0.023	6.90	7.59	
PM-2.5 [b1]	0.0223	6.69	7.36	
CO [c]	0.13	39.00	42.90	
NOx [c]	0.026	7.80	8.58	
SO_2 [c]	0.0034	1.02	1.12	
VOC [d]	0.032	9.60	10.56	
Lead	6.20E-07	1.86E-04	2.05E-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	1.17E-01	1.29E-01	**2.94E-02**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	7.20E-02	7.92E-02	3.75E-02
Formaldehyde[e]	3.10E-03	9.30E-01	1.02E+00	**2.34E-01**
Hexane[e]	9.20E-04	2.76E-01	3.04E-01	1.44E-01
Isooctane	4.00E-05	1.20E-02	1.32E-02	6.25E-03
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	1.44E-02	1.58E-02	7.50E-03
Toluene[e]	1.50E-04	4.50E-02	4.95E-02	2.34E-02
Xylene[e]	2.00E-04	6.00E-02	6.60E-02	3.13E-02
POM (7-PAH Group)		3.40E-02		**8.55E-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	2.22E-02	2.44E-02	**5.58E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	4.20E-04	4.62E-04	**1.05E-04**
Acenaphthylene	8.60E-06	2.58E-03	2.84E-03	**6.48E-04**
Anthracene	2.20E-07	6.60E-05	7.26E-05	**1.66E-05**
Benzo(a)anthracene	2.10E-07	6.30E-05	6.93E-05	**1.58E-05**
Benzo(a)pyrene[e]	9.80E-09	2.94E-06	3.23E-06	**7.38E-07**
Benzo(b)fluoranthene	1.00E-07	3.00E-05	3.30E-05	**7.53E-06**
Benzo(e)pyrene	1.10E-07	3.30E-05	3.63E-05	**8.29E-06**
Benzo(g,h,i)perylene	4.00E-08	1.20E-05	1.32E-05	**3.01E-06**
Benzo(k)fluoranthene	4.10E-08	1.23E-05	1.35E-05	**3.09E-06**
Chrysene	1.80E-07	5.40E-05	5.94E-05	**1.36E-05**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	1.83E-04	2.01E-04	**4.60E-05**
Fluorene	3.80E-06	1.14E-03	1.25E-03	**2.86E-04**
Indeno(1,2,3-cd)pyrene	7.00E-09	2.10E-06	2.31E-06	**5.27E-07**
Naphthalene[e]	9.00E-05	2.70E-02	2.97E-02	**6.78E-03**
Perylene	8.80E-09	2.64E-06	2.90E-06	**6.63E-07**
Phenanthrene	7.60E-06	2.28E-03	2.51E-03	**5.73E-04**
Pyrene	5.40E-07	1.62E-04	1.78E-04	**4.07E-05**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	2.01E-01	2.21E-01	1.05E-01
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	2.10E+00	2.31E+00	1.09E+00
Heptane	9.40E-03	2.82E+00	3.10E+00	1.47E+00
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	1.20E+00	1.32E+00	6.25E-01
2-Methyl-2-butene	5.80E-04	1.74E-01	1.91E-01	9.06E-02
3-Methylpentane	1.90E-04	5.70E-02	6.27E-02	2.97E-02
1-Pentene	2.20E-03	6.60E-01	7.26E-01	3.44E-01
n-Pentane	2.10E-04	6.30E-02	6.93E-02	3.28E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	5.40E-05	5.94E-05	2.81E-05
Arsenic[e]	5.60E-07	1.68E-04	1.85E-04	**4.22E-05**
Barium[e]	5.80E-06	1.74E-03	1.91E-03	9.06E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	1.23E-04	1.35E-04	**3.09E-05**
Chromium[e]	5.50E-06	1.65E-03	1.82E-03	8.59E-04
Cobalt[e]	2.60E-08	7.80E-06	8.58E-06	4.06E-06
Copper[e]	3.10E-06	9.30E-04	1.02E-03	4.84E-04
Hexavalent Chromium[e]	4.50E-07	1.35E-04	1.49E-04	**3.39E-05**
Manganese[e]	7.70E-06	2.31E-03	2.54E-03	1.20E-03
Mercury[e]	2.40E-07	7.20E-05	7.92E-05	3.75E-05
Molybdenum[e]				
Nickel[e]	6.30E-05	1.89E-02	2.08E-02	**4.75E-03**
Phosphorus[e]	2.80E-05	8.40E-03	9.24E-03	4.38E-03
Silver[e]	4.80E-07	1.44E-04	1.58E-04	7.50E-05
Selenium[e]	3.50E-07	1.05E-04	1.16E-04	5.47E-05
Thallium[e]	4.10E-09	1.23E-06	1.35E-06	6.41E-07
Vanadium[e]				
Zinc[e]	6.10E-05	1.83E-02	2.01E-02	9.53E-03

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: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/Facility ID: P-2015.0008 777-00552**

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

Fuel Type Toggle = 1
Hourly Production 300 T/hr
Daily Production 3,750 Tons/day
Max Annual Production 660,000 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	9.90	10.89	
PM-10 (total)[b]	0.023	6.90	7.59	
PM-2.5[b1]	0.0223	6.69	7.36	
CO[c]	0.13	39.00	42.90	
NOx[c]	0.055	16.50	18.15	
SO_2[c]	0.089	2.67	2.94	
VOC[d]	0.032	9.60	10.56	
Lead	1.50E-05	4.50E-03	4.95E-03	
HCl[d,e]	No Data			
Dioxins[e]				
2,3,7,8-TCDD	2.10E-13	6.3E-11	6.93E-11	**1.58E-11**
Total TCDD	9.30E-13	2.79E-10	3.07E-10	**7.01E-11**
1,2,3,7,8-PeCDD	3.10E-13	9.3E-11	1.02E-10	**2.34E-11**
Total PeCDD	2.20E-11	6.6E-09	7.26E-09	**1.66E-09**
1,2,3,4,7,8-HxCDD	4.20E-13	1.26E-10	1.39E-10	**3.16E-11**
1,2,3,6,7,8-HxCDD	1.30E-12	3.9E-10	4.29E-10	**9.79E-11**
1,2,3,7,8,9-HxCDD	9.80E-13	2.94E-10	3.23E-10	**7.38E-11**
Total HxCDD	1.20E-11	3.6E-09	3.96E-09	**9.04E-10**
1,2,3,4,6,7,8-Hp-CDD	4.80E-12	1.44E-09	1.58E-09	**3.62E-10**
Total HpCDD	1.90E-11	5.7E-09	6.27E-09	**1.43E-09**
Octa CDD	2.50E-11	7.5E-09	8.25E-09	**1.88E-09**
Total PCDD[h]	7.90E-11	2.37E-08	2.61E-08	**5.95E-09**
Furans[e]				
2,3,7,8-TCDF	9.70E-13	2.91E-10	3.20E-10	**7.31E-11**
Total TCDF	3.70E-12	1.11E-09	1.22E-09	**2.79E-10**
1,2,3,7,8-PeCDF	4.30E-12	1.29E-09	1.42E-09	**3.24E-10**
2,3,4,7,8-PeCDF	8.40E-13	2.52E-10	2.77E-10	**6.33E-11**
Total PeCDF	8.40E-11	2.52E-08	2.77E-08	**6.33E-09**
1,2,3,4,7,8-HxCDF	4.00E-12	1.2E-09	1.32E-09	**3.01E-10**
1,2,3,6,7,8-HxCDF	1.20E-12	3.6E-10	3.96E-10	**9.04E-11**
2,3,4,6,7,8-HxCDF	1.90E-12	5.7E-10	6.27E-10	**1.43E-10**
1,2,3,7,8,9-HxCDF	8.40E-12	2.52E-09	2.77E-09	**6.33E-10**
Total HxCDF	1.30E-11	3.9E-09	4.29E-09	**9.79E-10**
1,2,3,4,6,7,8-HpCDF	6.50E-12	1.95E-09	2.15E-09	**4.90E-10**
1,2,3,4,7,8,9-HpCDF	2.70E-12	8.1E-10	8.91E-10	**2.03E-10**
Total HpCDF	1.00E-11	3E-09	3.30E-09	**7.53E-10**
Octa CDF	4.80E-12	1.44E-09	1.58E-09	**3.62E-10**
Total PCDF[h]	4.00E-11	1.2E-08	1.32E-08	**3.01E-09**
Total PCDD/PCDF[h]	1.20E-10	3.6E-08	3.96E-08	**9.04E-09**
Non-PAH HAPs[f]				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]	3.90E-04	1.17E-01	1.29E-01	**2.94E-02**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	7.20E-02	7.92E-02	3.75E-02
Formaldehyde[e]	3.10E-03	9.30E-01	1.02E+00	**2.34E-01**
Hexane[e]	9.20E-04	2.76E-01	3.04E-01	1.44E-01
Isooctane	4.00E-05	1.20E-02	1.32E-02	6.25E-03
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	1.44E-02	1.58E-02	7.50E-03
Toluene[e]	2.90E-03	8.70E-01	9.57E-01	4.53E-01
Xylene[e]	2.00E-04	6.00E-02	6.60E-02	3.13E-02
POM (7-PAH Group)		1.64E-04		**4.13E-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	5.10E-02	5.61E-02	**1.28E-02**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	4.20E-04	4.62E-04	**1.05E-04**
Acenaphthylene	2.20E-05	6.60E-03	7.26E-03	**1.66E-03**
Anthracene	3.10E-06	9.30E-04	1.02E-03	**2.34E-04**
Benzo(a)anthracene	2.10E-07	6.30E-05	6.93E-05	**1.58E-05**
Benzo(a)pyrene[e]	9.80E-09	2.94E-06	3.23E-06	**7.38E-07**
Benzo(b)fluoranthene	1.00E-07	3.00E-05	3.30E-05	**7.53E-06**
Benzo(e)pyrene	1.10E-07	3.30E-05	3.63E-05	**8.29E-06**
Benzo(g,h,i)perylene	4.00E-08	1.20E-05	1.32E-05	**3.01E-06**
Benzo(k)fluoranthene	4.10E-08	1.23E-05	1.35E-05	**3.09E-06**
Chrysene	1.80E-07	5.40E-05	5.94E-05	**1.36E-05**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	1.83E-04	2.01E-04	**4.60E-05**
Fluorene	1.10E-05	3.30E-03	3.63E-03	**8.29E-04**
Indeno(1,2,3-cd)pyrene	7.00E-09	2.10E-06	2.31E-06	**5.27E-07**
Naphthalene[e]	0.00065	1.95E-01	2.15E-01	**4.90E-02**
Perylene	8.80E-09	2.64E-06	2.90E-06	**6.63E-07**
Phenanthrene	2.30E-05	6.90E-03	7.59E-03	**1.73E-03**
Pyrene	3.00E-06	9.00E-04	9.90E-04	**2.26E-04**
Non-HAP Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	2.01E-01	2.21E-01	1.05E-01
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	2.10E+00	2.31E+00	1.09E+00
Heptane	9.40E-03	2.82E+00	3.10E+00	1.47E+00
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	1.20E+00	1.32E+00	6.25E-01
2-Methyl-2-butene	5.80E-04	1.74E-01	1.91E-01	9.06E-02
3-Methylpentane	1.90E-04	5.70E-02	6.27E-02	2.97E-02
1-Pentene	2.20E-03	6.60E-01	7.26E-01	3.44E-01
n-Pentane	2.10E-04	6.30E-02	6.93E-02	3.28E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	5.40E-05	5.94E-05	2.81E-05
Arsenic[e]	5.60E-07	1.68E-04	1.85E-04	**4.22E-05**
Barium[e]	5.80E-06	1.74E-03	1.91E-03	9.06E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	1.23E-04	1.35E-04	**3.09E-05**
Chromium[e]	5.50E-06	1.65E-03	1.82E-03	8.59E-04
Cobalt[e]	2.60E-08	7.80E-06	8.58E-06	4.06E-06
Copper[e]	3.10E-06	9.30E-04	1.02E-03	4.84E-04
Hexavalent Chromium[e]	4.50E-07	1.35E-04	1.49E-04	**3.39E-05**
Manganese[e]	7.70E-06	2.31E-03	2.54E-03	1.20E-03
Mercury[e]	2.60E-06	7.80E-04	8.58E-04	4.06E-04
Molybdenum[e]				
Nickel[e]	6.30E-05	1.89E-02	2.08E-02	**4.75E-03**
Phosphorus[e]	2.80E-05	8.40E-03	9.24E-03	4.38E-03
Silver[e]	4.80E-07	1.44E-04	1.58E-04	7.50E-05
Selenium[e]	3.50E-07	1.05E-04	1.16E-04	5.47E-05
Thallium[e]	4.10E-09	1.23E-06	1.35E-06	6.41E-07
Vanadium[e]				
Zinc[e]	6.10E-05	1.83E-02	2.01E-02	9.53E-03

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: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/ Facility ID: P-2015.0008 777-00552**

LPG or Propane Fired Drum Mix Asphalt Plant With Fabric Filter

Fuel Type Toggle = 1
Max Hourly Production 300 Tons/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 660,000 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	9.90	10.89	
PM-10 (total)[b]	0.023	6.90	7.59	
PM-2.5 [b1]	0.0223	6.69	7.36	
CO [c]	0.13	39.00	42.90	
NOx [c1] (Natural Gas EF x 1.5)	0.039	11.70	12.87	
SO_2 [c]	0.0034	1.02	1.12	
VOC [d]	0.032	9.60	10.56	
Lead	6.20E-07	0.000186	2.05E-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	1.17E-01	1.29E-01	**2.94E-02**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	7.20E-02	7.92E-02	3.75E-02
Formaldehyde[e]	3.10E-03	9.30E-01	1.02E+00	**2.34E-01**
Hexane[e]	9.20E-04	2.76E-01	3.04E-01	1.44E-01
Isooctane	4.00E-05	1.20E-02	1.32E-02	6.25E-03
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	1.44E-02	1.58E-02	7.50E-03
Toluene[e]	1.50E-04	4.50E-02	4.95E-02	2.34E-02
Xylene[e]	2.00E-04	6.00E-02	6.60E-02	3.13E-02
POM (7-PAH Group)		1.64E-04		**4.13E-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	2.22E-02	2.44E-02	**5.58E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	4.20E-04	4.62E-04	**1.05E-04**
Acenaphthylene	8.60E-06	2.58E-03	2.84E-03	**6.48E-04**
Anthracene	2.20E-07	6.60E-05	7.26E-05	**1.66E-05**
Benzo(a)anthracene	2.10E-07	6.30E-05	6.93E-05	**1.58E-05**
Benzo(a)pyrene[e]	9.80E-09	2.94E-06	3.23E-06	**7.38E-07**
Benzo(b)fluoranthene	1.00E-07	3.00E-05	3.30E-05	**7.53E-06**
Benzo(e)pyrene	1.10E-07	3.30E-05	3.63E-05	**8.29E-06**
Benzo(g,h,I)perylene	4.00E-08	1.20E-05	1.32E-05	**3.01E-06**
Benzo(k)fluoranthene	4.10E-08	1.23E-05	1.35E-05	**3.09E-06**
Chrysene	1.80E-07	5.40E-05	5.94E-05	**1.36E-05**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	1.83E-04	2.01E-04	**4.60E-05**
Fluorene	3.80E-06	1.14E-03	1.25E-03	**2.86E-04**
Indeno(1,2,3-cd)pyrene	7.00E-09	2.10E-06	2.31E-06	**5.27E-07**
Naphthalene[e]	9.00E-05	2.70E-02	2.97E-02	**6.78E-03**
Perylene	8.80E-09	2.64E-06	2.90E-06	**6.63E-07**
Phenanthrene	7.60E-06	2.28E-03	2.51E-03	**5.73E-04**
Pyrene	5.40E-07	1.62E-04	1.78E-04	**4.07E-05**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	2.01E-01	2.21E-01	1.05E-01
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	2.10E+00	2.31E+00	1.09E+00
Heptane	9.40E-03	2.82E+00	3.10E+00	1.47E+00
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	1.20E+00	1.32E+00	6.25E-01
2-Methyl-2-butene	5.80E-04	1.74E-01	1.91E-01	9.06E-02
3-Methylpentane	1.90E-04	5.70E-02	6.27E-02	2.97E-02
1-Pentene	2.20E-03	6.60E-01	7.26E-01	3.44E-01
n-Pentane	2.10E-04	6.30E-02	6.93E-02	3.28E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	5.40E-05	5.94E-05	2.81E-05
Arsenic[e]	5.60E-07	1.68E-04	1.85E-04	**4.22E-05**
Barium[e]	5.80E-06	1.74E-03	1.91E-03	9.06E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	1.23E-04	1.35E-04	**3.09E-05**
Chromium[e]	5.50E-06	1.65E-03	1.82E-03	8.59E-04
Cobalt[e]	2.60E-08	7.80E-06	8.58E-06	4.06E-06
Copper[e]	3.10E-06	9.30E-04	1.02E-03	4.84E-04
Hexavalent Chromium[e]	4.50E-07	1.35E-04	1.49E-04	**3.39E-05**
Manganese[e]	7.70E-06	2.31E-03	2.54E-03	1.20E-03
Mercury[e]	2.40E-07	7.20E-05	7.92E-05	3.75E-05
Molybdenum[e]				
Nickel[e]	6.30E-05	1.89E-02	2.08E-02	**4.75E-03**
Phosphorus[e]	2.80E-05	8.40E-03	9.24E-03	4.38E-03
Silver[e]	4.80E-07	1.44E-04	1.58E-04	7.50E-05
Selenium[e]	3.50E-07	1.05E-04	1.16E-04	5.47E-05
Thallium[e]	4.10E-09	1.23E-06	1.35E-06	6.41E-07
Vanadium[e]				
Zinc[e]	6.10E-05	1.83E-02	2.01E-02	9.53E-03

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.

