Spidell and Associates
2403 Spaulding, Boise, Idaho 83705
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DE/AFS/SF

June 1, 2007

William Rogers
Permit Coordinator
Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706

RECEIVED
JUN - 7 2007
DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE OFFICE

RE: Submittal of American Paving, Inc. Permit Modification to Combust Waste Oil.

Mr. Rogers,

Tony Martarano of American Paving, Inc. ask me to forward the attached copies of American Paving, Inc. Permit Modification Application to combust waste oil. I have also attached a copy of the check and receipt for the Application Fee.

Please contact me at 336-4862 should you need further information or have any questions.

Sincerely,

Ron Spidell

enclosures: 2 Copies of Application, Copy of Application Fee check and receipt.

cc: with enclosure: Tony Martarano, American Paving, Inc.

IDAHO DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton
Boise, Idaho 83706-1253

RECEIPT

060707
DATE

RECEIVED FROM AMERICAN PAVING CO

SOURCE
Cash ☐ Check ☑ Money Order ☐ No. 7419

DESCRIPTION	AMOUNT OF PAYMENT
APPLICATION FEES	1000 00
PERMIT	

RECEIVED BY [signature]

TOTAL RECEIVED 1000 00

PID	OBS	CA	SUB-OBJ	WP	BE

Nº 82817

APPLICATION FOR A PERMIT TO MODIFY AN EXISTING SOURCE

American Paving Company
ADM Milemaker 160
Portable Hot Mix Asphalt Plant

Prepared For: Craig Gibson
President
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June 1, 2007

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1. PURPOSE

This permit application is being submitted by American Paving, Inc. to satisfy the requirements of IDAPA 58.01.01.200 for the modification of their Permit to Construct Number 777-00123. Currently the dryer burner is permitted for distilled fuel oil, residual oil, natural gas or propane. American Paving would like to modify the permit to allow for used oil to also be used to fire the dryer burner.

2. FACILITY DESCRIPTION

The facility is a portable ADM drum mix hot mix asphalt plant. An 800 kW generator supplies power to the plant when line power is not available.

3. EQUIPMENT LISTING

Portable Hot Mix Asphalt Plant

Manufacturer / Model:	ADM / MM 160
Type	Counter flow Drum Mix
Maximum Rated Output:	160 tons/hr
Burner	49.3 MMBtu Power Star SJP 260
Control Device	ADM Baghouse
Stack Diameter	2.23ft.
Stack Height	33 ft.

800 kW Generator

Manufacturer / Model:	Cummins / Model DFHB 60 Hz
Rated Output:	800 kW
Fuel Type:	#2 Fuel Oil
Control Device	None
Stack Diameter	0.67 ft.
Stack Height	13 ft.

Asphalt Heater

Manufacturer / Model:	HyWay / Model # 58 SFGL
Rated Output:	1.41 MMBtu
Fuel Type:	#2 Fuel Oil
Control Device	None
Stack Diameter	0.833 ft.
Stack Height	12 ft.

4. EMISSION INVENTORY

4.1 Drum Mix Dryer Emissions

Emission estimates for the drum mix dryer exhaust were calculated from emission factors in AP-42 Section 11.1. PM/PM-10 emissions were estimated using the grain loading limit in 40 CFR 60.92 of 0.04 gr/dscf and an average flow rate of 11,684 dry standard cubic feet per minute from the September 1995 performance test results. Potential emissions for the criteria air pollutants and toxic air pollutants exceeding the emission screening levels are shown in Table 1.

Table 1. Drum Mix Hot Mix Asphalt Plant
Potential Criteria Emissions

Maximum Rated Production (t/hr)	160
Potential Annual Production (tons/yr)	1,401,600
Dryer Stack Exhaust Flow (dscf/min)	11,684

Criteria Pollutant	Emission Factor (lb/ton)	Potential Emissions (lb/hr)	Potential Emissions (tons/yr)
PM/PM-10	0.04 gr/dscf	4.006	17.546
SO2	0.0580	9.280	40.646
NOx	0.0550	8.800	38.544
CO	0.1300	20.800	91.104
VOC	0.0320	5.120	22.426
Lead	1.50E-05	0.002	0.011