5/12/2015 7:06 **Permit/Facility ID: P-2015.0008 777-00552**

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
Fuel Consumption Rate 7.30 gal/hr
Max Daily Operation 0 hr/day
Max Annual Operation 4,000 hrs/yr

User Input Weight % Sulfur = 0.0500%
AP-42 1.3-1 EF is 0.142S lb SO2 per gallon of fuel oil

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	2.41E-02	0.05	
PM-10 (total)[b] (filterable+cond)	0.0023	1.68E-02	0.03	
PM-2.5 (total)[b] (filterable+cond)	0.00154	0.011	0.02	
CO[b] ("C" EF Rating Factor)	0.005	3.65E-02	0.07	
NOx[b]	0.024	1.75E-01	0.35	
SO_2[b]	0.0071	0.05	0.10	
VOC[d] (NMTOC EF)	5.56E-04	4.06E-03	8.12E-03	
Lead[f]	1.51E-06	1.10E-05	2.20E-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	5.04E-12	1.01E-11	**2.30E-12**
1,2,3,6,7,8-HxCDD				
1,2,3,7,8,9-HxCDD[c]	7.60E-13	5.55E-12	1.11E-11	**2.53E-12**
Total HxCDD				
1,2,3,4,6,7,8-Hp-CDD[c]	1.50E-11	1.09E-10	2.19E-10	**5.00E-11**
Total $HpCDD_c$	2.00E-11	1.46E-10	2.92E-10	**6.66E-11**
Octa CDD[c]	1.60E-10	1.17E-09	2.34E-09	**5.33E-10**
Total PCDD[c]	2.00E-10	1.46E-09	2.92E-09	**6.66E-10**
Furans[e]				
2,3,7,8-TCDF				
Total TCDF[c]	3.30E-12	2.41E-11	4.82E-11	**1.10E-11**
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF[c]	4.80E-13	3.50E-12	7.01E-12	**1.60E-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	1.46E-11	2.92E-11	**6.66E-12**
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF[c]	9.70E-12	7.08E-11	1.42E-10	**3.23E-11**
Octa CDF[c]	1.20E-11	8.76E-11	1.75E-10	**4.00E-11**
Total PCDF[c]	3.10E-11	2.26E-10	4.52E-10	**1.03E-10**
Total PCDD/PCDF[c]	2.30E-10	1.68E-09	3.36E-09	**7.66E-10**
Non-PAH HAPs				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]				
1,3-Butadiene[e]				
Ethylbenzene[e]				
Formaldehyde[c,e]	3.50E-06	2.55E-05	5.11E-05	**1.17E-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)		7.30E-07		**3.33E-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	3.87E-06	7.74E-06	**1.77E-06**
Acenaphthylene[c]	2.00E-07	1.46E-06	2.92E-06	**6.66E-07**
Anthracene[c]	1.80E-07	1.31E-06	2.63E-06	**6.00E-07**
Benzo(a)anthracene				
Benzo(a)pyrene[e]				
Benzo(b)fluoranthene[c]	1.00E-07	7.30E-07	1.46E-06	**3.33E-07**
Benzo(e)pyrene				
Benzo(g,h,I)perylene				
Benzo(k)fluoranthene				
Chrysene				
Dibenzo(a.h)anthracene				
Dichlorobenzene				
Fluoranthene[c]	4.40E-08	3.21E-07	6.42E-07	**1.47E-07**
Fluorene[c]	3.20E-08	2.34E-07	4.67E-07	**1.07E-07**
Indeno(1,2,3-cd)pyrene				
Naphthalene[c,e]	1.70E-05	1.24E-04	2.48E-04	**5.66E-05**
Perylene				
Phenanthrene[c]	4.90E-06	3.58E-05	7.15E-05	**1.63E-05**
Pyrene[c]	3.20E-08	2.34E-07	4.67E-07	**1.07E-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	3.83E-05	7.66E-05	0.00E+00
Arsenic[e]	1.32E-06	9.63E-06	1.93E-05	**4.40E-06**
Barium[e]	2.57E-06	1.88E-05	3.75E-05	0.00E+00
Beryllium[e]	2.78E-08	2.03E-07	4.06E-07	**9.26E-08**
Cadmium[e]	3.98E-07	2.90E-06	5.81E-06	**1.33E-06**
Chromium[e]	8.45E-07	6.17E-06	1.23E-05	0.00E+00
Cobalt[e]	6.02E-06	4.39E-05	8.79E-05	0.00E+00
Copper[e]	1.76E-06	1.28E-05	2.57E-05	0.00E+00
Hexavalent Chromium[e]	2.48E-07	1.81E-06	3.62E-06	**8.26E-07**
Manganese[e]	3.00E-06	2.19E-05	4.38E-05	0.00E+00
Mercury[e]	1.13E-07	8.25E-07	1.65E-06	0.00E+00
Molybdenum[e]	7.87E-07	5.74E-06	1.15E-05	0.00E+00
Nickel[e]	8.45E-05	6.17E-04	1.23E-03	**2.82E-04**
Phosphorus[e]	9.46E-06	6.90E-05	1.38E-04	0.00E+00
Silver[e]				
Selenium[e]	6.83E-07	4.98E-06	9.97E-06	0.00E+00
Thallium[e]				
Vanadium[e]	3.18E-05	2.32E-04	4.64E-04	0.00E+00
Zinc[e]	2.91E-05	2.12E-04	4.25E-04	0.00E+00

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 g
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: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/Facility ID:** P-2015.0008 777-00552

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

Fuel Type Toggle = 1
Fuel Consumption Rate 980 scf/hr
Max Daily Operation 0 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**	8.73E-03	1.75E-02	
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	2.55E-05	5.10E-05	**1.16E-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)		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,I)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: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/Facility ID:** P-2015.0008 777-00552

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

Fuel Type Toggle = 1
Fuel Consumption Rate 980 scf/hr
Max Daily Operation 0 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	7.45E-03	1.49E-02	
PM-10 (total)[c]	7.6	7.45E-03	1.49E-02	
PM-2.5	7.6	7.45E-03	1.49E-02	
CO[b]	84	8.24E-02	1.65E-01	
NOx[b]	100	9.80E-02	1.96E-01	
SO_2[c]	0.6	5.88E-04	1.18E-03	
VOC[c]	5.5	5.39E-03	1.08E-02	
Lead[c]	5.00E-04	4.90E-07	9.80E-07	
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	2.06E-06	4.12E-06	**9.40E-07**
1,3-Butadiene[e]				
Ethylbenzene[e]				
Formaldehyde[e]	7.50E-02	7.35E-05	1.47E-04	**3.36E-05**
Hexane[e]	1.80E+00	1.76E-03	3.53E-03	0.00E+00
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[c1, e]	2.60E+00	2.55E-03	5.10E-03	0.00E+00
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c1, e]	3.40E-03	3.33E-06	6.67E-06	0.00E+00
Xylene[e]				
POM (7-PAH Group)		1.12E-08		**5.10E-09**

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	2.35E-08	4.71E-08	**1.07E-08**
3-Methylchloranthrene[c1, e]	1.80E-06	1.76E-09	3.53E-09	**8.06E-10**
Acenaphthene[c1]	1.80E-06	1.76E-09	3.53E-09	**8.06E-10**
Acenaphthylene[c1]	1.80E-06	1.76E-09	3.53E-09	**8.06E-10**
Anthracene[c1]	2.40E-06	2.35E-09	4.71E-09	**1.07E-09**
Benzo(a)anthracene[c1]	1.80E-06	1.76E-09	3.53E-09	**8.06E-10**
Benzo(a)pyrene[c1, e]	1.20E-06	1.18E-09	2.35E-09	**5.37E-10**
Benzo(b)fluoranthenec[1]	1.80E-06	1.76E-09	3.53E-09	**8.06E-10**
Benzo(e)pyrene				
Benzo(g,h,i)perylene[c1]	1.20E-06	1.18E-09	2.35E-09	**5.37E-10**
Benzo(k)fluoranthene[c1]	1.80E-06	1.76E-09	3.53E-09	**8.06E-10**
Chrysene[c1]	1.80E-06	1.76E-09	3.53E-09	**8.06E-10**
Dibenzo(a,h)anthracene[c1]	1.20E-06	1.18E-09	2.35E-09	**5.37E-10**
Dichlorobenzene[c1]	1.20E-03	1.18E-06	2.35E-06	**5.37E-07**
Fluoranthene[c1]	3.00E-06	2.94E-09	5.88E-09	**1.34E-09**
Fluorene[c1]	2.80E-06	2.75E-09	5.49E-09	**1.25E-09**
Indeno(1,2,3-cd)pyrene[c1]	1.80E-06	1.76E-09	3.53E-09	**8.06E-10**
Naphthalene[c1, e]	6.10E-04	5.98E-07	1.20E-06	**2.73E-07**
Perylene				
Phenanthrene[c1]	1.70E-05	1.67E-08	3.33E-08	**7.61E-09**
Pyrene[c1]	5.00E-06	4.90E-09	9.80E-09	**2.24E-09**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane[c1]	2.10E+00	2.06E-03	4.12E-03	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	1.96E-07	3.92E-07	**8.95E-08**
Barium[d,e]	4.40E-03	4.31E-06	8.63E-06	0.00E+00
Beryllium[e]	1.20E-05	1.18E-08	2.35E-08	**5.37E-09**
Cadmium[d,e]	1.10E-03	1.08E-06	2.16E-06	**4.92E-07**
Chromium[d,e]	1.40E-03	1.37E-06	2.75E-06	0.00E+00
Cobalt[d,e]	8.40E-05	8.24E-08	1.65E-07	0.00E+00
Copper[d,e]	8.50E-04	8.33E-07	1.67E-06	0.00E+00
Hexavalent Chromium[e]				
Manganese[d,e]				
Mercury[d,e]				
Molybdenum[d,e]	1.10E-03	1.08E-06	2.16E-06	0.00E+00
Nickel[d,e]				
Phosphorus[e]				
Silver[e]				
Selenium[d,e]				
Thallium[e]				
Vanadium[d,e]	2.30E-03	2.25E-06	4.51E-06	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: DePatco, Inc. - 00552
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Silo Filling Operations AP-42 Section 11.1

Emissions Toggle = 1
Max Hourly Production 300 T/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 660,000 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	0.1758	0.1933	
PM-10 (total)[b]	5.86E-04	0.1758	0.1933	
PM-2.5[b]	5.86E-04	0.1758	0.1933	
CO[b]	1.18E-03	0.3540	0.3894	
NOx				
SO_2				
VOC[d,g]	1.22E-04	3.66E-02	0.0402	
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	1.17E-03	1.29E-03	0.0003
1,3-Butadiene[e]				
Ethylbenzene[e]	4.63E-06	1.39E-03	1.53E-03	7.24E-04
Formaldehyde[e]	8.41E-05	2.52E-02	2.77E-02	0.0063
Hexane[e]	1.22E-05	3.66E-03	4.02E-03	1.90E-03
Isooctane	3.78E-08	1.13E-05	1.25E-05	5.90E-06
Methyl Ethyl Ketone[e]	4.75E-06	1.43E-03	1.57E-03	7.43E-04
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]		0.00E+00	0.00E+00	
Toluene[e]	7.56E-06	2.27E-03	2.49E-03	1.18E-03
Xylene[e]	3.13E-05	9.40E-03	1.03E-02	4.89E-03
POM (7-PAH Group)		2.03E-04		**5.09E-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	4.01E-03	4.42E-03	1.01E-03
3-Methylchloranthrene[e]				
Acenaphthene	1.19E-06	3.58E-04	3.94E-04	8.99E-05
Acenaphthylene	3.55E-08	1.07E-05	1.17E-05	2.68E-06
Anthracene	3.30E-07	9.90E-05	1.09E-04	2.49E-05
Benzo(a)anthracene	1.42E-07	4.27E-05	4.69E-05	1.07E-05
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	7.24E-06	7.96E-06	1.82E-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	1.60E-04	1.76E-04	4.02E-05
Dibenzo(a,h)anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dichlorobenzene				
Fluoranthene	3.81E-07	1.14E-04	1.26E-04	2.87E-05
Fluorene	2.56E-06	7.69E-04	8.46E-04	1.93E-04
Indeno(1,2,3-cd)pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene[e]	4.62E-06	1.39E-03	1.52E-03	3.48E-04
Perylene	7.62E-08	2.29E-05	2.51E-05	5.74E-06
Phenanthrene	4.57E-06	1.37E-03	1.51E-03	3.44E-04
Pyrene	1.12E-06	3.35E-04	3.69E-04	8.42E-05
Non-HAP Organic Compounds				
Acetone[e]	6.70E-06	2.01E-03	0.0022	1.05E-03
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	1.34E-04	4.02E-02	0.0442	2.09E-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 (°F) = 325

		LOADOUT	SILO FILL	
Total PM EF = $0.000181+0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ + $000332+ 0.00105(-V)e^{((0.0251)(T+460)-20.}$	=	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.

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Silo Filling Operations AP-42 Section 11.1, Page 2

Fuel Type Toggle =	1
Max Hourly Production	300 T/hr
Max Daily Production	3,750 Tons/day
Max Annual Production	660,000 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[g]				
Bromomethane[e]	5.97E-07	1.79E-04	0.0002	9.33E-05
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	1.95E-06	5.85E-04	0.0006	3.05E-04
Chloroethane (Ethyl chloride[e])	4.87E-07	1.46E-04	0.0002	7.62E-05
Chloromethane (Methyl chloride[e])	2.80E-06	8.41E-04	0.0009	4.38E-04
Cumene[e]				
n-Hexane (see Hexane[e])				
Methylene chloride (Dichloromethane[e])	3.29E-08	9.87E-06	1.09E-05	5.14E-06
MTBE				
Styrene[e]	6.58E-07	1.97E-04	2.17E-04	1.03E-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	7.31E-03	0.0080	3.81E-03
o-Xylene[e] (added into Xylene[e])	6.95E-06	2.08E-03	0.0023	1.09E-03
Phenol[e,f]				
Non-HAP Organic Compounds				
Methane	3.17E-03	9.51E-01	1.0456	4.95E-01

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

Facility: DePatco, Inc. - 00552
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Load-out Operations AP-42 Section 11.1

Emissions Toggle = 1
Max Hourly Production 300 T/hr
Max Daily Production 3,750 Tons/day
Max Annual Production 660,000 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	0.157	0.17	
PM-10 (total)[b]	5.22E-04	0.157	0.17	
PM-2.5[b]	5.22E-04	0.157	0.17	
CO[b]	1.35E-03	0.405	0.45	
NOx				
SO_2				
VOC[d,g]	3.91E-03	1.173	1.29	
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	6.49E-04	7.14E-04	1.63E-04
1,3-Butadiene[e]				
Ethylbenzene[e]	1.16E-05	3.49E-03	3.84E-03	1.82E-03
Formaldehyde[e]	3.66E-06	1.10E-03	1.21E-03	2.76E-04
Hexane[e]	6.24E-06	1.87E-03	2.06E-03	9.75E-04
Isooctane	7.49E-08	2.25E-05	2.47E-05	1.17E-05
Methyl Ethyl Ketone[e]	2.04E-06	6.11E-04	6.73E-04	3.18E-04
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[e]	8.73E-06	2.62E-03	2.88E-03	1.36E-03
Xylene[e]	5.03E-05	1.51E-02	1.66E-02	7.86E-03
POM (7-PAH Group)		1.38E-04		3.47E-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	2.43E-03	2.68E-03	6.11E-04
3-Methylchloranthrene[e]				
Acenaphthene	8.86E-07	2.66E-04	2.93E-04	6.68E-05
Acenaphthylene	9.55E-08	2.86E-05	3.15E-05	7.19E-06
Anthracene	2.39E-07	7.16E-05	7.88E-05	1.80E-05
Benzo(a)anthracene	6.48E-08	1.94E-05	2.14E-05	4.88E-06
Benzo(a)pyrene[e]	7.84E-09	2.35E-06	2.59E-06	5.91E-07
Benzo(b)fluoranthene	2.59E-08	7.77E-06	8.55E-06	1.95E-06
Benzo(e)pyrene	2.66E-08	7.98E-06	8.78E-06	2.00E-06
Benzo(g,h,I)perylene	6.48E-09	1.94E-06	2.14E-06	4.88E-07
Benzo(k)fluoranthene	7.50E-09	2.25E-06	2.48E-06	5.65E-07
Chrysene	3.51E-07	1.05E-04	1.16E-04	2.65E-05
Dibenzo(a,h)anthracene	1.26E-09	3.78E-07	4.16E-07	9.50E-08
Dichlorobenzene				
Fluoranthene	1.70E-07	5.11E-05	5.63E-05	1.28E-05
Fluorene	2.63E-06	7.88E-04	8.66E-04	1.98E-04
Indeno(1,2,3-cd)pyrene	1.60E-09	4.81E-07	5.29E-07	1.21E-07
Naphthalene[e]	4.26E-06	1.28E-03	1.41E-03	3.21E-04
Perylene	7.50E-08	2.25E-05	2.48E-05	5.65E-06
Phenanthrene	2.76E-06	8.28E-04	9.11E-04	2.08E-04
Pyrene	5.11E-07	1.53E-04	1.69E-04	3.85E-05
Non-HAP Organic Compounds				
Acetone[e]	1.95E-06	5.84E-04	6.42E-04	3.04E-04
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	2.95E-05	8.86E-03	9.74E-03	4.61E-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 (°F) = 325