Toxic Air Pollutant Non-Carcinogens	Emission Factor (lb/ton)	Potential Emissions (lb/hr)	Potential Emissions (tons/yr)	Emission Screening Level (EL) (lb/hr)
None	----	----	----	----
Carcinogens				
Acetaldehyde	1.30E-03	2.080E-01	0.911	3.00E-03
Arsenic	5.60E-07	8.960E-05	3.924E-04	1.50E-06
Benzene	3.90E-04	6.240E-02	0.273	8.00E-04
Cadmium	4.10E-07	6.560E-05	2.873E-04	3.70E-06
Chromium, Hexavalent	4.50E-07	7.200E-05	3.154E-04	5.60E-07
Dioxin and Furans (TEQ)	5.71E-11	9.141E-09	4.004E-08	1.50E-10
Formaldehyde	3.10E-03	4.960E-01	2.172	5.10E-04
Nickel	6.30E-05	1.008E-02	0.044	2.70E-05
Polyaromatic Hydrocarbons	5.48E-07	8.765E-05	3.839E-04	2.00E-06

Example calculations for PM/PM-10 emissions based on the grain loading limit and NOX emissions from the AP-42 emission factor are shown below.

$$\text{lb/hr PM/PM}-10 = \frac{(0.04\ \text{gr/dscf})(11{,}684\ \text{dscf/min})(60\ \text{min/hr})}{7{,}000\ \text{lb/gr}} = 4.006\ \text{lb PM/PM10/hr}$$

$$\text{lb/hr NOx} = (160\ \text{tons asphalt/hr})(0.055\ \text{lb NOx/ton Asphalt}) = 8.80\ \text{lb NOx/hr}$$

An air dispersion screen model of the drum dryer exhaust was performed to determine the compliance status of the criteria and toxic air pollutants. The screen model showed a maximum 1-hr concentration of 3.425 μg/m³ at

an emission rate of 1 lb/hr. Details of the screen model are included in Appendix B. The screen model analysis showed no violation of the National Ambient Air Quality Standard (NAAQS) for criteria air pollutants. Two of the toxic air pollutants, formaldehyde and nickel, did exceeded the acceptable ambient concentration for carcinogens (AACC) at the potential emission rate. To meet the AACC for formaldehyde and nickel, the annual asphalt production will be limited. Using the annual persistence factor of 0.125 gives an annual concentration of 0.4281 μg/m³ at the 1 lb/hr emission rate. The maximum asphalt that can be produced without exceeding the 90% of the AACC for formaldehyde can be calculated.

$$\text{Maximum Formaldehyde Emissions} = \frac{\left(\text{AACC}\,\dfrac{7.7\text{E}-2\,\mu\text{g}}{\text{m}^3}\right)\left(\dfrac{8{,}760\text{ hr}}{\text{yr}}\right)}{\text{Modeled Annual Conc.}\,\dfrac{0.4281\,\mu\text{g/m}^3}{\text{lb/hr}}} = 1{,}575.6\text{ lb formaldehyde / year}$$

$$\text{Asphalt Production Limit} = \frac{\text{Formaldehyde Emission Limit}\,\dfrac{1{,}575.6\text{ lb}}{\text{yr}}}{\text{Formaldehyde Emission Factor}\,\dfrac{3.1\text{E}-3\text{ lb}}{\text{ton Asphalt}}} \times 0.9 = 457{,}432.3\text{ tons of Asphalt / year}$$

A proposed asphalt production limit of 250,000 tons of asphalt per year would comply with the ambient air quality standards. Table 2 summarizes the emissions at the production limit.

Table 2 Emission Limits Drum Mix Hot Mix Asphalt Plant

Maximum Rated Production (tons/hr)		160	
Limited Annual Production (tons/yr)		250,000	
Dryer Stack Exhaust Flow (dscf/min)		11,684	
Criteria Pollutant	**Emission Factor (lb/ton)**	**Actual Emissions (lb/hr)**	**(tons/yr)**
PM/PM-10	0.0400	4.01	3.13
SO2	0.0580	9.28	7.25
NOx	0.0550	8.80	6.88
CO	0.1300	20.80	16.25
VOC	0.0320	5.12	4.00
Lead	1.50E-05	2.40E-03	1.88E-03

Toxic Air Pollutant Non-Carcinogens	**Emission Factor (lb/ton)**	**Actual Emissions Potential (lb/hr)**	**Average (lb/hr)**	**(tons/yr)**
None	----	----	----	----
Carcinogens				
Acetaldehyde	1.30E-03	2.08E-01	3.710E-02	1.625E-01
Arsenic	5.60E-07	8.96E-05	1.598E-05	7.000E-05
Benzene	3.90E-04	6.24E-02	1.113E-02	4.875E-02
Cadmium	4.10E-07	6.56E-05	1.170E-05	5.125E-05
Chromium, Hexavalent	4.50E-07	7.20E-05	1.284E-05	5.625E-05
Dioxin and Furans (TEQ)	5.71E-11	9.14E-09	1.630E-09	7.141E-09
Formaldehyde	3.10E-03	4.96E-01	8.847E-02	3.875E-01
Nickel	6.30E-05	1.01E-02	1.798E-03	7.875E-03
Polyaromatic Hydrocarbons	5.48E-07	8.76E-05	1.563E-05	6.848E-05

4.2 Generator Emissions

Emission estimates for the 800 kW generator were calculated using emission factors from AP-42 Section 3.4. The emission factors are in units of lb/MMBtu. Factors of 1.341 hp/kW and a brake specific fuel consumption (BSFC) of 7,000 Btu/hp-hr were used to calculate the heat input of the generator. Table 3 summarizes the criteria and toxic air pollutant emission estimates for the 800 kW generator. An example calculation for PM_{10} is also shown below.

Table 3. 800 kW Generator Emissions

Operating Parameters	
Generator Size (kw) =	800
Generator Size (hp) =	1,072.80
Fuel Heat Value (Btu/gal) =	137,000
BSFC (Btu/hp-hr) =	7,000
Heat Input (MMBtu/hr) =	7.51
Fuel Burned (gal/hr) =	54.81
Potential Fuel Burned (MM gal/yr) =	0.48
Potential Operating Hours (hr/yr) =	8,760
Limited Actual Operating Hours (hr/yr) =	2,083

Criteria Pollutant	Emission Factor lb/MMBtu	Potential Emissions (lb/hr)	Potential Emissions (tons/yr)	Actual Emissions (lb/hr)	Actual Emissions (tons/yr)
PM-10	0.100	0.751	3.29	0.751	0.782
SO2	0.505	3.792	16.61	3.792	3.950
NOx	3.200	24.031	105.25	24.031	25.028
CO	0.850	6.383	27.96	6.383	6.648
VOC	0.090	0.676	2.96	0.676	0.704
Lead	----	----	----	----	----

Toxic Air Pollutant Non-Carcinogenic	Emission Factor lb/MMBtu	Potential Emissions (lb/hr)	Potential Emissions (tons/yr)	Actual Emissions (lb/hr)	Actual Emissions (tons/yr)
None	-----	-----	-----	-----	-----
Carcinogenic					
Acetaldehyde	2.52E-05	1.892E-04	8.289E-04	4.500E-05	1.971E-04
Benzene	7.76E-04	5.827E-03	2.552E-02	1.386E-03	6.069E-03
Formaldehyde	7.89E-05	5.925E-04	2.595E-03	1.409E-04	6.171E-04
Polyaromatic Hydrocarbons	4.50E-06	3.377E-05	1.479E-04	8.030E-06	3.517E-05

$$\text{lb/hr } PM_{10} = \frac{(800\text{ kW})\left(\frac{1.341\text{ hp}}{\text{kW}}\right)\left(\frac{7{,}000\text{ Btu}}{\text{hp}-\text{hr}}\right)(0.1\text{ lb } PM_{10}/\text{MMBtu})}{\left(\frac{1{,}000{,}000\text{ Btu}}{\text{MMBtu}}\right)} = 0.751\text{ lb } PM_{10}/\text{hr}$$

Potential NOx emissions from the generator exceed 100 tons per year. Because the generator only operates while the facility is producing asphalt and the annual asphalt production is limited to 250,000 tons per year, the annual operating hours for the generator will also be limited. Assuming an average hourly asphalt production

rate of 75% of the potential asphalt production rate of 160 tons/hr the actual operating hours for the generator can be estimated. $\frac{\text{Limited Annual Asphalt Production 250,000 tons / yr}}{(\text{Potential Asphalt Production Rate 160 tons / hr})(0.75)} = 2{,}083 \text{ hrs / yr}$

4.3 Asphalt Tank Heater Emissions

Emission estimates for the 1.41 MMBtu oil fired heater used to heat the liquid asphalt were calculated from emission factors in AP-42 1.3 using a fuel heating value of 137,000 Btu per gallon and 2,083 annual hours of operation.