		LOADOUT	SILO FILL	
Total PM EF = $0.000181+0.00141(-V)e^{((0.0251)(T+460)-20.43)}$ + $000332+ 0.00105(-V)e^{((0.0251)(T+460)-20}$	=	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: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/Facility ID: P-2015.0008 777-00552**

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

Fuel Type Toggle =	1	
Max Hourly Production	300	T/hr
Max Daily Production	3,750	Tons/day
Max Annual Production	660,000	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[a]				
Bromomethane[e]	3.99E-07	1.20E-04	1.32E-04	6.24E-05
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	5.41E-07	1.62E-04	1.78E-04	8.45E-05
Chloroethane (Ethyl chloride[e])	8.73E-09	2.62E-06	2.88E-06	1.36E-06
Chloromethane (Methyl chloride[e])	6.24E-07	1.87E-04	2.06E-04	9.75E-05
Cumene[e]	4.57E-06	1.37E-03	1.51E-03	7.15E-04
n-Hexane (see Hexane[e])				
Methylene chloride (Dichloromethane[e])				
MTBE				
Styrene[e]	3.04E-07	9.11E-05	1.00E-04	4.74E-05
Tetrachloroethene (Tetrachloroethylene[e])	3.20E-07	9.61E-05	1.06E-04	5.00E-05
1,1,1-Trichloroethane (Methyl chloroform[e])				
Trichloroethene (Trichloroethylene[e])				
Trichlorofluoromethane	5.41E-08	1.62E-05	1.78E-05	8.45E-06
m-/p-Xylene[e] (added into Xylene[e])	1.71E-05	5.12E-03	5.63E-03	2.66E-03
o-Xylene[e] (added into Xylene[e])	3.33E-05	9.98E-03	1.10E-02	5.20E-03
Phenol[e,f]	4.02E-06	1.21E-03	1.33E-03	6.29E-04
Non-HAP Organic Compounds				
Methane	2.70E-04	8.11E-02	8.92E-02	4.22E-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: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit** P-2015.0008 **Facility ID:** 777-00552

G1 Electrical Generator < 600 hp (447 kW)

Fuel Type Toggle =	1	
Fuel Consumption Rate	3.42	gal/hr
Calculated MMBtu/hr	0.469	MMBtu/hr
Max Daily Operation	13	hr/day
Max Annual Operation	2,200	hrs/yr

Rated Power (kW):	50
Not EPA Certified:	No
Certified EPA Tier 1:	No
Certified EPA Tier 2:	Yes
Certified EPA Tier 3:	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

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM = PM10
EMISSION FACTORS USED FOR G1 (lb/MMBtu):	**1.76**	**0.36**		**1.17**	**0.094**

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 and 1039 (updated for <37 kW only), 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	0.19
kW < 8	4	0	2008	---	---	1.76	1.88	0.09
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	---	---	1.76	1.55	0.19
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	---	---	1.76	1.29	0.07
19 ≤ kW < 37	BlueSky	0	n/a	---	*0.36*	1.06	*1.29*	0.08
37 ≤ kW < 75	1	0	1998	2.16	*0.36*	---	*1.17*	*0.31*
37 < kW < 75	2	1	2004	---	*0.36*	1.76	1.17	0.09
37 ≤ kW < 75	3	0	2008	---	*0.36*	1.10	1.17	0.09
37 ≤ kW < 75	BlueSky	0	n/a	---	*0.36*	1.10	*1.17*	0.06
75 < kW < 130	1	0	1997	2.16	*0.36*	---	*1.17*	*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	BlueSky	0	n/a	---	*0.36*	0.94	*1.17*	0.04
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 ≤ 560	BlueSky	0	n/a	---	*0.31*	0.94	*0.82*	0.03
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
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
kW > 560	1	0	2000	2.16	0.31	---	2.68	0.13
kW > 560	2	0	2006	---	*0.31*	1.50	0.82	0.05
kW > 560	BlueSky	0	n/a	---	*0.31*	0.89	*0.82*	0.03

40 CFR 89 and 1039 (updated for <37 kW only), 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	0.00	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
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
19 ≤ kW < 37	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	1	0	1998	0.00	0.00	0.00	0.00	0.00
37 < kW < 75	2	1	2004	0.00	0.36	1.76	1.17	0.09
37 ≤ kW < 75	3	0	2008	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
75 < kW < 130	1	0	1997	0.00	0.00	0.00	0.00	0.00
75 < kW < 130	2	0	2003	0.00	0.00	0.00	0.00	0.00
75 < kW < 130	3	0	2007	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	1	0	1996	0.00	0.00	0.00	0.00	0.00
130 < kW < 225	2	0	2003	0.00	0.00	0.00	0.00	0.00
130 < kW < 225	3	0	2006	0.00	0.00	0.00	0.00	0.00
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
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
kW > 560	1	0	2000	0.00	0.00	0.00	0.00	0.00
kW > 560	2	0	2006	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 G1 (lb/MMBTU):				**0.00**	**0.36**	**1.76**	**1.17**	**0.094**

Facility: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/Facility ID:** P-2015.0008 777-00552

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

Fuel Type Toggle = 1 50 kw
Fuel Consumption Rate 3.42 gal/hr
Calculated MMBtu/hr 0.469 MMBtu/hr
Max Daily Operation 13 hr/day
Max Annual Operation 2,200 hrs/yr

User Input Weight % Sulfur = 0.0500%
AP-42 3.3 SO2 EF = 0.29 for #2 fuel oil, presumed max 0.5%
SO2 emissions are multiplied by a factor: User Input Value/0.5% = 0.10
EPA Certified Generator (Tier 1, 2, 3, or Blue Sky)

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total) [b]	0.09	0.044	4.85E-02	
PM-10 (total) [b]	0.09	0.044	4.85E-02	
PM-2.5	0.07	0.033	3.61E-02	
CO [b]	1.17	0.551	6.06E-01	
NO_x [b]	1.76	0.826	9.09E-01	
SO_2 [b] (total SOx presumed SO2)	0.29	1.36E-02	1.50E-03	
VOC [b] (total TOC--> VOCs)	0.36	0.169	1.86E-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	3.60E-04	3.96E-04	**9.03E-05**
Acrolein[c]	9.25E-05	4.34E-05	4.77E-05	2.26E-05
Benzene[c,e]	9.33E-04	4.38E-04	4.81E-04	**1.10E-04**
1,3-Butadiene[c,e]	3.91E-05	1.83E-05	2.02E-05	**4.61E-06**
Ethylbenzene[e]				
Formaldehyde[c,e]	1.18E-03	5.53E-04	6.09E-04	**1.39E-04**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c,e]	4.09E-04	1.92E-04	2.11E-04	9.99E-05
Xylene[c,e]	2.85E-04	1.34E-04	1.47E-04	6.96E-05
POM (7-PAH Group)		1.61E-06		**4.04E-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	6.66E-07	7.33E-07	**1.67E-07**
Acenaphthylene[c]	5.06E-06	2.37E-06	2.61E-06	**5.96E-07**
Anthracene[c]	1.87E-06	8.77E-07	9.65E-07	**2.20E-07**
Benzo(a)anthracene[c]	1.68E-06	7.88E-07	8.67E-07	**1.98E-07**
Benzo(a)pyrene[c,e]	1.88E-07	8.82E-08	9.70E-08	**2.21E-08**
Benzo(b)fluoranthene[c]	9.91E-08	4.65E-08	5.11E-08	**1.17E-08**
Benzo(e)pyrene				
Benzo(g,h,I)perylene[c]	4.89E-07	2.29E-07	2.52E-07	**5.76E-08**
Benzo(k)fluoranthene[c]	1.55E-07	7.27E-08	8.00E-08	**1.83E-08**
Chrysene[c]	3.53E-07	1.66E-07	1.82E-07	**4.16E-08**
Dibenzo(a,h)anthracene[c]	5.83E-07	2.73E-07	3.01E-07	**6.87E-08**
Dichlorobenzene				
Fluoranthene[c]	7.61E-06	3.57E-06	3.93E-06	**8.96E-07**
Fluorene[c]	2.92E-05	1.37E-05	1.51E-05	**3.44E-06**
Indeno(1,2,3-cd)pyrene[c]	3.75E-07	1.76E-07	1.93E-07	**4.42E-08**
Naphthalene[c,e]	8.48E-05	3.98E-05	4.37E-05	**9.99E-06**
Perylene				
Phenanthrene[c]	2.94E-05	1.38E-05	1.52E-05	**3.46E-06**
Pyrene[c]	4.78E-06	2.24E-06	2.47E-06	**5.63E-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[c]				
Barium[e]				
Beryllium[c]				
Cadmium[c]				
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: DePatco, Inc. - 00552
5/12/2015 7:06 Permit P-2015.0008 Facility ID: 777-00552

G2 Electrical Generator > 600 hp (447 kW)

Fuel Type Toggle =	1	
Fuel Consumption Rate	56.45	gal/hr
Calculated MMBtu/hr	7.74	MMBtu/hr
Max Daily Operation	13	hr/day
Max Annual Operation	2,200	hrs/yr

Rated Power (kW):	824
Not EPA Certified:	No
Certified EPA Tier 1:	No
Certified EPA Tier 2:	Yes
Certified EPA Tier 3:	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

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM=PM10
EMISSION FACTORS USED FOR G2 (lb/MMBtu):	1.50	0.31		0.82	0.047

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
kW< 8	1	0	2000	---	*0.36*	2.47	1.88	0.23
kW< 8	2	0	2005	---	*0.36*	1.76	1.88	0.19
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	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	BlueSky	0	n/a	---	*0.36*	1.06	*1.29*	0.085
37 ≤ kW < 75	1	0	1998	2.16	*0.36*	---	*0.95*	*0.31*
37 ≤ kW < 75	2	0	2004	---	*0.36*	1.76	1.17	0.09
37 ≤ kW < 75	3	0	2008	---	*0.36*	1.10	1.17	0.09
37 ≤ kW < 75	BlueSky	0	n/a	---	*0.36*	1.10	*1.17*	0.056
75 ≤ kW < 130	1	0	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	BlueSky	0	n/a	---	*0.36*	0.94		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 ≤ 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
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
kW > 560	1	0	2000	2.16	0.31	---	2.68	0.13
kW > 560	2	1	2006	---	*0.31*	1.50	0.82	0.05
kW > 560	BlueSky	0	n/a	---	*0.31*	0.89	*0.82*	0.028

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	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	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	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	1	0	1998	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	2	0	2004	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	3	0	2008	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	1	0	1997	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	2	0	2003	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	3	0	2007	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	1	0	1996	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	2	0	2003	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	3	0	2006	0.00	0.00	0.00	0.00	0.00
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
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
kW > 560	1	0	2000	0.00	0.00	0.00	0.00	0.00
kW > 560	2	1	2006	0.00	0.31	1.50	0.82	0.05
kW > 560	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
EMISSION FACTORS FOR GENERATOR G2 (lb/MMBTU):				0.00	0.31	1.50	0.82	0.047

Facility: DePatco, Inc. - 00552
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IC Engine 2 Powering an Electrical Generator > 600 hp (447 kW) AP-42 Section 3.4 (diesel fueled, uncontrolled)

Fuel Type Toggle = 1 824 kw
Fuel Consumption Rate 56.45 gal/hr
Calculated MMBtu/hr 7.74 MMBtu/hr
Max Daily Operation 13 hr/day
Max Annual Operation 2,200 hrs/yr

User Input Weight % Sulfur = 0.0500%
AP-42 3.4-1 SO2 EF = 1.01 x S

EPA Certified Generator (Tier 1, 2, 3, or Blue Sky)

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	0.774	8.51E-01	1.94E-01
PM-10 (total)[d]	0.05	0.363	4.00E-01	9.12E-02
PM-2.5	0.0556	0.430	4.73E-01	1.08E-01
CO[b]	0.82	6.358	6.99E+00	
NOx[b]	1.50	11.626	1.28E+01	2.92E+00
SO_2[b] (total SOx presumed SO2)	0.0505	0.391	0.430	9.81E-02
VOC[b] (total TOC--> VOCs)	0.31	2.398	2.638	
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	1.95E-04	2.14E-04	4.90E-05
Acrolein[c]	7.88E-06	6.10E-05	6.70E-05	3.17E-05
Benzene[c,e]	7.76E-04	6.00E-03	6.60E-03	1.51E-03
1,3-Butadiene[c,e]				
Ethylbenzene[e]				
Formaldehyde[c,e]	7.89E-05	6.10E-04	6.71E-04	1.53E-04
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c,e]	2.81E-04	2.17E-03	2.39E-03	1.13E-03
Xylene[c,e]	1.93E-04	1.49E-03	1.64E-03	7.78E-04
POM (7-PAH Group)		3.48E-05		8.74E-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	3.62E-05	3.98E-05	9.09E-06
Acenaphthylene[c1]	9.23E-06	7.14E-05	7.85E-05	1.79E-05
Anthracene[c1]	1.23E-06	9.51E-06	1.05E-05	2.39E-06
Benzo(a)anthracene[c1]	6.22E-07	4.81E-06	5.29E-06	1.21E-06
Benzo(a)pyrene[c1,e]	2.57E-07	1.99E-06	2.19E-06	4.99E-07
Benzo(b)fluoranthene[c1]	1.11E-06	8.59E-06	9.44E-06	2.16E-06
Benzo(e)pyrene				
Benzo(g,h,I)perylene[c1]	5.56E-07	4.30E-06	4.73E-06	1.08E-06
Benzo(k)fluoranthene[c1]	2.18E-07	1.69E-06	1.85E-06	4.23E-07
Chrysene[c1]	1.53E-06	1.18E-05	1.30E-05	2.97E-06
Dibenzo(a,h)anthracene[c1]	3.46E-07	2.68E-06	2.94E-06	6.72E-07
Dichlorobenzene				
Fluoranthene[c1]	4.03E-06	3.12E-05	3.43E-05	7.83E-06
Fluorene[c1]	1.28E-05	9.90E-05	1.09E-04	2.49E-05
Indeno(1,2,3-cd)pyrene[c1]	4.14E-07	3.20E-06	3.52E-06	8.04E-07
Naphthalene[c1,e]	1.30E-04	1.01E-03	1.11E-03	2.53E-04
Perylene				
Phenanthrene[c1]	4.08E-05	3.16E-04	3.47E-04	7.93E-05
Pyrene[c1]	3.71E-06	2.87E-05	3.16E-05	7.21E-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.

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Max Hourly Production	300 T/hr	96% T/hr is Aggregate & RAP =	**288 T/hr**
Max Daily Production	3,750 Tons/day	96% T/day is Aggregate & RAP =	**3,600 T/day**
Max Annual Production	660,000 Tons/yr	96% T/yr is Aggregate & RAP =	**633,600 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 stabilizes 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: **288 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	0.95	0.50	1.05	0.24	1.90	0.99	2.09	0.48
PM-10 (total)	1.56E-03	0.45	0.23	0.50	0.11	0.90	0.47	0.99	0.23
PM-2.5	2.37E-04	0.07	0.04	0.07	0.02	0.14	0.07	0.15	0.03

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: **288 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	9.52E-02	4.96E-02	1.05E-01	2.39E-02	1.90E-01	9.92E-02	2.09E-01	4.78E-02
PM-10 (total)	1.56E-03	4.50E-02	2.34E-02	4.95E-02	1.13E-02	9.00E-02	4.69E-02	9.90E-02	2.26E-02
PM-2.5	2.37E-04	6.82E-03	3.55E-03	7.50E-03	1.71E-03	1.36E-02	7.10E-03	1.50E-02	3.42E-03

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

Aggregate flow across scalping screen onto conveyor: **288 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	0.720	3.75E-01	7.92E-01	1.81E-01
PM-10 (total)	0.0087	0.251	1.31E-01	2.76E-01	6.29E-02
PM-2.5	1.30E-04	0.004	1.95E-03	4.12E-03	9.40E-04

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

Aggregate transfer from conveyor to drum dryer (1 transfer point): **288 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	9.52E-02	4.96E-02	1.05E-01	2.39E-02
PM-10 (total)	1.56E-03	4.50E-02	2.34E-02	4.95E-02	1.13E-02
PM-2.5	2.37E-04	6.82E-03	3.55E-03	7.50E-03	1.71E-03

Facility: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/Facility ID: P-2015.0008 777-00552**

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) =	0
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) =	1

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	10,890.00	1.00	10,890.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	3.96	21.00	83.16
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.208713	310.00	64.70

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			385.32	1	385.32
Methane	0.216	lb/10^3 gal	AP-42 Table 1.3-3	3.15E-03	21	0.07
N_2O	0.26	lb/10^2 gal	AP-42 Table 1.3-8	8.35E+00	310	2588.05

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	0.00	1.00	0.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	0.00	21.00	0.00
N_2O	0.53	lb/10^3 gal	AP-42 Table 1.3-8	0.000000	310.00	0.00

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	10,890.00	1.00	10,890.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	3.96	21.00	83.16
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.208713	310.00	64.70

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	235.29	1	235.29
Methane	0.0000023	lb/scf	AP-42 Table 1.4-2	4.51E-03	21	0.09
N_2O	0.0000022	lb/scf	AP-42 Table 1.4-2	4.31E-03	310	1.34