Table 4. Tank Heater Emissions

Operating Parameters	
Heat Input (MMBtu/hr) =	1.41
Fuel Heat Value (Btu/gal) =	137,000
Operating Hours (hr/yr) =	2,083
Fuel Consumption (gal/hr) =	10.29
Fuel Consumption (MM gal/yr) =	0.021

Criteria Pollutants	Emission Factor lb/1,000 gal	Actual Emissions (lb/hr)	(tons/yr)
PM-10	2 + 1.3	0.034	0.035
SO2 (0.5% S)	142(S)	0.731	0.761
NOx	20	0.206	0.214
CO	5	0.051	0.054
VOC	0.252	0.003	0.003
Lead	1.26E-03	1.297E-05	1.351E-05
TAPS Carcigenic			
Arsenic	5.60E-04	5.764E-06	6.003E-06
Cadmium	4.20E-04	4.323E-06	4.502E-06

4.4 Fugitive Emissions

Emission estimates for fugitive emissions associated with load-out and silo filling operations were calculated using predictive emission factor equations found in Table 11.1-14 of AP-42. Default values of –0.5 for asphalt volatility and 325 °F for asphalt mix temperature were used in the calculations. The calculated emission factors are shown in Table 5. An example calculation used to develop the emission factors is also shown.

Table 5. Emission Factors for Load-out and Silo Filling Operations

Parameters for HMA Fugitive Emissions	
Asphalt Volatility (V)	-0.5
HMA Mix Temp (°F)	325
Maximum Hourly Production Rate (tons/hr)	160
Annual Production Limit (tons/yr)	250,000

Emission Source	Pollutant	Predictive Emission Equation	Emission Factor (lb/ton)
Plant Load-out	Total PM	$EF = 0.000181 + 0.00141(-V)e^{((0.0251)(T + 460) - 20.43)}$	5.219E-04
	Organic PM	$EF = 0.00141(-V)e^{((0.0251)(T + 460) - 20.43)}$	3.409E-04
	TOC	$EF = 0.0172(-V)e^{((0.0251)(T + 460) - 20.43)}$	4.159E-03
	CO	$EF = 0.00558(-V)e^{((0.0251)(T + 460) - 20.43)}$	1.349E-03
Silo Filling	Total PM	$EF = 0.000332 + 0.00105(-V)e^{((0.0251)(T + 460) - 20.43)}$	5.859E-04
	Organic PM	$EF = 0.00105(-V)e^{((0.0251)(T + 460) - 20.43)}$	2.539E-04
	TOC	$EF = 0.0504(-V)e^{((0.0251)(T + 460) - 20.43)}$	1.219E-02
	CO	$EF = 0.00488(-V)e^{((0.0251)(T + 460) - 20.43)}$	1.180E-03

$$\text{Silo Filling Total PM Emission Factor (EF)} = 0.000332 + 0.00105\left(-V\right)e^{((0.0251)(T + 460) - 20.43)}$$
$$= 0.000332 + 0.00105\left(-\left(-0.5\right)\right)e^{((0.0251)(325 + 460) - 20.43)}$$
$$= 0.000332 + 0.00105\left(0.5\right)e^{-0.7265} = 5.859\text{E} - 04 \text{ lb PM / ton}$$

Fugitive emissions for the criteria air pollutants are summarized in Table 6.

Table 6. Criteria Air Pollutant Emission Estimates for Load-out and Silo Filling Operations

Maximum Hourly Production Rate (tons/hr)	160
Annual Production Limit (tons/yr)	250,000

Fugitive Source	Criteria Pollutant	Emission Factor (lb/ton)	Actual Emissions (lb/hr)	Actual Emissions (tons/yr)
Plant Load-out	PM	5.219E-04	0.084	0.065
	CO	1.349E-03	0.216	0.169
	VOC	4.159E-03	0.665	0.520
Silo Filling	PM	5.859E-04	0.094	0.073
	CO	1.180E-03	0.189	0.147
	VOC	1.219E-02	1.950	1.523

Toxic air pollutant emissions from the load-out and silo filling operations are summarized in Table 7. The emissions were estimated using the speciation profiles of organic particulate-based compounds found in Table 11.1-15 and of organic volatile-based compounds found in Table 11.1-16 of AP42.

Table 7. Toxic Air Pollutant Emission Estimates for Load-out and Silo Filling Operations

Maximum Hourly Production Rate (tons/hr)	160
Annual Production Limit (tons/yr)	250,000

Toxic Air Pollutant	Organic Particulate-Based Emission Factors						
	% of Organic PM		Load-out	Silo Filling	Total	Emissions	
Non-Carcinogenic	Load-out	Silo Filling	lb/ton	lb/ton	lb/ton	(lb/hr)	(tons/yr)
Naphthalene	1.25E+00	1.82	4.262E-06	4.621E-06	8.882E-06	1.421E-03	1.110E-03
Phenol	1.18E+00	ND	4.023E-06	ND	4.023E-06	6.437E-04	5.029E-04
Carcinogenic							
Benzo(a)pyrene	2.30E-03	ND	7.842E-09	ND	7.842E-09	1.255E-06	9.802E-07
Polyaromatic Hydrocarbons	-----	-----	4.601E-07	6.753E-07	1.135E-06	1.817E-04	1.419E-04
Benzo(a)anthracene	1.90E-02	0.056	6.478E-08	1.422E-07	2.070E-07	-----	-----
Benzo(b)fluoranthene	7.60E-03	ND	2.591E-08	ND	2.591E-08	-----	-----
Benzo(k)fluoranthene	2.20E-03	ND	7.501E-09	ND	7.501E-09	-----	-----
Chrysene	1.03E-01	0.21	3.512E-07	5.332E-07	8.843E-07	-----	-----
Dibenzo(a,h)anthracene	3.70E-04	ND	1.261E-09	ND	1.261E-09	-----	-----
Indeno(1,2,3-cd)pyrene	4.70E-04	ND	1.602E-09	ND	1.602E-09	-----	-----
Benzo(a)pyrene	2.30E-03	ND	7.842E-09	ND	7.842E-09	-----	-----

Toxic Air Pollutant	Organic Volatile-Based Emission Factors						
	% of TOC		Load-out	Silo Filling	Total	Emissions	
Non-Carcinogenic	Load-out	Silo Filling	lb/ton	lb/ton	lb/ton	(lb/hr)	(tons/yr)
Acetone	0.046	0.055	1.913E-06	6.703E-06	8.616E-06	1.379E-03	1.077E-03
Carbon Disulfide	0.013	0.016	5.407E-07	1.950E-06	2.491E-06	3.985E-04	3.113E-04
Cumene	0.11	ND	4.575E-06	ND	4.575E-06	7.320E-04	5.719E-04
Ethylbenzene	0.28	0.038	1.165E-05	4.631E-06	1.628E-05	2.604E-03	2.034E-03
Hexane	0.15	0.1	6.238E-06	1.219E-05	1.843E-05	2.948E-03	2.303E-03
Methyl ethyl ketone	0.049	0.039	2.038E-06	4.753E-06	6.791E-06	1.087E-03	8.488E-04
Styrene	0.0073	0.0054	3.036E-07	6.581E-07	9.617E-07	1.539E-04	1.202E-04
Toluene	0.21	0.062	8.734E-06	7.556E-06	1.629E-05	2.606E-03	2.036E-03
Trichloroethene	0	ND	0	ND	0	0.000E+00	0
o, m, p, Xylene	0.41	0.2	1.705E-05	2.437E-05	4.143E-05	6.628E-03	5.178E-03
Carcinogenic							
Benzene	0.052	0.032	2.163E-06	3.900E-06	6.062E-06	9.700E-04	7.578E-04
Formaldehyde	0.088	0.69	3.660E-06	8.409E-05	8.775E-05	1.404E-02	1.097E-02
Methylene Chloride	0	0.00027	0	3.290E-08	3.290E-08	5.265E-06	4.113E-06
Tetrachloroethene	0.0077	ND	3.202E-07	ND	3.202E-07	5.124E-05	4.003E-05

Fugitive emissions from aggregate handling were calculated using the predictive emissions equation 1 in AP 42 13.3.4. The amount of aggregate handled per hour and annually was estimated assuming 95% of the asphalt produced is composed of aggregate.