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	10,890.00	1.00	10,890.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	3.96	21.00	83.16
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.208713	310.00	64.70

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	85.49	1.00	85.49

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	1,409.98	1.00	1,409.98

Total Green House Gas Emissions

Total Emissions	CO_2e (T/yr)
CO_2	12,770.79
Methane	83.25
N_2O	2,652.75
Grand Total	**15,506.79**

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

A. Drum Mix Plant: 300 Tons/hour 2,200 Hours/year 660,000 Tons/year 3,750 Tons/day
Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Natural Gas LPG/Propane
B. Tank Heater: 1.0000 MMBtu/hr 4,000 Hours/year 0 hrs/day
Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Natural Gas
C1. IC Engine 1: 3.42 gal/hour 2200 Hours/year IC Engine < 600hp #2 Fuel Oil 13 hrs/day
C2. IC Engine 2: 56.45 gal/hour 2200 Hours/year IC Engine > 600hp #2 Fuel Oil 13 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)	9.90	2.41E-02	8.18E-01	3.32E-01	11.07
PM-10 (total)	6.90	1.68E-02	4.07E-01	3.32E-01	7.66
PM-2.5	6.69	1.12E-02	4.63E-01	3.32E-01	7.50
CO	39.00	8.24E-02	6.91E+00	7.59E-01	46.75
NOx	16.50	1.75E-01	1.25E+01		29.13
SO_2	2.67	5.18E-02	4.04E-01		3.13
VOC	9.60	5.39E-03	2.57E+00	1.21E+00	13.38
Lead	4.50E-03	1.10E-05	0.00E+00		4.51E-03
HCl [e]	0.00E+00	0.00E+00	0.00E+00		0.00E+00
Dioxins[e]					
2,3,7,8-TCDD	1.58E-11				1.58E-11
Total TCDD	7.01E-11				7.01E-11
1,2,3,7,8-PeCDD	2.34E-11				2.34E-11
Total PeCDD	1.66E-09				1.66E-09
1,2,3,4,7,8-HxCDD	3.16E-11	2.30E-12			3.39E-11
1,2,3,6,7,8-HxCDD	9.79E-11				9.79E-11
1,2,3,7,8,9-HxCDD	7.38E-11	2.53E-12			7.64E-11
Total HxCDD	9.04E-10				9.04E-10
1,2,3,4,6,7,8-Hp-CDD	3.62E-10	5.00E-11			4.12E-10
Total HpCDD	1.43E-09	6.66E-11			1.50E-09
Octa CDD	1.88E-09	5.33E-10			2.42E-09
Total PCDD[h]	5.95E-09	6.66E-10			6.62E-09
Furans[e]					
2,3,7,8-TCDF	7.31E-11				7.31E-11
Total TCDF	2.79E-10	1.10E-11			2.90E-10
1,2,3,7,8-PeCDF	3.24E-10				3.24E-10
2,3,4,7,8-PeCDF	6.33E-11				6.33E-11
Total PeCDF	6.33E-09	1.60E-12			6.33E-09
1,2,3,4,7,8-HxCDF	3.01E-10				3.01E-10
1,2,3,6,7,8-HxCDF	9.04E-11				9.04E-11
2,3,4,6,7,8-HxCDF	1.43E-10				1.43E-10
1,2,3,7,8,9-HxCDF	6.33E-10				6.33E-10
Total HxCDF	9.79E-10	6.66E-12			9.86E-10
1,2,3,4,6,7,8-HpCDF	4.90E-10				4.90E-10
1,2,3,4,7,8,9-HpCDF	2.03E-10				2.03E-10
Total HpCDF	7.53E-10	3.23E-11			7.86E-10
Octa CDF	3.62E-10	4.00E-11			4.02E-10
Total PCDF[h]	3.01E-09	1.03E-10			3.12E-09
Total PCDD/PCDF[h]	9.04E-09	7.66E-10	0.00E+00		9.81E-09
Non-PAH HAPs					
Acetaldehyde[e]	0.00E+00		1.39E-04		1.39E-04
Acrolein[e]	0.00E+00		5.43E-05		5.43E-05
Benzene[e]	2.94E-02	9.40E-07	1.62E-03	4.57E-04	3.15E-02
1,3-Butadiene[e]			4.61E-06		4.61E-06
Ethylbenzene[e]	3.75E-02			2.54E-03	4.00E-02
Formaldehyde[e]	2.34E-01	3.36E-05	2.92E-04	6.61E-03	2.40E-01
Hexane[e]	1.44E-01	0.00E+00		2.88E-03	1.47E-01
Isooctane	6.25E-03			1.76E-05	6.27E-03
Methyl Ethyl Ketone[e]	0.00E+00			1.06E-03	1.06E-03
Pentane[e]		0.00E+00			0.00E+00
Propionaldehyde[e]	0.00E+00				0.00E+00
Quinone[e]	0.00E+00				0.00E+00
Methyl chloroform[e]	7.50E-03				7.50E-03
Toluene[e]	4.53E-01	0.00E+00	1.23E-03	2.55E-03	4.57E-01
Xylene[e]	3.13E-02		8.47E-04	1.28E-02	4.49E-02
POM (7-PAH Group)[e]	4.13E-05	3.38E-07	9.14E-06	8.55E-05	1.36E-04
TOTAL PAH HAPs	6.67E-02	7.73E-05	4.31E-04	3.71E-03	7.09E-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	1.28E-02	1.07E-08		1.62E-03	1.44E-02
3-Methylchloranthrene[e]	0.00E+00	8.06E-10			8.06E-10
Acenaphthene	1.05E-04	1.77E-06	9.26E-06	1.57E-04	2.73E-04
Acenaphthylene	1.66E-03	6.66E-07	1.85E-05	9.87E-06	1.69E-03
Anthracene	2.34E-04	6.00E-07	2.61E-06	4.28E-05	2.80E-04
Benzo(a)anthracene[e]	1.58E-05	8.06E-10	1.41E-06	1.56E-05	3.28E-05
Benzo(a)pyrene[e]	7.38E-07	5.37E-10	5.21E-07	5.91E-07	1.85E-06
Benzo(b)fluoranthene[e]	7.53E-06	3.33E-07	2.17E-06	1.95E-06	1.20E-05
Benzo(e)pyrene	8.29E-06	0.00E+00		3.82E-06	1.21E-05
Benzo(g,h,i)perylene	3.01E-06	5.37E-10	1.14E-06	4.88E-07	4.64E-06
Benzo(k)fluoranthene[e]	3.09E-06	8.06E-10	4.42E-07	5.65E-07	4.10E-06
Chrysene[e]	1.36E-05	8.06E-10	3.01E-06	6.66E-05	8.32E-05
Dibenzo(a,h)anthracene[e]	0.00E+00	5.37E-10	7.41E-07	9.50E-08	8.36E-07
Dichlorobenzene	0.00E+00	5.37E-07			5.37E-07
Fluoranthene	4.60E-05	1.47E-07	8.72E-06	4.15E-05	9.64E-05
Fluorene	8.29E-04	1.07E-07	2.83E-05	3.91E-04	1.25E-03
Indeno(1,2,3-cd)pyrene[e]	5.27E-07	8.06E-10	8.48E-07	1.21E-07	1.50E-06
Naphthalene[e]	4.90E-02	5.66E-05	2.63E-04	6.69E-04	5.00E-02
Perylene	6.63E-07	0.00E+00		1.14E-05	1.21E-05
Phenanthrene	1.73E-03	1.63E-05	8.27E-05	5.52E-04	2.38E-03
Pyrene	2.26E-04	1.07E-07	7.77E-06	1.23E-04	3.57E-04
Non-HAP Organic Compounds					
Acetone[e]	0.00E+00	0.00E+00		1.35E-03	1.35E-03
Benzaldehyde	0.00E+00	0.00E+00			0.00E+00
Butane	1.05E-01	0.00E+00			1.05E-01
Butyraldehyde	0.00E+00	0.00E+00			0.00E+00
Crotonaldehyde[e]	0.00E+00	0.00E+00			0.00E+00
Ethylene	1.09E+00	0.00E+00		2.56E-02	1.12E+00
Heptane	1.47E+00	0.00E+00			1.47E+00
Hexanal	0.00E+00	0.00E+00			0.00E+00
Isovaleraldehyde	0.00E+00	0.00E+00			0.00E+00
2-Methyl-1-pentene	6.25E-01	0.00E+00			6.25E-01
2-Methyl-2-butene	9.06E-02	0.00E+00			9.06E-02
3-Methylpentane	2.97E-02	0.00E+00			2.97E-02
1-Pentene	3.44E-01	0.00E+00			3.44E-01
n-Pentane	3.28E-02	0.00E+00			3.28E-02
Valeraldehyde[e]	0.00E+00	0.00E+00			0.00E+00
Metals					
Antimony[e]	2.81E-05	0.00E+00			2.81E-05
Arsenic[e]	4.22E-05	4.40E-06			4.66E-05
Barium[e]	9.06E-04	0.00E+00			9.06E-04
Beryllium[e]	0.00E+00	9.26E-08			9.26E-08
Cadmium[e]	3.09E-05	1.33E-06			3.22E-05
Chromium[e]	8.59E-04	0.00E+00			8.59E-04
Cobalt[e]	4.06E-06	0.00E+00			4.06E-06
Copper[e]	4.84E-04	0.00E+00			4.84E-04
Hexavalent Chromium[e]	3.39E-05	8.26E-07			3.47E-05
Manganese[e]	1.20E-03	0.00E+00			1.20E-03
Mercury[e]	4.06E-04	0.00E+00			4.06E-04
Molybdenum[e]	0.00E+00	0.00E+00			0.00E+00
Nickel[e]	4.75E-03	2.82E-04			5.03E-03
Phosphorus[e]	4.38E-03	0.00E+00			4.38E-03
Silver[e]	7.50E-05	0.00E+00			7.50E-05
Selenium[e]	5.47E-05	0.00E+00			5.47E-05
Thallium[e]	6.41E-07	0.00E+00			6.41E-07
Vanadium[e]	0.00E+00	0.00E+00			0.00E+00
Zinc[e]	9.53E-03	0.00E+00			9.53E-03

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: **300** Tons/hour **2,200** Hours/year **660,000** Tons/year HMA throughput **3,750** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Natural Gas LPG/Propane

B. Tank Heater: **1.0000** MMBtu/hr **4,000** Hours/year **0** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Natural Gas

C1. IC Engine 1: **3.42** gal/hour **2200** Hours/year #2 Fuel Oil Generator < 600hp **13** hrs/day

C2. IC Engine 2: **56.45** gal/hour **2200** Hours/year #2 Fuel Oil Generator > 600hp **13** 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]				1.56E-04	1.56E-04
2-Butanone (see Methyl Ethyl Ketone)					
Carbon disulfide[e]				3.89E-04	3.89E-04
Chloroethane (Ethyl chloride[e])				7.75E-05	7.75E-05
Chloromethane (Methyl chloride[e])				5.35E-04	5.35E-04
Cumene				7.15E-04	7.15E-04
n-Hexane					
Methylene chloride (Dichloromethane[e])				5.14E-06	5.14E-06
MTBE					
Styrene[e]				1.50E-04	1.50E-04
Tetrachloroethene (Tetrachloroethylene[e])				5.00E-05	5.00E-05
1,1,1-Trichloroethane (Methyl chloroform[e])					
Trichloroethene (Trichloroethylene[e])					
Trichlorofluoromethane				8.45E-06	8.45E-06
m-/p-Xylene[e]				6.47E-03	6.47E-03
o-Xylene[e]				6.28E-03	6.28E-03
Phenol[e,f]				6.29E-04	6.29E-04
Non-HAP Organic Compounds					
Methane				5.37E-01	5.37E-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: DePatco, Inc. - 00552
5/12/2015 7:06 **Permit/Facility ID:** P-2015.0008 777-00552

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: **300** Tons/hour 2,200 Hours/year **660,000** Tons/year HMA throughput **3,750** hrs/day
Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Natural Gas LPG/Propane
B. Tank Heater: **1.0000** MMBtu/hr **4,000** Hours/year **0** hrs/day
Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Natural Gas
C1. IC Engine 1: **3.42** gal/hour **2200** Hours/year IC Engine <600hp #2 Fuel Oil **13** hrs/day
C2. IC Engine 2: **56.45** gal/hour **2200** Hours/year IC Engine > 600hp #2 Fuel Oil **13** 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)	10.89	4.82E-02	8.99E-01	3.66E-01	11.84
PM-10 (total)	7.59	3.36E-02	4.48E-01	3.66E-01	8.07
PM-2.5	7.36	2.25E-02	5.09E-01	3.66E-01	7.89
CO	42.90	1.65E-01	7.60E+00	8.35E-01	50.66
NOx	18.15	3.50E-01	1.37E+01		32.20
SO_2	2.94	1.04E-01	4.31E-01		3.47
VOC	10.56	1.08E-02	2.82E+00	1.33E+00	13.39
Lead	4.95E-03	2.20E-05	0.00E+00		4.97E-03
HCl [e]	0.00E+00	0.00E+00	0.00E+00		0.00E+00
Dioxins[e]					
2,3,7,8-TCDD	6.93E-11				6.93E-11
Total TCDD	3.07E-10				3.07E-10
1,2,3,7,8-PeCDD	1.02E-10				1.02E-10
Total PeCDD	7.26E-09				7.26E-09
1,2,3,4,7,8-HxCDD	1.39E-10	1.01E-11			1.49E-10
1,2,3,6,7,8-HxCDD	4.29E-10				4.29E-10
1,2,3,7,8,9-HxCDD	3.23E-10	1.11E-11			3.34E-10
Total HxCDD	3.96E-09				3.96E-09
1,2,3,4,6,7,8-Hp-CDD	1.58E-09	2.19E-10			1.80E-09
Total HpCDD	6.27E-09	2.92E-10			6.56E-09
Octa CDD	8.25E-09	2.34E-09			1.06E-08
Total PCDD[h]	2.61E-08	2.92E-09			2.90E-08
Furans[e]					
2,3,7,8-TCDF	3.20E-10				3.20E-10
Total TCDF	1.22E-09	4.82E-11			1.27E-09
1,2,3,7,8-PeCDF	1.42E-09				1.42E-09
2,3,4,7,8-PeCDF	2.77E-10				2.77E-10
Total PeCDF	2.77E-08	7.01E-12			2.77E-08
1,2,3,4,7,8-HxCDF	1.32E-09				1.32E-09
1,2,3,6,7,8-HxCDF	3.96E-10				3.96E-10
2,3,4,6,7,8-HxCDF	6.27E-10				6.27E-10
1,2,3,7,8,9-HxCDF	2.77E-09				2.77E-09
Total HxCDF	4.29E-09	2.92E-11			4.32E-09
1,2,3,4,6,7,8-HpCDF	2.15E-09				2.15E-09
1,2,3,4,7,8,9-HpCDF	8.91E-10				8.91E-10
Total HpCDF	3.30E-09	1.42E-10			3.44E-09
Octa CDF	1.58E-09	1.75E-10			1.76E-09
Total PCDF[h]	1.32E-08	4.52E-10			1.37E-08
Total PCDD/PCDF[h]	3.96E-08	3.36E-09			4.30E-08
Non-PAH HAPs					
Acetaldehyde[e]	0.00E+00		6.10E-04		6.10E-04
Acrolein[e]	0.00E+00		1.15E-04		1.15E-04
Benzene[e]	1.29E-01	4.12E-06	7.08E-03	2.00E-03	1.36E-01
1,3-Butadiene[e]	0.00E+00		2.02E-05		2.02E-05
Ethylbenzene[e]	7.92E-02			5.37E-03	7.92E-02
Formaldehyde[e]	1.02E+00	1.47E-04	1.28E-03	2.90E-02	1.02E+00
Hexane[e]	3.04E-01	3.53E-03		6.08E-03	3.07E-01
Isooctane	1.32E-02			3.72E-05	1.32E-02
Methyl Ethyl Ketone[e]	0.00E+00			2.24E-03	0.00E+00
Pentane[e]	0.00E+00	5.10E-03			5.10E-03
Propionaldehyde[e]	0.00E+00				0.00E+00
Quinone[e]	0.00E+00				0.00E+00
Methyl chloroform[e]	1.58E-02				1.58E-02
Toluene[e]	9.57E-01	6.67E-06	2.60E-03	5.38E-03	9.60E-01
Xylene[e]	6.60E-02	0.00E+00	1.79E-03	2.69E-02	6.78E-02
TOTAL Federal HAPs (T/yr)=					**2.96E+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	5.61E-02	4.71E-08		7.09E-03	5.61E-02
3-Methylchloranthrene[e]	0.00E+00	3.53E-09			3.53E-09
Acenaphthene	4.62E-04	7.74E-06	4.06E-05	6.86E-04	5.10E-04
Acenaphthylene	7.26E-03	2.92E-06	8.11E-05	4.32E-05	7.34E-03
Anthracene	1.02E-03	2.63E-06	1.14E-05	1.88E-04	1.04E-03
Benzo(a)anthracene[e]	6.93E-05	3.53E-09	6.16E-06	6.83E-05	7.55E-05
Benzo(a)pyrene[e]	3.23E-06	2.35E-09	2.28E-06	2.59E-06	5.52E-06
Benzo(b)fluoranthene[e]	3.30E-05	1.46E-06	9.50E-06	8.55E-06	4.40E-05
Benzo(e)pyrene	3.63E-05	0.00E+00		1.67E-05	3.63E-05
Benzo(g,h,I)perylene	1.32E-05	2.35E-09	4.98E-06	2.14E-06	1.82E-05
Benzo(k)fluoranthene[e]	1.35E-05	3.53E-09	1.93E-06	2.48E-06	1.55E-05
Chrysene[e]	5.94E-05	3.53E-09	1.32E-05	2.92E-04	7.26E-05
Dibenzo(a,h)anthracene[e]	0.00E+00	2.35E-09	3.24E-06	4.16E-07	3.25E-06
Dichlorobenzene	0.00E+00	2.35E-06			2.35E-06
Fluoranthene	2.01E-04	6.42E-07	3.82E-05	1.82E-04	2.40E-04
Fluorene	3.63E-03	4.67E-07	1.24E-04	1.71E-03	3.75E-03
Indeno(1,2,3-cd)pyrene[e]	2.31E-06	3.53E-09	3.72E-06	5.29E-07	6.03E-06
Naphthalene[e]	2.15E-01	2.48E-04	1.15E-03	2.93E-03	2.16E-01
Perylene	2.90E-06	0.00E+00		4.99E-05	2.90E-06
Phenanthrene	7.59E-03	7.15E-05	3.62E-04	2.42E-03	8.02E-03
Pyrene	9.90E-04	4.67E-07	3.40E-05	5.37E-04	1.02E-03
Non-HAP Organic Compounds					
Acetone[e]	0.00E+00	0.00E+00		2.85E-03	0.00E+00
Benzaldehyde	0.00E+00	0.00E+00			0.00E+00
Butane	2.21E-01	4.12E-03			2.25E-01
Butyraldehyde	0.00E+00	0.00E+00			0.00E+00
Crotonaldehyde[e]	0.00E+00	0.00E+00			0.00E+00
Ethylene	2.31E+00	0.00E+00		5.40E-02	2.31E+00
Heptane	3.10E+00	0.00E+00			3.10E+00
Hexanal	0.00E+00	0.00E+00			0.00E+00
Isovaleraldehyde	0.00E+00	0.00E+00			0.00E+00
2-Methyl-1-pentene	1.32E+00	0.00E+00			1.32E+00
2-Methyl-2-butene	1.91E-01	0.00E+00			1.91E-01
3-Methylpentane	6.27E-02	0.00E+00			6.27E-02
1-Pentene	7.26E-01	0.00E+00			7.26E-01
n-Pentane[e]	6.93E-02	0.00E+00			6.93E-02
Valeraldehyde[e]	0.00E+00	0.00E+00			0.00E+00
Metals					
Antimony[e]	5.94E-05	7.66E-05			1.36E-04
Arsenic[e]	1.85E-04	1.93E-05			2.04E-04
Barium[e]	1.91E-03	3.75E-05			1.95E-03
Beryllium[e]	0.00E+00	4.06E-07			4.06E-07
Cadmium[e]	1.35E-04	5.81E-06			1.41E-04
Chromium[e]	1.82E-03	1.23E-05			1.83E-03
Cobalt[e]	8.58E-06	8.79E-05			9.64E-05
Copper[e]	1.02E-03	2.57E-05			1.05E-03
Hexavalent Chromium[e]	1.49E-04	3.62E-06			1.52E-04
Manganese[e]	2.54E-03	4.38E-05			2.58E-03
Mercury[e]	8.58E-04	1.65E-06			8.60E-04
Molybdenum[e]	0.00E+00	1.15E-05			1.15E-05
Nickel[e]	2.08E-02	1.23E-03			2.20E-02
Phosphorus[e]	9.24E-03	1.38E-04			9.38E-03
Silver[e]	1.58E-04	0.00E+00			1.58E-04
Selenium[e]	1.16E-04	9.97E-06			1.25E-04
Thallium[e]	1.35E-06				1.35E-06
Vanadium[e]	0.00E+00	4.64E-04			4.64E-04
Zinc[e]	2.01E-02	4.25E-04			2.06E-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: **300** Tons/hour 2,200 Hours/year **660,000** Tons/year **3,750** Tons/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Natural Gas LPG/Propane
B. Tank Heater: **1.0000** MMBtu/hr **4,000** Hours/year **0** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Natural Gas
C1. Generator G1: **3.42** gal/hour **2200** Hours/year #2 Fuel Oil IC Engine <600hp **13** hrs/day
C2. Generator G2: **56.45** gal/hour **2200** Hours/year #2 Fuel Oil IC Engine > 600hp **13** 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]				3.29E-04	0.00E+00
2-Butanone (see Methyl Ethyl Ketone)					0.00E+00
Carbon disulfide[e]				8.22E-04	0.00E+00
Chloroethane (Ethyl chloride[e])				1.64E-04	0.00E+00
Chloromethane (Methyl chloride[e])				1.13E-03	0.00E+00
Cumene				1.51E-03	0.00E+00
n-Hexane				0.00E+00	0.00E+00
Methylene chloride (Dichloromethane[e])				1.09E-05	0.00E+00
MTBE					0.00E+00
Styrene[e]				3.17E-04	0.00E+00
Tetrachloroethene (Tetrachloroethylene[e])				1.06E-04	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				1.78E-05	0.00E+00
m-/p-Xylene[e]				1.37E-02	0.00E+00
o-Xylene[e]				1.33E-02	0.00E+00
Phenol[e,f]				1.33E-03	0.00E+00
Non-HAP Organic Compounds					
Methane				1.13E+00	0.00E+00