TABLE 8. Fugitive Emissions From Aggregate Handling

Tons Aggregate Transferred per hour	152
Tons Aggregate Transferred per year	232,750

	Emission Factor		Actual Emissions			
	PM	PM10	PM		PM10	
Source	lb/ton	lb/ton	lb/hr	tons/yr	lb/hr	tons/yr
Agg. Trans to Bins	5.33E-03	2.02E-03	0.8102	0.6203	0.3070	0.2351
Agg. Trans to Conv.	5.33E-03	2.02E-03	0.8102	0.6203	0.3070	0.2351
Agg. Trans to Dryer	5.33E-03	2.02E-03	0.8102	0.6203	0.3070	0.2351
		Total	**2.4305**	**1.8608**	**0.9211**	**0.7052**

TABLE 9. Fugitive Emissions From VehicleTraffic

	Plant Road	Loader Path
Round Trip Distance (miles)	0.25	0.125
Tons Hauled per Round Trip	18	6.5
Tons Hauled per hour	160.0	152.0
Tons Hauled per year	250,000	237,500
Vehicle Miles Traveled per hour	2.22	2.92
Vehicle Miles Traveled per Year	3,472.22	4,567.31

						Emission Factor		Actual Emissions			
						PM	PM_{10}	PM		PM_{10}	
Vehicle	s	S	W	w	p	(lb/VMT)	(lb/VMT)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
Asphalt Truck	4.8	5	20	14	90	2.092	0.753	4.649	3.632	1.674	1.308
Loader	4.8	5	6.25	4	90	0.495	0.178	1.4480	0.4073	0.5213	0.4073
							TOTAL	**6.097**	**4.039**	**2.195**	**1.715**

5.0 Air Dispersion Modeling

Air dispersion modeling of the asphalt plant dryer stack, the 800 kW generator and the asphalt heater was performed using SCREEN 3. The maximum one-hour impact using a 1 lb/hr emission rate for the three sources is shown below:

Asphalt Plant Dryer Stack	3.425 $\mu g/m^3$
800 kW Generator Stack	13.88 $\mu g/m^3$
Asphalt Heater Stack	212.3 $\mu g/m^3$

The. To calculate longer-term concentrations for the screen model generated 1-hour maximum concentrations, the following persistence factors were used:

3-hr	0.9
8-hr	0.7
24hr	0.4
Quarterly	0.225
Annual	0.08 - Criteria air pollutants
Annual	0.125 - Toxic air pollutants

To calculate the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants, Idaho Department of Environmental Quality small town / suburban background concentrations:

PM_{10}	24-hr	81 $\mu g/m^3$
	Annual	27 $\mu g/m^3$
CO	1-hr:	10,200 $\mu g/m^3$
	8-hr:	3,400 $\mu g/m^3$
NO_2	Annual:	32 $\mu g/m^3$
SO_2	3-hr:	42 $\mu g/m^3$
	24-hr:	26 $\mu g/m^3$
	Annual:	8 $\mu g/m^3$
Pb	Quarterly	0.03 $\mu g/m^3$

Table 10 shows the results of the NAAQS Analysis for the criteria air pollutants. The ambient air assessments for the toxic air pollutants are shown in Table 11.

Table 10. Full Impact NAAQS Analysis for Criteria Air Pollutants

Source	Dryer Stack	Generator	Heater
Screen Modeled 1-hr Concentration at 1 lb/hr (μg/m³)	3.425	12.82	212.3
3-hr Concentration at 0.9 Persistence Factor (μg/m³)	3.0825	11.538	191.07
8-hr Concentration at 0.7 Persistence Factor (μg/m³)	2.3975	8.974	148.61
24-hr Concentration at 0.4 Persistence Factor (μg/m³)	1.37	5.128	84.92
Quarterly Concentration at 0.225 Persistence Factor (μg/m³)	0.770625	2.885	47.768
Annual Concentration at 0.08 Persistence Factor (μg/m³)	0.274	1.0256	16.984

Pollutant	Averaging Period	Emission Rates Dryer Stack (lb/hr)	Generator (lb/hr)	Heater (lb/hr)	Dryer Impact (μg/m³)	Generator Impact (μg/m³)	Heater Impact (μg/m³)
PM-10	24-hour	4.006	0.751	0.034	5.4881	3.8509	2.8842
	Annual				1.0976	0.7702	0.5768
Sulfur Dioxide (SO_2)	3-hour	9.28	3.792	0.731	28.6056	43.7561	139.6206
	24-hour				12.7136	19.4472	62.0536
	Annual				2.54272	3.8894	12.4107
Nitrogen Dioxide (NO_2)	Annual	8.800	24.031	0.206	2.4112	24.6459	3.4960
Carbon Monoxide (CO)	1-hour	20.80	6.383	0.051	71.2400	81.8321	10.9249
	8-hour				49.8680	57.2825	7.6474
Lead	Quarterly	0.002	0.00	1.297E-05	1.85E-03	0.0000	0.0006

Pollutant	Averaging Period	Total Impact (μg/m³)	Background Concentration (μg/m³)	Total Ambient Concentration (μg/m³)	Regulatory Limit (μg/m³)	Percent of NAAQS
PM-10	24-hour	12.2232	81.0	93.2	150.0	62.15
	Annual	2.4446	27.0	29.4	50.0	58.89
Sulfur Dioxide (SO_2)	3-hour	211.9823	42.0	254.0	1,300.0	19.54
	24-hour	94.2143	26.0	120.2	365.0	32.94
	Annual	18.8429	8.0	26.8	80.0	33.55
Nitrogen Dioxide (NO_2)	Annual	30.5531	32.0	62.6	100.0	62.55
Carbon Monoxide (CO)	1-hour	163.9970	10,200.0	10,364.0	40,000	25.91
	8-hour	114.7979	3,400.0	3,514.8	10,000	35.15
Lead	Quarterly	0.0025	3.00E-02	0.0	1.5	2.16

Table 11. Acceptable Ambient Concentration Analysis for Toxic Air Pollutants

Source	Dryer Stack	Generator	Heater
Screen Modeled 1-hr Concentration at 1 lb/hr (μg/m³)	3.425	12.82	212.3
Annual Concentration at 0.125 Persistence Factor (μg/m³)	0.4281	1.6025	26.5375

Toxic Air Pollutant	Averaging Period	Emission Rates Dryer (lb/hr)	Generator (lb/hr)	Heater (lb/hr)	Dryer Impact (μg/m³)	Generator Impact (μg/m³)	Heater Impact (μg/m³)
Acetaldehyde	Annual	3.710E-02	1.37E-03		1.588E-02	2.195E-03	
Arsenic	Annual	1.598E-05		1.370E-06	6.842E-06		3.637E-05
Benzene	Annual	1.113E-02	1.67E-03	5.237E-07	4.765E-03	2.670E-03	1.390E-05
Cadmium	Annual	1.170E-05		1.028E-06	5.009E-06		2.728E-05
Chromium, Hexavalent	Annual	1.284E-05			5.498E-06		
Dioxin and Furans (TEQ)	Annual	8.724E-11			3.735E-11		
Formaldehyde	Annual	8.847E-02	2.107E-03	8.076E-05	3.788E-02	3.377E-03	2.143E-03
Nickel	Annual	1.798E-03		1.028E-06	7.697E-04		2.728E-05
Polyaromatic Hydrocarbons	Annual	1.563E-05	6.13E-06	2.858E-08	6.693E-06	9.824E-06	7.586E-07

Toxic Air Pollutant	Averaging Period	Total Impact (μg/m³)	AACC (μg/m³)	Percent of AACC
Acetaldehyde	Annual	1.808E-02	4.50E-01	4.02
Arsenic	Annual	4.321E-05	2.30E-04	18.79
Benzene	Annual	7.449E-03	1.20E-01	6.21
Cadmium	Annual	3.229E-05	5.60E-04	5.77
Chromium, Hexavalent	Annual	5.498E-06	8.30E-05	6.62
Dioxin and Furans (TEQ)	Annual	3.735E-11	2.20E-08	0.17
Formaldehyde	Annual	4.340E-02	7.70E-02	56.36
Nickel	Annual	7.970E-04	4.20E-03	18.98
Polyaromatic Hydrocarbons	Annual	1.728E-05	3.00E-04	5.76