e) IDAPA Toxic Air Pollutant

Facility: DePatco, Inc. - 00552

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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: 300 Tons/hour 2,200 Hours/year 660,000 Tons/year 3,750 Tons/day 12.5 hr/day 2,200 hr/yr

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

B. Tank Heater: 1.0000 MMBtu Rate 4,000 Hours/year | | 0.0500% S | 0.5000% S | 0 hrs/day

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

C1. IC Engine 1: 3.42 gal/hour 2200 Hours/year IC Engine < 600hp | 0.0500% S | #2 Fuel Oil | | 13 hrs/day

C2. IC Engine 2: 56.45 gal/hour 2200 Hours/year IC Engine > 600hp | 0.0500% S | #2 Fuel Oil | | 13 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)	6.90	1.68E-02	4.41E-02	3.63E-01	1.76E-01	1.57E-01	
PM-2.5	6.69	1.12E-02	3.28E-02	4.30E-01	1.76E-01	1.57E-01	
CO	39.00	8.24E-02	5.51E-01	6.36E+00	3.54E-01	4.05E-01	
NOx	16.50	1.75E-01	8.26E-01	1.16E+01			
SO_2	2.67	5.18E-02	1.36E-02	3.91E-01			
VOC	9.60	5.39E-03	1.69E-01	2.40E+00	3.66E-02	1.17E+00	
Lead	4.50E-03	1.10E-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)	3.59	0.00E+00	2.29E-02	1.89E-01	9.15E-02	8.16E-02	
PM-2.5	3.48	0.00E+00	1.71E-02	0.223992708	9.15E-02	8.16E-02	
CO							
NOx							
SO_2	1.39	0.00E+00	7.08E-03	2.03E-01			
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)	1.73	7.66E-03	1.11E-02	9.12E-02	4.41E-02	3.93E-02	
PM-2.5	1.68	5.13E-03					
CO							
NOx	4.14	8.00E-02	0.21	2.92			
SO_2	0.67	0.02	3.42E-03	0.10			
VOC							
Lead							

Facility: DePatco, Inc. - 00552

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TAPs EL Screen - ALL SOURCES

586 pollutants are shown in bold

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

A. Drum Mix Plant: 300 Tons/hour 2,200 Hours/year 660,000 Tons/year 3,750 Tons/day

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

B. Tank Heater: 1.0000 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: 3.42 gal/hour 2200 Hours/year IC Engine <600hp #2 Fuel Oil 13 hrs/day

C2. IC Engine G2: 56.45 gal/hour 2200 Hours/year IC Engine > 600hp #2 Fuel Oil 13 hrs/day

Pollutant	TOTAL of Max Emission Rates from A, B, C & D (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled? Meets AAC or AACC?
HCl[e]	0.000	0.05	No	
Dioxins		**Toxic Equivalency Factor[c]**	**Adjusted Emission Rate (lb/hr)**	
2,3,7,8-TCDD	1.58E-11	1.0	1.58E-11	
Total TCDD	7.01E-11	n/a		
1,2,3,7,8-PeCDD	2.34E-11	1.0	2.34E-11	
Total PeCDD	1.66E-09	n/a		
1,2,3,4,7,8-HxCDD	3.39E-11	0.1	3.39E-12	
1,2,3,6,7,8-HxCDD	9.79E-11	0.1	9.79E-12	
1,2,3,7,8,9-HxCDD	7.64E-11	0.1	7.64E-12	
Total HxCDD	9.04E-10	n/a		
1,2,3,4,6,7,8-Hp-CDD	4.12E-10	0.01	4.12E-12	
Total HpCDD	1.50E-09	n/a		
Octa CDD	2.42E-09	0.0003	7.25E-13	
Total PCDD	6.62E-09	n/a		
Furans				
2,3,7,8-TCDF	7.31E-11	0.1	7.31E-12	
Total TCDF	2.90E-10	n/a		
1,2,3,7,8-PeCDF	3.24E-10	0.03	9.72E-12	
2,3,4,7,8-PeCDF	6.33E-11	0.3	1.90E-11	
Total PeCDF	6.33E-09	n/a		
1,2,3,4,7,8-HxCDF	3.01E-10	0.1	3.01E-11	
1,2,3,6,7,8-HxCDF	9.04E-11	0.1	9.04E-12	
2,3,4,6,7,8-HxCDF	1.43E-10	0.1	1.43E-11	
1,2,3,7,8,9-HxCDF	6.33E-10	0.1	6.33E-11	
Total HxCDF	9.86E-10	n/a		
1,2,3,4,6,7,8-HpCDF	4.90E-10	0.01	4.90E-12	
1,2,3,4,7,8,9-HpCDF	2.03E-10	0.01	2.03E-12	
Total HpCDF	7.86E-10	n/a		
Octa CDF	4.02E-10	0.0003	1.20E-13	
Total PCDF	3.12E-09	n/a		
Total PCDD/PCDF	9.81E-09	n/a		
TOTAL Dioxin/Furans[c]	Adjusted lb/hr 2.25E-10	TAPs EL for 2,3,7,8 TCDD 1.50E-10	**Exceeds TAPs EL?** Exceeds	Modeled?
Non-PAH HAPs				
Acetaldehyde	1.39E-04	3.00E-03	No	
Acrolein	5.43E-05	0.017	No	
Benzene	3.15E-02	8.00E-04	Exceeds	
1,3-Butadiene				
Ethylbenzene	4.00E-02	29	No	
Formaldehyde	2.40E-01	5.10E-04	Exceeds	
Hexane	1.47E-01	12	No	
Isooctane	6.27E-03			
Methyl Ethyl Ketone	1.06E-03	39.3	No	
Pentane	0.00E+00	118	No	
Propionaldehyde	0.00E+00	0.0287	No	
Quinone	0.00E+00	0.027	No	
Methyl chloroform	7.50E-03	127	No	
Toluene	4.57E-01	25	No	
Xylene	4.49E-02	29	No	

Pollutant	TOTAL of Max Emission Rates from A, B, C & 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	1.44E-02	9.10E-05	Exceeds	
3-Methylchloranthrene	8.06E-10	2.50E-06	No	
Acenaphthene	2.73E-04	9.10E-05	Exceeds	
Acenaphthylene	1.69E-03	9.10E-05	Exceeds	
Anthracene	2.80E-04	9.10E-05	Exceeds	
Benzo(a)anthracene	3.28E-05			see POM
Benzo(a)pyrene	1.85E-06	2.00E-06	No	see POM
Benzo(b)fluoranthene	1.20E-05			see POM
Benzo(e)pyrene	1.21E-05	9.10E-05	No	
Benzo(g,h,I)perylene	4.64E-06	9.10E-05	No	
Benzo(k)fluoranthene	4.10E-06			see POM
Chrysene	8.32E-05			see POM
Dibenzo(a,h)anthracene	8.36E-07			see POM
Dichlorobenzene	5.37E-07	9.10E-05	No	
Fluoranthene	9.64E-05	9.10E-05	Exceeds	
Fluorene	1.25E-03	9.10E-05	Exceeds	
Indeno(1,2,3-cd)pyrene	1.50E-06			see POM
Naphthalene[e]	5.00E-02	9.10E-05	Exceeds	
Perylene	1.21E-05	9.10E-05	No	
Phenanthrene	2.38E-03	9.10E-05	Exceeds	
Pyrene	3.57E-04	9.10E-05	Exceeds	
PolycyclicOrganicMatter[d]	1.36E-04	2.00E-06	Exceeds	
Non-HAP Organic Compounds				
Acetone	1.35E-03	119	No	
Benzaldehyde	0.00E+00			
Butane	1.05E-01			
Butyraldehyde	0.00E+00			
Crotonaldehyde	0.00E+00	0.38	No	
Ethylene	1.12E+00			
Heptane	1.47E+00	109	No	
Hexanal	0.00E+00			
Isovaleraldehyde	0.00E+00			
2-Methyl-1-pentene	6.25E-01			
2-Methyl-2-butene	9.06E-02			
3-Methylpentane	2.97E-02			
1-Pentene	3.44E-01			
n-Pentane[e]	3.28E-02	118	No	
Valeraldehyde (n-Valeraldehyde)	0.00E+00	11.7	No	
Metals				
Antimony[e]	2.81E-05	0.033	No	
Arsenic	4.66E-05	1.50E-06	Exceeds	
Barium	9.06E-04	0.033	No	
Beryllium	9.26E-08	2.80E-05	No	
Cadmium	3.22E-05	3.70E-06	Exceeds	
Chromium	8.59E-04	0.033	No	
Cobalt	4.06E-06	0.0033	No	
Copper	4.84E-04	0.013	No	
Hexavalent Chromium	3.47E-05	5.60E-07	Exceeds	
Manganese	1.20E-03	0.067	No	
Mercury	4.06E-04	0.003	No	
Molybdenum	0.00E+00	0.333	No	
Nickel	5.03E-03	2.70E-05	Exceeds	
Phosphorus	4.38E-03	0.007	No	
Silver	7.50E-05	0.007	No	
Selenium	5.47E-05	0.013	No	
Thallium	6.41E-07	0.007	No	
Vanadium	0.00E+00	0.003	No	
Zinc	9.53E-03	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, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **300** Tons/hour 2,200 Hours/year **660,000** Tons/year **3,750** Tons/day
Maximum emission for each pollutant from any fuel-burning option selected in "Facility Data" worksheet.

B. Tank Heater: **1.0000** MMBtu Rated **4,000** Hours/year
Maximum emission for each pollutant for heater burning any fuel selected in "Facility Data" worksheet.

C1. IC Engine G1: **3.42** gal/hour **2200** Hours/year #2 Fuel Oil **13** hrs/day
C2. IC Engine G2: **56.45** gal/hour **2200** Hours/year #2 Fuel Oil **13** hrs/day

D. Include all emissions from Load-out/Silo Filling? Yes

Pollutant	TOTAL of Max Emission Rates from A, B, C & D (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled?
non-PAH HAPs[a]				
Bromomethane (Methyl bromide[e])	1.56E-04	1.27	No	
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	3.89E-04	2	No	
Chloroethane (Ethyl chloride[e])	7.75E-05	176	No	
Chloromethane (Methyl chloride[e])	5.35E-04	6.867	No	
Cumene[e]	7.15E-04	16.3	No	
n-Hexane[e] (see Hexane[e])				
Methylene chloride (Dichloromethane[e])	5.14E-06	1.60E-03	No	
MTBE	0.00E+00			
Styrene[e]	1.50E-04	6.67	No	
Tetrachloroethene (Tetrachloroethylene[e])	5.00E-05	1.30E-02	No	
1,1,1-Trichloroethane (see Methyl chloroform[e])				
Trichloroethene (Trichloroethylene[e])	0.00E+00	17.93	No	
Trichlorofluoromethane	8.45E-06			
m-/p-Xylene[e] (added into Xylene[e])				
o-Xylene[e] (added into Xylene[e])				
Phenol[e,f]	6.29E-04	1.27	No	
Non-HAP Organic Compounds				
Methane	5.37E-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

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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: 300 Tons/hour 2,200 Hours/year 660,000 Tons/year 3,750 Tons/day

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

B. Tank Heater: 1.0000 MMBtu Rated 4,000 Hours/year 0 hrs/day

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

C1. IC Engine: 3.42 gal/hour 2200 Hours/year IC Engine < 600hp #2 Fuel Oil 13 hrs/day

C2. IC Engine: 56.45 gal/hour 2200 Hours/year IC Engine > 600h #2 Fuel Oil 13 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 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)
PM (total)						
PM-10 (total)						
PM-2.5						
CO						
NOx						
SO_2						
VOC						
Lead						
HCl [e]	0.00E+00	0.00E+00				
Dioxins[e]						
2,3,7,8-TCDD	1.58E-11					
Total TCDD	7.01E-11					
1,2,3,7,8-PeCDD	2.34E-11					
Total PeCDD	1.66E-09					
1,2,3,4,7,8-HxCDD	3.16E-11	2.30E-12				
1,2,3,6,7,8-HxCDD	9.79E-11					
1,2,3,7,8,9-HxCDD	7.38E-11	2.53E-12				
Total HxCDD	9.04E-10					
1,2,3,4,6,7,8-Hp-CDD	3.62E-10	5.00E-11				
Total HpCDD	1.43E-09	6.66E-11				
Octa CDD	1.88E-09	5.33E-10				
Total PCDD[h]	5.95E-09	6.66E-10				
Furans[e]						
2,3,7,8-TCDF	7.31E-11					
Total TCDF	2.79E-10	1.10E-11				
1,2,3,7,8-PeCDF	3.24E-10					
2,3,4,7,8-PeCDF	6.33E-11					
Total PeCDF	6.33E-09	1.60E-12				
1,2,3,4,7,8-HxCDF	3.01E-10					
1,2,3,6,7,8-HxCDF	9.04E-11					
2,3,4,6,7,8-HxCDF	1.43E-10					
1,2,3,7,8,9-HxCDF	6.33E-10					
Total HxCDF	9.79E-10	6.66E-12				
1,2,3,4,6,7,8-HpCDF	4.90E-10					
1,2,3,4,7,8,9-HpCDF	2.03E-10					
Total HpCDF	7.53E-10	3.23E-11				
Octa CDF	3.62E-10	4.00E-11				
Total PCDF[h]	3.01E-09	1.03E-10				
Total PCDD/PCDF[h]	9.04E-09	7.66E-10				
Non-PAH HAPs						
Acetaldehyde[e]	0.00E+00		9.03E-05	4.90E-05		
Acrolein[e]	0.00E+00		2.26E-05	3.17E-05		
Benzene[e]	2.94E-02	9.40E-07	1.10E-04	1.51E-03	2.94E-04	1.63E-04
1,3-Butadiene[e]			4.61E-06			
Ethylbenzene[e]	3.75E-02				7.24E-04	1.82E-03
Formaldehyde[e]	2.34E-01	3.36E-05	1.39E-04	1.53E-04	6.34E-03	2.76E-04
Hexane[e]	1.44E-01	0.00E+00			1.90E-03	9.75E-04
Isooctane	6.25E-03				5.90E-06	1.17E-05
Methyl Ethyl Ketone[e]	0.00E+00				7.43E-04	3.18E-04
Pentane[e]		0.00E+00				
Propionaldehyde[e]	0.00E+00					
Quinone[e]	0.00E+00					
Methyl chloroform[e]	7.50E-03					
Toluene[e]	4.53E-01	0.00E+00	9.99E-05	1.13E-03	1.18E-03	1.36E-03
Xylene[e]	3.13E-02		6.96E-05	7.78E-04	4.89E-03	7.86E-03
POM (7-PAH Group)	4.13E-05	3.38E-07		8.74E-06	5.09E-05	3.47E-05

e) IDAPA Toxic Air Pollutant

Pollutant	A Drum Dryer 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)	D Silo Filling Emission Rate for Pollutant (lb/hr)	D2 Load-out Emission Rate for Pollutant (lb/hr)
PAH HAPs						
2-Methylnaphthalene	1.28E-02	1.07E-08			1.01E-03	6.11E-04
3-Methylchloranthrene[e]	0.00E+00	8.06E-10				
Acenaphthene	1.05E-04	1.77E-06	1.67E-07	9.09E-06	8.99E-05	6.68E-05
Acenaphthylene	1.66E-03	6.66E-07	5.96E-07	1.79E-05	2.68E-06	7.19E-06
Anthracene	2.34E-04	6.00E-07	2.20E-07	2.39E-06	2.49E-05	1.80E-05
Benzo(a)anthracene[e]	1.58E-05	8.06E-10	1.98E-07	1.21E-06	1.07E-05	4.88E-06
Benzo(a)pyrene[e]	7.38E-07	5.37E-10	2.21E-08	4.99E-07	0.00E+00	5.91E-07
Benzo(b)fluoranthene[e]	7.53E-06	3.33E-07	1.17E-08	2.16E-06	0.00E+00	1.95E-06
Benzo(e)pyrene	8.29E-06	0.00E+00		0.00E+00	1.82E-06	2.00E-06
Benzo(g,h,I)perylene	3.01E-06	5.37E-10	5.76E-08	1.08E-06	0.00E+00	4.88E-07
Benzo(k)fluoranthene[e]	3.09E-06	8.06E-10	1.83E-08	4.23E-07	0.00E+00	5.65E-07
Chrysene[e]	1.36E-05	8.06E-10	4.16E-08	2.97E-06	4.02E-05	2.65E-05
Dibenzo(a,h)anthracene[e]	0.00E+00	5.37E-10	6.87E-08	6.72E-07	0.00E+00	9.50E-08
Dichlorobenzene	0.00E+00	5.37E-07		0.00E+00		
Fluoranthene	4.60E-05	1.47E-07	8.96E-07	7.83E-06	2.87E-05	1.28E-05
Fluorene	8.29E-04	1.07E-07	3.44E-06	2.49E-05	1.93E-04	1.98E-04
Indeno(1,2,3-cd)pyrene[e]	5.27E-07	8.06E-10	4.42E-08	8.04E-07	0.00E+00	1.21E-07
Naphthalene[e]	4.90E-02	5.66E-05	9.99E-06	2.53E-04	3.48E-04	3.21E-04
Perylene	6.63E-07	0.00E+00			5.74E-06	5.65E-06
Phenanthrene	1.73E-03	1.63E-05	3.46E-06	7.93E-05	3.44E-04	2.08E-04
Pyrene	2.26E-04	1.07E-07	5.63E-07	7.21E-06	8.42E-05	3.85E-05
Non-HAP Organic Compounds						
Acetone[e]	0.00E+00	0.00E+00			1.05E-03	3.04E-04
Benzaldehyde	0.00E+00	0.00E+00				
Butane	1.05E-01	0.00E+00				
Butyraldehyde	0.00E+00	0.00E+00				
Crotonaldehyde[e]	0.00E+00	0.00E+00				
Ethylene	1.09E+00	0.00E+00			2.09E-02	4.61E-03
Heptane	1.47E+00	0.00E+00				
Hexanal	0.00E+00	0.00E+00				
Isovaleraldehyde	0.00E+00	0.00E+00				
2-Methyl-1-pentene	6.25E-01	0.00E+00				
2-Methyl-2-butene	9.06E-02	0.00E+00				
3-Methylpentane	2.97E-02	0.00E+00				
1-Pentene	3.44E-01	0.00E+00				
n-Pentane	3.28E-02	0.00E+00				
Valeraldehyde[e]	0.00E+00	0.00E+00				
Metals						
Antimony[e]	2.81E-05	0.00E+00				
Arsenic[e]	4.22E-05	4.40E-06				
Barium[e]	9.06E-04	0.00E+00				
Beryllium[e]	0.00E+00	9.26E-08				
Cadmium[e]	3.09E-05	1.33E-06				
Chromium[e]	8.59E-04	0.00E+00				
Cobalt[e]	4.06E-06	0.00E+00				
Copper[e]	4.84E-04	0.00E+00				
Hexavalent Chromium[e]	3.39E-05	8.26E-07				
Manganese[e]	1.20E-03	0.00E+00				
Mercury[e]	4.06E-04	0.00E+00				
Molybdenum[e]	0.00E+00	0.00E+00				
Nickel[e]	4.75E-03	2.82E-04				
Phosphorus[e]	4.38E-03	0.00E+00				
Silver[e]	7.50E-05	0.00E+00				
Selenium[e]	5.47E-05	0.00E+00				
Thallium[e]	6.41E-07	0.00E+00				
Vanadium[e]	0.00E+00	0.00E+00				
Zinc[e]	9.53E-03	0.00E+00				

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

MEMORANDUM

DATE: April 15, 2015

TO: Darrin Pampaian, Permit Writer, Air Program

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

PROJECT: P-2015.0008 PROJ 61509, Permit to Construct (PTC) for DePatco, Inc. 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

1.0 Summary

DePatco, Inc. (DePatco) submitted a Permit to Construct (PTC) application for operation of a portable hot mix asphalt (HMA) plant in Idaho. This memorandum provides a summary of the ambient air impact analyses performed by DEQ in support of the PTC application in the context of requirements set forth in the Idaho Administrative Procedures Act 58.01.01 (Idaho Air Rules).

Project-specific air quality impact analyses involving atmospheric dispersion modeling of estimated emissions associated with the proposed facility were performed to demonstrate that the facility would not cause or significantly contribute to a violation of any applicable ambient air quality standard, as required by Idaho Air Rules Section 203.02 and/or 203.03.

DEQ performed ambient air impact analyses for this project to demonstrate compliance with applicable National Ambient Air Quality Standards (NAAQS) and Toxic Air Pollutant (TAP) allowable ambient increments. DEQ's analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that the 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 evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. Evaluation of emissions estimates was the responsibility of the permit writer and is addressed in the main body of the Statement of Basis. Emissions estimates were not reviewed as part of the modeling review described in this modeling review memorandum.

The PTC application was initially received by DEQ on January 28, 2015.

The air quality impact analyses performed by DEQ: 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 pollutant-specific air impact assessments as per Idaho Air Rules Section 203.02 and/or 203.03 were not required because of the nature and quantity of emissions; 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 ambient air impacts exceeding allowable TAP increments.

Table 1 presents key assumptions and results to be considered in the development of the permit.

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

Table 1. KEY CONDITIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Maximum HMA throughput does not exceed 300 ton/hour, 3,750 ton/day, and 660,000 ton/year.	Short-term and annual modeling was performed assuming these rates.
For operations at a single site for more than 12 months in duration, maintain the following minimum setback distances between the nearest property boundary and the stacks of the drum dryer and the IC engines powering generators: 1) 820 feet (250 meters) when operating with IC engines; 2) 427 feet (130 meters) when operating without IC engines.	This setback distance is necessary to assure compliance with applicable air quality standards at ambient air locations. The applicant indicated that the HMA plant would not remain at a single location for more than 12 months. Setbacks for a period exceeding 12 months were provided for information purposes in the event that future permit changes are needed.
If the HMA plant does not remain at any single location for more than one year, then the following minimum setback distances will apply: 1) 394 feet (120 meters) when operating with IC engines; 2) 394 feet (120 meters) when operating without IC engines.	1-hour NO_2, 24-hour PM_{10}, and 24-hour $PM_{2.5}$ NAAQS compliance are the governing analyses for setback determination. Design values for NO_2 and $PM_{2.5}$ are based on 3-year averages. If the plant only operates in one location for a maximum of less than one year, then the design value impacts and resulting setbacks are reduced.
The plant will not operate during the winter season (December 1 through March 31).	Substantially greater setback distances would be needed if production was assumed for the winter season.
Co-contributing emissions sources such as other HMA plants, concrete batch plants, or rock crushing plants will not locate on the plant property and within 1,000 feet of the drum dryer stack of the HMA plant, except as noted below for a rock crushing plant. However, NAAQS compliance is assured for the HMA plant with a co-contributing rock crushing plant, provided it is not operated during any day when the HMA plant is operated and the annual actual throughput of the rock crushing plant is less than 500,000 ton/year.	Emissions are considered co-contributing if they occur within 1,000 feet (305 meters) of each other. Once the HMA plant is established at a specific site, that facility is not responsible for controlling other facilities from moving in nearby, provided they are not on the same property. Neighboring facilities would be required to account for the HMA impacts for their permitting analyses.
The HMA plant will not relocated to a site where there are co-contributing stationary emissions sources within 1,000 feet of the drum dryer stack except as noted for a rock crushing plant above.	After the HMA plant is established at a location, the permittee is not responsible for ensuring neighboring facilities do not move in.
DEQ Modeling staff contend that NAAQS compliance is assured for an HMA plant operating simultaneously (both within a given day) with a crushing plant, provided HMA daily throughput for that day is limited to half that normally allowed.	Decreased HMA throughput will offset potential impacts of a nearby crushing plant.
Fugitive emissions from vehicle traffic are controlled to a high degree.	Emissions from vehicle traffic on unpaved surfaces was assumed to be minimal and accounted for in the background concentrations used in the analyses.
Large diesel IC engine powering HMA operations generator: powered by an engine rated at >600 brake horsepower (bhp), having a power rating of equal or less than 1,105 bhp, have an EPA Tier 2 certification, and operating less than 12.5 hour/day.	Different combinations can be used if it is demonstrated that total emissions from generators are less than those modeled for these sources.
Small diesel IC engine powering a generator: powered by an engine having a combined power rating of equal of less than 67 bhp, have an EPA Tier 2 certification, and not operate simultaneously with the large operations generator.	Different combinations can be used if it is demonstrated that total emissions from generators are less than those modeled for these sources.
Emissions rates for applicable averaging periods are not greater than those used in the modeling analyses, as listed in this memorandum.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses.
Stack heights for the drum dryer and engines are as listed in this memorandum or higher.	NAAQS compliance is still assured if actual stack heights are greater than those listed in this memo.
NAAQS compliance is assured provided stack parameters of exhaust temperatures and flow rates are not less than about 75 percent of values listed in this memorandum.	Higher temperatures and flow rates increase plume rise, allowing the plume to disperse to a larger degree before impacting ground level.
The HMA plant will not locate in an area classified as non-attainment for any pollutants, or an area of concern identified by DEQ.	Compliance with NAAQS has not been demonstrated for operation of the plant in a non-attainment area or area where background concentrations are effectively above or very near the NAAQS.

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 HMA plant will be a portable facility. The impact analyses performed assumed that the HMA plant will only locate in areas designated as attainment or unclassifiable for all criteria pollutants, and the plant will not locate in areas of air quality concern, as identified by DEQ. Areas of concern are areas where background concentrations are effectively above or very near the applicable NAAQS.

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 Significant Impact Level (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 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

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. If the SIL analysis indicates the facility/modification has impacts exceeding the SIL, the facility might not have a significant contribution to violations if impacts are below the SIL at the specific receptors showing the violations during the time periods when modeled violations occurred.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or b) 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 c) 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.

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.*

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Impact Levels[a] ($\mu g/m^3$)[b]**	**Regulatory Limit[c] ($\mu g/m^3$)**	**Modeled 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	0.3	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]
	24-hour	5	365[m]	Maximum 2nd highest[n]
	Annual	1.0	80[r]	Maximum 1st highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 $\mu g/m^3$)	100 ppb[s] (188 $\mu g/m^3$)	Mean of maximum 8th highest[t]
	Annual	1.0	100[r]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1st highest[n]
	Quarterly	NA	1.5[r]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	75 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. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 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.
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.

Per Section 210, if the total project-wide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated. If a facility will only be located at a specific

site for less than five years, then allowable impacts of Idaho Air Rules Section 586 TAPs (carcinogens) are 10 times the AACC increment in Section 586, as per Idaho Air Rules Section 210.15.

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.

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 rates of criteria pollutants and TAPs for the DePatco HMA plant were provided by CENTRA Consulting, Inc. (CENTRA), DePatco's permitting consultant, for various applicable averaging periods. CENTRA used DEQ's HMA emissions calculation spreadsheet to calculate emissions for their proposed plant, given the specified equipment and requested operational rates. Review and approval of estimated emissions was the responsibility of the DEQ permit writer, and is not addressed in this modeling memorandum. DEQ modeling review included verification that the application's potential emissions rates were properly used in the model. The rates listed represent the maximum allowable rate as averaged over the specified period.

All modeled criteria air pollutant and TAP emissions rates were equal to or greater than the facility's emissions as calculated in the HMA emissions spreadsheet.

3.1.1 Criteria Pollutant Emissions Rates and Modeling Applicability

Table 3 lists criteria pollutant emissions rates used in the DEQ non-site-specific modeling analyses for the proposed HMA plant production rate, proposed operational configuration, and for all applicable averaging periods. Attachment 1 provides additional details of DEQ emissions calculations used in the modeling analyses.

Setback distances were calculated for four operational scenarios: 1) operations with the use of diesel-fired generators to supply electrical power; 2) operations without the use of diesel-fired generators; 3) operations with use of diesel-fired generators and at a single location not more than 12 months; operations without the use of diesel-fired generators and at a single location not more than 12 months.

Fugitive particulate emissions from frontend loader handling of aggregate materials and three conveyor transfers for the HMA plant 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 as indicated by the applicant. Emissions rates for LOADCONV are a function of wind speed and were varied in the model according to wind speed. Attachment 1 provides details on emissions calculations.

DEQ's air impact analyses assumed that the facility will not operate during the period of December 1 through March 31, as indicated by the applicant. Emissions were turned off in the model for this time period for all sources except LOADCONV. The MONTH factor in AERMOD, used to adjust emissions

as a function of month, could not be used simultaneously with the WSPEED factor to vary emissions as a function of windspeed.

Annual $PM_{2.5}$ pound/hour emissions were calculated in the spreadsheet by dividing annual emissions over 8,760 hours. However, the plant will only operate between April 1 and November 30, and emissions will only be included in the model for this time period. To properly model emissions, the annual emissions should be divided over 5,856 hours rather than 8,760 hours. To adjust the annual $PM_{2.5}$ pound/hour emissions rate in spreadsheet to what will be modeled, an adjustment factor of 8,760/5,856 was applied to the rate.