APPENDIX A

Emission Factors

American Paving Company
ADM Milemaker 160
Hot Mix Asphalt Plant

HOT-MIX ASPHALT PLANT DRUM DRYER EMISSION FACTORS
American Paving Company

	Fuel Oil		Waste Oil	
Criteria Pollutants	lb/ton	Source	lb/ton	Source
PM-10 (Drum Mix w/Fabric Filter)	2.30E-02	AP42 Tbl 11.1-3 (3/04)	2.30E-02	AP42 Tbl 11.1-3 (3/04)
SO2	1.10E-02	AP42 Tbl 11.1-7 (3/04)	5.80E-02	AP42 Tbl 11.1-7 (3/04)
NOx	5.50E-02	AP42 Tbl 11.1-7 (3/04)	5.50E-02	AP42 Tbl 11.1-7 (3/04)
CO	1.30E-01	AP42 Tbl 11.1-7 (3/04)	1.30E-01	AP42 Tbl 11.1-7 (3/04)
VOC	3.20E-02	AP42 Tbl 11.1-8 (3/04)	3.20E-02	AP42 Tbl 11.1-8 (3/04)
Lead	1.50E-05	AP42 Tbl 11.1-12 (3/04)	1.50E-05	AP42 Tbl 11.1-12 (3/04)
Non-Criteria				
PM	3.30E-02	AP42 Tbl 11.1-3 (3/04)	3.30E-02	AP42 Tbl 11.1-3 (3/04)
Beryllium	0.00E+00	AP42 Tbl 11.1-12 (3/04)	0.00E+00	AP42 Tbl 11.1-12 (3/04)
Mercury	2.60E-06	AP42 Tbl 11.1-12 (3/04)	2.60E-06	AP42 Tbl 11.1-12 (3/04)
TAPS Non-Carcinogenic				
Acetone			8.30E-04	AP42 Tbl 11.1-10 (3/04)
Acrolein			2.60E-05	AP42 Tbl 11.1-10 (3/04)
Antimony	1.80E-07	AP42 Tbl 11.1-12 (3/04)	1.80E-07	AP42 Tbl 11.1-12 (3/04)
Barium	5.80E-06	AP42 Tbl 11.1-12 (3/04)	5.80E-06	AP42 Tbl 11.1-12 (3/04)
Chromium	5.50E-06	AP42 Tbl 11.1-12 (3/04)	5.50E-06	AP42 Tbl 11.1-12 (3/04)
Cobalt	2.60E-08	AP42 Tbl 11.1-12 (3/04)	2.60E-08	AP42 Tbl 11.1-12 (3/04)
Copper	3.10E-06	AP42 Tbl 11.1-12 (3/04)	3.10E-06	AP42 Tbl 11.1-12 (3/04)
Crotonaldehyde			8.60E-05	AP42 Tbl 11.1-10 (3/04)
Ethyl benzene	2.40E-04	AP42 Tbl 11.1-12 (3/04)	2.40E-04	AP42 Tbl 11.1-10 (3/04)
Heptane	9.40E-03	AP42 Tbl 11.1-10 (3/04)	9.40E-03	AP42 Tbl 11.1-10 (3/04)
Hexane	9.20E-04	AP42 Tbl 11.1-12 (3/04)	9.20E-04	AP42 Tbl 11.1-10 (3/04)
Hydrogen Chloride (HCL)	ND	AP42 Tbl 11.1-8 (3/04)	2.10E-04	AP42 Tbl 11.1-8 (12/00)
Manganese	7.70E-06	AP42 Tbl 11.1-12 (3/04)	7.70E-06	AP42 Tbl 11.1-12 (3/04)
Mercury	2.60E-06	AP42 Tbl 11.1-12 (3/04)	2.60E-06	AP42 Tbl 11.1-12 (3/04)
Methyl Chloroform (1,1,1 Trichloroethane)	4.80E-05	AP42 Tbl 11.1-10 (3/04)	4.80E-05	AP42 Tbl 11.1-10 (3/04)
Methyl ethyl ketone			2.00E-05	AP42 Tbl 11.1-10 (3/04)
Naphthalene	6.50E-04	AP42 Tbl 11.1-10 (3/04)	6.50E-04	AP42 Tbl 11.1-10 (3/04)
Pentane	2.10E-04	AP42 Tbl 11.1-10 (3/04)	2.10E-04	AP42 Tbl 11.1-10 (3/04)
Phosphorous	2.80E-05	AP42 Tbl 11.1-12 (3/04)	2.80E-05	AP42 Tbl 11.1-12 (3/04)
Propionaldehyde			1.30E-04	AP42 Tbl 11.1-10 (3/04)
Quinone			1.60E-04	AP42 Tbl 11.1-10 (3/04)
Selenium	3.50E-07	AP42 Tbl 11.1-12 (3/04)	3.50E-07	AP42 Tbl 11.1-12 (3/04)
Silver	4.80E-07	AP42 Tbl 11.1-12 (3/04)	4.80E-07	AP42 Tbl 11.1-12 (3/04)
Thallium	4.10E-09	AP42 Tbl 11.1-12 (3/04)	4.10E-09	AP42 Tbl 11.1-12 (3/04)
Toluene	2.90E-03	AP42 Tbl 11.1-10 (3/04)	2.90E-03	AP42 Tbl 11.1-10 (3/04)
2,2,4-Trimethyl-pentane (Isooctane)	4.00E-05	AP42 Tbl 11.1-10 (3/04)	4.00E-05	AP42 Tbl 11.1-10 (3/