Table 3. EMISSIONS USED IN DEQ ANALYSES

Emissions Point in Model	Pollutant	Averaging Period	Emissions Rate (lb/hr)[a]
DRYER – drum dryer/mixer - emissions controlled by a baghouse - emissions include silo filling emissions (SILO) that are captured and routed back through the drum dryer.	$PM_{2.5}$	24-hour	3.576[b]
		Annual	2.579[c]
	PM_{10}	24-hour	3.686[b]
	NOx	1-hour	16.50
		Annual	6.199[c]
SILO – asphalt storage silo	Emissions captured and routed back to drum dryer		
LOAD – asphalt loadout	$PM_{2.5}$	24-hour	0.08155[b]
		Annual	0.05882[c]
	PM_{10}	24-hour	0.08155[b]
GEN1 – electrical generator - 1,105 hp diesel engine; - 12.5 hr/day, 2,200 hr/yr; - 0.05% sulfur diesel; - Tier 2 certified	$PM_{2.5}$	24-hour	0.2686[b]
		Annual	0.1937[c]
	PM_{10}	24-hour	0.6280[b]
	NOx	1-hour	29.68
		Annual	11.15
GEN2 – electrical generator - 67 hp diesel engine; - 24 hr/day, 2,200 hr/yr; - 0.05% sulfur diesel; - Tier 2 certified	$PM_{2.5}$	24-hour	0.01573[b,d]
		Annual	0.01233[c]
	PM_{10}	24-hour	0.02111[b,d]
	NOx	1-hour	0.0[d]
		Annual	0.3104[c]
HOTOIL – asphalt oil heater	$PM_{2.5}$	24-hour	0.01124[b]
		Annual	0.007677[c]
	PM_{10}	24-hour	0.01678[b]
	NOx	1-hour	0.1751
		Annual	0.1196[c]
LOADCONV – aggregate handling by frontend loader and conveyor transfers	$PM_{2.5}$	24-hour	0.08166[b,e]
		Annual	0.05890[c,e]
	PM_{10}	24-hour	0.5394[b,e]
SCREEN – scalping screen	$PM_{2.5}$	24-hour	0.001950[b]
		Annual	0.001407[c]
	PM_{10}	24-hour	0.1305[b]

a. Pounds per hour emissions rate used in modeling analyses for specified averaging periods.

b. Calculated by multiplying the daily throughput or daily operational hours by the emissions factor, then dividing by 24.

c. Emissions rate is equal to annual emissions divided over 5,856 hours/year (April 1 through November 30 operation).

d. GEN2 will not operate simultaneously with GEN1 and other sources at the facility while asphalt is produced. For 24-hour averaged rates the maximum impact scenario is 12.5 hours of operation by GEN1 and 11.5 hours of operation by GEN2.

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

Pollutant-Specific Applicability of Impact Analyses

DEQ's regulatory interpretation policy of permit exemption provisions of Idaho Air Rules (Policy on NAAQS Compliance Demonstration Requirements, DEQ policy memorandum, July 11, 2014) 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." 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 submitted emissions inventory asserts that facility-wide PTE emissions of SO_2 and Pb are below BRC levels, as listed in Table 4. Therefore, a NAAQS compliance demonstration for SO_2 and Pb per Idaho Air Rules Section 203.02 is not required for permit issuance.

Table 4. CRITERIA POLLUTANT NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY

Criteria Pollutant	BRC Level (ton/year)	Applicable Facility Wide PTE Emissions (ton/year)	NAAQS Compliance Demonstration Required?
PM_{10}[a]	1.5	9.00	Yes
$PM_{2.5}$[b]	1.0	7.98	Yes
Carbon Monoxide (CO)	10.0	52.34	Yes
Sulfur Dioxide (SO_2)	4.0	3.56	No
Nitrogen Oxides (NOx)	4.0	52.06	Yes
Lead (Pb)	0.06	0.0050	No
Ozone as VOC or NOx	4.0	11.67	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.

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 emissions 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* (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. The modeling threshold for Pb was set to assure compliance with the NAAQS, since there is no SIL for Pb.

Emissions of CO were not modeled to evaluate impacts to ambient air because facility-wide emissions were below the DEQ Level II Modeling Thresholds of 175 pounds/hour for CO.

Annual NOx estimated emissions of 52 ton/year exceeded the 14 ton/year Level II modeling threshold, but annual NO_2 was not modeled because DEQ determined that 1-hour NO_2 modeling results would be far more restrictive because of the increased relative stringency of the 1-hour NO_2 standard as compared to the annual standard and the reduced annual hours of operation.

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. The submitted emissions inventory identified that potential increases of several Idaho Air Rules Section 585 and Section 586 TAPs could exceed screening emissions levels (ELs). Table 5 lists those TAPs having potential emissions exceeding ELs of Idaho Air Rules Sections 585 or 586. Potential increases in emissions of other TAPs identified in the application were all less than applicable ELs. Table 5 lists modeled emissions of TAPs.

Emissions rates input to the model were 1,000 times greater than those listed in Table 5. This was done because AERMOD output resolution is limited to 1 E-5 $\mu g/m^3$, which is near the AACC of several Section 586 TAPs. Correct modeled impacts were obtained by dividing the model output by 1,000, as model output varies linearly with emissions rates.

Table 5. MODELED TAP EMISSIONS RATES

TAP	Averaging Period	Emissions Rates for Listed Sources (Pounds/Hour)[a]			
		Drum Dryer[b] (DRYR)	Silo Filling[b] (DRYR)	Oil Tank Heater (HEAT)	Asphalt Loadout (LOUT)
Benzene	Annual	2.938E-2	2.938E-4		1.629E-4
Formaldehyde	Annual	2.336E-1	6.335E-3	1.166E-5	2.757E-4
PAH[c]	Annual	4.897E-2	3.481E-4	5.665E-5	3.211E-4
POM[d]	Annual	4.127E-5	5.088E-5	3.332E-7	3.466E-5
Arsenic	Annual	4.219E-7		4.399E-6	
Cadmium	Annual	3.089E-5		1.326E-6	
Hexavalent Chromium	Annual	3.390E-5		8.264E-7	
Nickel	Annual	4.747E-3		2.816E-4	

a. For the 24-hour averaging period, emissions are maximum daily allowable emissions divided by 24 hour/day. For the annual averaging period, emissions are maximum allowable annual emissions divided over 8,760 hours/year.
b. Emissions from silo filling are captured, channeled back to the drum dryer, and emitted from the drum dryer stack. Modeled emissions from DRYR are the sum of Drum Dryer emissions and Silo Filling emissions.
c. Polyaromatic Hydrocarbons. Naphthalene was the PAH with the highest emissions rate.
d. Polycyclic Organic Matter.

3.1.3 Emissions Release Parameters

Table 6 provides emissions release parameters for the analyses, including stack height, stack diameter, exhaust temperature, and exhaust velocity. Additional details are provided in Attachment 1.

Table 6. EMISSIONS RELEASE PARAMETERS

Release Point /Location	Source Type	Stack Height (m)[a]	Modeled Diameter (m)	Stack Gas Temp. (K)[b]	Stack Gas Flow Velocity (m/sec)[c]
DRYER	Point	11.6	1.19	408	21.5
GEN1	Point	4.0	0.328	897	44.6
GEN2	Point	1.5	0.102	556	44.6
HOTOIL	Point	2.4	0.305	478	0.61
LOADOUT	Point	3.5	3.0	346	0.1
Volume Sources					
Release Point /Location	**Source Type**	**Release Height (m)**	**Initial Horizontal Dispersion Coefficient σ_{y0} (m)**	**Initial Vertical Dispersion Coefficient σ_{z0} (m)**	
LOADCONV	Volume	2.5	4.65	1.16	
SCREEN	Volume	3.0	0.70	0.70	

a. Meters
b. Kelvin
c. Meters per second

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

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

3.2 Background Concentrations

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources not explicitly modeled. Table 7 lists reasonably conservative background concentrations for Idaho. Ozone background concentrations were used in the 1-hour NO_2 modeling analysis to more accurately account for conversion of NO to NO_2.

Background concentration values were obtained by using a background concentration tool developed by the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST) and provided through Washington State University (located at http://lar.wsu.edu/nw-airquest/lookup.html). The tool uses regional scale modeling of pollutants in Washington, Oregon, and Idaho, with model results adjusted according to available monitoring data. DEQ used the background concentration tool to determine design value concentrations at the following locations: Mountain Home, Boise, Nampa, Coeur d'Alene, McCall, St. Maries, Pocatello, Soda Springs, Payette, Rathdrum, Lewiston, Grangeville, Star, Twin Falls, Blackfoot, Plummer, Sandpoint, Kamiah, Idaho Falls, Burley, Middleton, Caldwell, and Post Falls. 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.

Table 7. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	24-hour	85.8
$PM_{2.5}$[c]	24-hour	23.7
	Annual	8.27
Nitrogen dioxide (NO_2)	1-hour	65.5
	Annual	11.1
Ozone (O_3)	1-hour	59.9

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

3.3 NAAQS Impact Modeling Methodology

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

3.3.1 General Overview of Analyses

DEQ performed non-site-specific analyses that were considered to be reasonably representative of the proposed HMA plant, and the results demonstrated compliance with applicable air quality standards to DEQ's satisfaction, provided specified setbacks and operational restrictions are maintained. Alternatively, site-specific air impact analyses, demonstrating compliance with NAAQS and TAP increments, could be performed for those locations where the setback requirement cannot be achieved.

Non-site-specific modeling was used because of the portable nature of the HMA plant. Results of the analyses were used to establish setback distances between locations of primary emissions points and the property boundary of the HMA plant.

Table 8 provides a brief description of parameters used in the modeling analyses.

Table 8. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Portable	All locations not within non-attainment areas.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 14134
Meteorological Data	Multiple Data Sets	See Section 3.3.5
Terrain	Flat	The analyses assumed flat terrain for the immediate area
Building Downwash	Considered	No substantial structures were identified in the application. Downwash for the enclosure of the large generator was considered in the analyses.
Receptor Grid	Grid 1	Polar grid with 10-meter downwind spacing out 200 meters
	Grid 2	Polar grid with 25-meter downwind spacing out 400 meters
	Grid 3	Polar grid with 50-meter downwind spacing out 700 meters

3.3.2 Modeling protocol and Methodology

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

3.3.3 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 14134 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 PVMRM

The Plume Volume Molar Ratio Method (PVMRM) was used with AERMOD to provide a more refined estimate of 1-hour NO_2 concentrations at specific receptors. Table 9 lists the data and parameters used for PVMRM. Background NO_2 and O_3 concentrations, as specified in Section 3.2, were used in PVMRM to estimate the conversion of NO to NO_2.

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

Table 9. PARAMETERS AND DATA FOR PVMRM

Parameter	Value	Source/Comments
NO_2/NOx Ratio for Emissions	0.5 for dryer, 0.2 for the large generator. The smaller engine was not used in the 1-hour NO_2 impact analysis because it was conservatively assumed that the larger generator was operating at all times. 0.1 was used for the oil heater.	0.5 is an EPA suggested default when source-specific data are not available.
Ambient Equilibrium for NO_2/NOx	0.90	Default value.
NO_2 and O_3 background concentrations	$NO_2 = 65.5\ \mu g/m^3$ $O_3 = 59.9$ ppb	The mean + standard deviation concentration from selected areas in Idaho, as determined by the NW AIRQUEST background concentration tool (see Section 3.2), was used as a background value.

3.3.5 Meteorological Data

Because of the portable nature of the HMA plant, DEQ used up to 11 different meteorological datasets from various locations in Idaho to assure compliance with applicable standards for the non-site-specific analyses. Table 10 lists the meteorological datasets used in the air impact analyses.

Table 10. METEOROLOGICAL DATA SETS USED IN MODELING ANALYSES

Surface Data	Upper Air Data	Years
Boise[a]	Boise	2008-2012
Spokane[a]	Spokane, Wa	2008-2012
Idaho Falls[a]	Boise	2008-2012
Burley[a]	Boise	2008-2012
Coeur d'Alene	Spokane, Wa	2008-2012
Twin Falls[a]	Boise	2008-2012
Jerome[a]	Boise	2008-2012
Pocatello[a]	Boise	2008-2012
Lewiston[a]	Spokane, WA	2008-2012
McCall[a]	Boise	2008-2012
Sandpoint	Spokane, Wa	2008-2012

a. Processed using AERMINUTE.

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 emissions points associated with HMA plants are near ground-level and the immediate surrounding area is typically flat for dispersion modeling purposes. Emissions sources near ground-level typically have maximum pollutant impacts near the source, minimizing the potential affect of surrounding terrain to influence the magnitude of maximum modeled impacts.

3.3.7 Facility Layout

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

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 2-meter square structure, 3-meters high. No other substantial structures were identified in the application. Downwash effects from equipment or other minor structures at the site were not accounted for because much of the equipment is porous with regard to wind, thereby minimizing downwash effects

3.3.9 Ambient Air Boundary

DEQ's non-site-specific analysis methods, using a generic facility layout, were used to generate minimum setback distances between emissions points and the property boundary or the established boundary to ambient air (if not the same as the property boundary). Ambient air is any area where the general public (anyone not under direct control of the HMA plant) has access. Compliance with NAAQS is not demonstrated unless setback distances are maintained.

3.3.10 Receptor Network and Generation of Setback Distances

A polar grid with 10-meter receptor spacing extending out to 250 meters, 25-meter spacing extending out to 400 meters, and 50-meter spacing extending out to 700 meters was used in the non-site-specific modeling performed by DEQ. Additional receptors were added in refined modeling to more precisely define the required setback. To establish a setback distance, the following procedure was followed for the requested production level and operational configuration:

1) Appropriate emissions rates were modeled and background concentrations were added to the resulting impact levels.

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

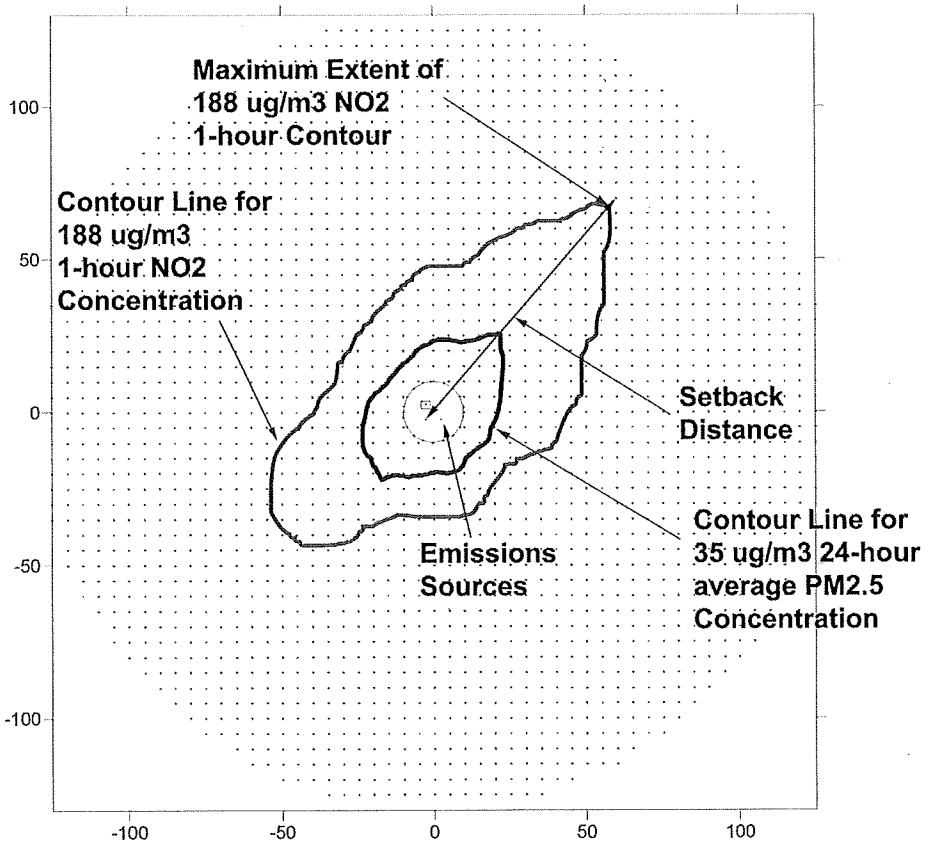
3) The controlling receptor for each pollutant, averaging period, and meteorological data set was identified. First, the receptor having a concentration in excess of the NAAQS that was the

furthest from the center of the facility was identified. The controlling receptor was the next furthest downwind receptor from that point.

4) The minimum required setback distance was calculated. This was the furthest distance between the center of the facility (the drum dryer stack) and the controlling receptor.

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

Figure 1 - Determination of Setback Distance for a Modeling Run



3.3.11 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 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 65.5 $\mu g/m^3$ was used for 1-hour NO_2, a value of 23.7 $\mu g/m^3$ was used for 24-hour $PM_{2.5}$, and a value of 8.27 $\mu g/m^3$ was used for annual $PM_{2.5}$. These values represent design value background concentrations as described in Section 3.2.

The 5-year mean of modeled 1-hour NO_2, 24-hour $PM_{2.5}$, and annual $PM_{2.5}$ design values for each year was used for the m_1 value rather than the design value for an individual year. Considering other conservative measures in the analyses, DEQ determined this method was adequately conservative.

The 1-hour NO_2 model results were in the form of the 5-year mean of the 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:

$$y = ((m_1 + 65.5\ \mu g/m^3) + 65.5\ \mu g/m^3 + 65.5\ \mu g/m^3) / 3$$
$$= ((m_1 + 65.5\ \mu g/m^3) + 131.0\ \mu g/m^3) / 3$$
$$= (m_1 + 65.5\ \mu g/m^3)/3 + 43.7\ \mu g/m^3$$

The 24-hour $PM_{2.5}$ model results were in the form of the 5-year mean of the 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 $PM_{2.5}$:

$$y = (m_1 + 23.7\ \mu g/m^3 + 23.7\ \mu g/m^3 + 23.7\ \mu g/m^3) / 3$$
$$= (m_1 + 71.1\ \mu g/m^3) / 3$$
$$= m_1/3 + 23.7\ \mu g/m^3$$

The annual $PM_{2.5}$ model results were in the form of the 5-year mean of the 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 $PM_{2.5}$:

$$y = (m_1 + 8.27\ \mu g/m^3 + 8.27\ \mu g/m^3 + 8.27\ \mu g/m^3) / 3$$
$$= (m_1 + 24.81\ \mu g/m^3) / 3$$
$$= m_1/3 + 8.27\ \mu g/m^3$$

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 a 5-year period, this translates into a design value of the 6th

highest 24-hour concentration at a specific receptor. If the HMA is only operating for a single year, with the source not present for the remaining two years, then only a single year of meteorological data would be modeled and the 4th highest modeled value would be used (assuming a constant background).

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 Throughput Rates	300 ton/hr, 3,750 ton/day, 660,000 ton/yr
Co-Contributing Sources	The HMA plant will not move into an area where there is a co-contributing stationary emissions source within 1,000 feet of the drum dryer stack. Also, co-contributing emissions sources will not locate on the plant property and within 1,000 feet of emissions points of the HMA, except as noted below for a rock crushing plant. A rock crushing plant could be operated at the site provided it is not operated during any day when the HMA plant is operated and annual throughput is less than 500,000 ton/yr. Alternatively, a rock crusher could be operated simultaneously (both operating in a given day) with the HMA plant provided the HMA throughput for that day does not exceed a value of half that otherwise allowed.
Drum Dryer	Drum dryer fueled by natural gas, propane, or diesel with a baghouse for emissions control.
Electrical Power	Line power or generators powered by diesel-fired IC engines with the following characteristics: 1) a large generator powered by a 1,105 bhp, EPA Tier 2 certified engine, burning 0.05% sulfur diesel fuel, operating less than 12.5 hr/day; 2) a small generator powered by a engine of less than 67 bhp, EPA Tier 2 certified engine, burning 0.05% sulfur diesel fuel, operating up to 24 hr/day. The two engines will not operate simultaneously.
Large Generator Stack Parameters	Stack height ≥13 ft, unobstructed release to the atmosphere
Small Generator Stack Parameters	Stack height ≥5 ft, unobstructed release to the atmosphere
Dryer Stack Parameters	Stack height ≥37.9 ft, stack diameter ≈47 in, gas temp ≥ 275° F, flow velocity ≥70 ft/sec.
Asphalt Silo Filling	Emissions are captured and routed back into 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) aggregate to storage pile; 2) aggregate from pile to hopper.
Seasonal Restriction	The HMA plant will not operate during the period between December 1 and March 31.

4.0 Impact Modeling Results

4.1 Results for NAAQS Cumulative Impact Level Analyses and TAP Impact 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 stack location. Attachment 2 provides calculated setback distances for individual impact analyses.

The PM_{10} required setback did not change for operations of less than one year. This results because one year of meteorological data can often drive the PM_{10} analyses.

Table 12. SETBACK DISTANCES AS A FUNCTION OF THROUGHPUT AND OPERATIONAL CONFIGURATION		
HMA Configuration Scenario	**Setback (ft (m))**	**Controlling Pollutant**
300 ton HMA/hr, 3,750 ton HMA/dy, 660,000 ton HMA/yr operating with or without two generator engines - operations not more than 12 months at any one location	394 (120)	24-hr PM_{10}
Operation at rates listed above and with operation of generators - operational duration of greater than 12 months at any one location.	820 (250)	1-hr NO_2
Operation at rates listed above and without operation of generators - operational duration of greater than 12 months at any one location.	427 (130)	TAPs

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 concrete plant, or other permitted facility. DEQ modeling staff established a rule-of-thumb distance of 1,000 feet from emissions sources at the HMA plant where emissions from a nearby source/facility would need to be considered in the air impact analyses for the HMA plant. Emissions sources located beyond 1,000 feet are considered to be too distant to have a measureable impact on receptors substantially impacted by the HMA plant.

HMA plants commonly co-locate with rock crushing plants. Since the 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 submitted with the PTC application demonstrated to DEQ's satisfaction that emissions from the DePatco HMA in areas not classified as non-attainment will not cause or significantly contribute to a violation of any ambient air quality standard.

ATTACHMENT 1

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

HMA Plant Modeled Emissions Rates

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

Drum Dryer Emissions

DePatco's consultant, CENTRA, used the DEQ-provided HMA spreadsheet to calculate emissions rates for various averaging periods.

The default NO_2/NOx ratio of 0.5 was used for this source. DEQ determined this was a reasonable estimate, given the lack of data for this type of emissions source.

Asphalt Loadout

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

Asphalt Silo Filling

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

Asphalt Tank Heater Emissions

DePatco calculated emissions from the asphalt oil heater based on 24 hour/day operation, using natural gas.

An NO_2/NOx ratio of 0.1 was used for this source.

Power Generator

The application indicated two diesel engines may be operated at the HMA plant to power electrical generators: 1) an EPA Tier 2 certified 1,105 bhp diesel engine operating up to 12.5 hr/day and 2,200 hr/year; 2) an EPA Tier 2 certified 67 bhp diesel engine operating up to 24 hr/day and 2,200 hr/year. Emissions estimates were calculated assuming the engines will combust diesel with a maximum 0.05% sulfur content.

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

- 1-hour NO_2, 1-hour SO_2, and CO: Hourly emissions from the larger generator are larger than those from the small generator, and the larger generator operates along with the drum dryer; therefore, maximum impacts will occur when the larger generator is operating and the smaller generator is not operating.

- 24-hour $PM_{2.5}$, 24-hour PM_{10}: daily emissions are a mix of both the large and small generator operations. The application states that each generator may operate up to 12.5 hr/day. Therefore maximum daily generator PM emissions associated with operation of the HMA plant would be from 12.5 hours operation of the large generator and 11.5 hours operation of the small generator.

  Large Generator Daily $PM_{2.5}$:

$$\frac{0.4301 \text{ lb } PM_{2.5}}{\text{hr}} \left| \frac{12.5 \text{ hr}}{24 \text{ hr}} \right. = \frac{0.2686 \text{ lb}}{\text{hr}}$$

Small Generator Daily $PM_{2.5}$:

$$\frac{0.03283 \text{ lb } PM_{2.5}}{\text{hr}} \left| \frac{11.5 \text{ hr}}{24 \text{ hr}} \right. = \frac{0.01573 \text{ lb}}{\text{hr}}$$

- Annual emissions: Calculated using specified annual operating hours of 2,200 hour/year for the large generator and 2,200 hour/year for the small generator.

  Large Generator Annual $PM_{2.5}$:

$$\frac{0.5157 \text{ lb } PM_{2.5}}{\text{hr}} \left| \frac{2,200 \text{ hr}}{5,856 \text{ hr}} \right. = \frac{0.1937 \text{ lb}}{\text{hr}}$$

  Small Generator Annual $PM_{2.5}$:

$$\frac{0.03283 \text{ lb } PM_{2.5}}{\text{hr}} \left| \frac{2,200 \text{ hr}}{5,856 \text{ hr}} \right. = \frac{0.01233 \text{ lb}}{\text{hr}}$$

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: $0.053(0.0032)\frac{(10/5)^{1.3}}{(3/2)^{1.4}} = 2.367\,E-4$ 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 3,750 ton/day HMA and 660,000 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 $PM_{2.5}$:

$$\frac{2.367\text{ E-4 lb } PM_{2.5}}{\text{ton}} \left| \frac{3{,}600\text{ ton}}{\text{day}} \right| \frac{\text{day}}{24\text{ hr}} \left| \frac{2\text{ transfers}}{} \right. = \frac{0.07101\text{ lb}}{\text{hr}}$$

Annual $PM_{2.5}$:

$$\frac{2.367\text{ E-4 lb } PM_{2.5}}{\text{ton}} \left| \frac{633{,}600\text{ ton}}{\text{yr}} \right| \frac{\text{yr}}{5{,}856\text{ hour}} \left| \frac{2\text{ transfers}}{} \right. = \frac{0.05122\text{ lb}}{\text{hr}}$$

Emissions from the three conveyor transfers are as follows:

Daily $PM_{2.5}$:

$$\frac{2.367\text{ E-4 lb } PM_{2.5}}{\text{ton}} \left| \frac{3{,}600\text{ ton}}{\text{day}} \right| \frac{\text{day}}{24\text{ hr}} \left| \frac{3\text{ transfers}}{} \right| \frac{(1\text{-}0.90)}{} = \frac{0.01065\text{ lb}}{\text{hr}}$$

Annual $PM_{2.5}$:

$$\frac{2.367\text{ E-4 lb } PM_{2.5}}{\text{ton}} \left| \frac{633{,}600\text{ ton}}{\text{yr}} \right| \frac{\text{yr}}{5{,}856\text{ hour}} \left| \frac{3\text{ transfers}}{} \right| \frac{(1\text{-}0.90)}{} = \frac{0.007683\text{ lb}}{\text{hr}}$$

Total aggregate handling emissions:

Daily $PM_{2.5}$: 0.07101 lb/hr + 0.01065 lb/hr = 0.08166 lb/hr
Annual $PM_{2.5}$: 0.05122 lb/hr + 0.007683 lb/hr = 0.05890 lb/hr

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

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

σ_{yo} = 20 m / 4.3 = 4.65 m

σ_{zo} = 5 m / 4.3 = 1.16 m

Screening Emissions

This 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 5,000 ton/day HMA and 325,000 ton/year HMA, emissions are as follows:

Scalping Screen (controlled emissions):

Daily $PM_{2.5}$:

$$\frac{0.000130\text{ lb } PM_{10}}{\text{ton}} \left| \frac{3{,}600\text{ ton}}{\text{day}} \right| \frac{\text{day}}{24\text{ hour}} \left| \frac{(1\text{-}0.90)}{} \right. = \frac{0.001950\text{ lb}}{\text{hr}}$$

Annual $PM_{2.5}$:

$$\frac{0.000130\text{ lb } PM_{10}}{\text{ton}} \left| \frac{633{,}600\text{ ton}}{\text{yr}} \right| \frac{\text{yr}}{5{,}856\text{ hour}} \left| \frac{(1\text{-}0.90)}{} \right. = \frac{0.001407\text{ lb}}{\text{hr}}$$

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

σ_{yo} = 3 m / 4.3 = 0.70 m
σ_{zo} = 3 m / 4.3 = 0.70 m

HMA Plant Modeling Parameters

Dryer baghouse Stack

Release height = 11.6 meters; effective diameter of release area = 1.19 meters;
typical stack gas temperature = 408 K; typical flow velocity = 21.5 meters/second

Asphalt Silo Filling

Emissions are captured and routed back to the drum dryer.

Asphalt Loadout

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

Aggregate to and from Storage and Conveyor Transfers

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

Initial dispersion coefficients:

σ_{y0} = 20 m / 4.3 = 4.65 m

σ_{z0} = 5 m / 4.3 = 1.16 m

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

Asphalt Oil Heater

Parameters were provided by Knife River. Release height = 2.4 meters; effective diameter of release area = 0.305 meters; typical stack gas temperature = 478 K; typical flow velocity = 0.61 meters/second.

Power Generator

Stack height of the large operations generator (GEN1) = 3.96 m. The stack height of the small generator (GEN2) = 1.71 m.

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

DEQ modeled the operations generator emissions at an exit gas temperature of 897 K and the smaller generator emissions at 556 K. Exhaust flows were calculated using the following formula from the State of Washington Department of Ecology (Washington State Department of Ecology. *Suitability of Diesel-Powered Emergency Generators for Air Quality General Order of Approval: Evaluation of Control Technology, Ambient Impacts, and Potential Approval Criteria.* June 23, 2006):

Flow = 0.284 m^3/(sec·100·hp)

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

The final point source parameters for the1105 hp engine (GEN1) were as follows:

Stack height = 3.96 m; stack diameter = 0.299 meters; stack gas temperature = 897K; flow velocity = 44.6 meters/second.

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

Stack height = 1.71 m; stack diameter = 0.074 meters; stack gas temperature = 556 K; flow velocity = 44.6 meters/second.

An NO_2/NOx ratio of 0.2 was used for the engines. This is a moderately conservative value based on review of such sources in EPA's NO_2/NOx database available on the SCRAM website (http://www.epa.gov/ttn/scram/guidance/guide/NO2_ISR_alpha_database.slsx).

ATTACHMENT 2

CALCULATED SETBACK DISTANCES FOR

DEQ'S AIR IMPACT ANALYSES

Setback Distances for Specific Pollutants, Averaging Periods, and Meteorological Datasets			
Meteorological Data	**Setback (m)**	**Setback (m)**	**Setback (m)**
NO_2 1-hour Modeling Results	**300 ton/hr throughput, with engines**	**300 ton/hr throughput, without engines**	**300 ton/hr throughput, with engines, < 1yr**
Burley	**250**	**<50**	<50
Sandpoint	170	<50	60
McCall	100	<50	<50
Boise	180	<50	60
Jerome	250	<50	**80**
Spokane	170	<50	<50
Twin Falls	120	<50	60
Coeur d'Alene	225	<50	<50
Pocatello	180	<50	80
Idaho Falls	200	<50	80
Lewiston	190	<50	<50
$PM_{2.5}$ 24-hour Modeling Results	**3,750 ton/day throughput, with engines**	**3,750 ton/day throughput, without engines**	**3,750 ton/day throughput, with engines, < 1yr**
Burley	**100**	**90**	**<50**
Sandpoint	80	70	<50
McCall	60	60	<50
Boise	90	90	<50
Jerome	90	80	<50
Spokane	100	90	<50
Twin Falls	70	60	<50
Coeur d'Alene	100	90	<50
Pocatello	70	60	<50
Idaho Falls	80	80	<50
Lewiston	60	<50	<50
PM_{10} 24-hour Modeling Results	**3,750 ton/day throughput, with engines**	**3,750 ton/day throughput, without engines**	**3,750 ton/day throughput, with engines, < 1yr**
Burley	110	110	
Sandpoint	80	80	
McCall	80	80	
Boise	100	100	
Jerome	100	100	
Spokane	**120**	**120**	**120**[a]
Twin Falls	80	80	
Coeur d'Alene	110	110	
Pocatello	70	70	
Idaho Falls	100	100	
Lewiston	80	80	

a. Based on the 4th high concentration from using meteorological data from 2010. Since this value exceeds the setback obtained from modeling all five years of meteorological data and using the 6th high concentrations, a shorter PM_{10} setback distance cannot be used for operations limited to one year or less.

Setback Distances for Specific Pollutants, Averaging Periods, and Meteorological Datasets			
Meteorological Data	**Setback (m)**	**Setback (m)**	**Setback (m)**
$PM_{2.5}$ Annual Modeling Results	**660,000 ton/yr throughput, with engines**	**660,000 ton/yr throughput, with engines**	**660,000 ton/yr throughput, < 1yr operation**
Burley	70	60	<50
Sandpoint	60	<50	<50
McCall	<50	<50	<50
Boise	70	70	<50
Jerome	60	60	<50
Spokane	60	60	<50
Twin Falls	60	60	<50
Coeur d'Alene	60	60	<50
Pocatello	60	60	<50
Idaho Falls	60	60	<50
Lewiston	<50	<50	<50

TAPs Modeling Results for 660,000 ton/yr throughput	**Setback (meters) With or Without Generators**	**< 1 Yr Operations Setback (meters)**
Arsenic AACC = 2.3 E-4 µg/m^3		
Boise met	<50 (max = 1.6 E-4 µg/m^3)	
Benzene AACC = 1.2 E-1 µg/m^3		
Boise met	<50 (max = 1.5 E-2 µg/m^3)	
Cadmium AACC = 5.6 E-4 µg/m^3		
Boise met	<50 (max = 4.8 E-5 µg/m^3)	
Chromium 6+ AACC = 8.3 E-5 µg/m^3		
Boise met	<50 (max = 3.0 E-5 µg/m^3)	
Formaldehyde AACC = 7.7 E-2 µg/m^3		
Boise met	<50 (max = 3.5 E-2 µg/m^3)	
Naphthalene (PAH) AACC = 1.4 E-2 µg/m^3		
Boise met	<50 (max = 1.0 E-2 µg/m^3)	
Nickel AACC = 4.2 E-3 µg/m^3		
Boise met	130	<50
Idaho Falls met	120	<50
Burley met	80	
Spokane met	90	
Twin Falls	80	
Coeur d'Alene met	90	
Sandpoint met	90	
Pocatello met	70	
Jerome met	70	
Lewiston met	80	
McCall met	80	
POM AACC = 3.0 E-4 µg/m^3		
Burley met	90	
Spokane met	90	
Coeur d'Alene met	90	
Idaho Falls met	90	
Twin Falls met	90	
Jerome met	80	
Boise met	110	
Pocatello met	80	
Sandpoint met	80	

APPENDIX C – PROCESSING FEE

PTC Fee Calculation

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

Company: DePatco, Inc. - 00552
Address: Portable
City:
State: ID
Zip Code:
Facility Contact: Greg Stoddard
Title: Facility permitting contact
AIRS No.: 777-00552

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

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	32.2	0	32.2
SO_2	3.5	0	3.5
CO	51.5	0	51.5
PM10	8.5	0	8.5
VOC	14.7	0	14.7
TAPS/HAPS	0.0	0	0.0
Total:	0.0	0	**110.4**
Fee Due	**$ 500.00**		

Comments: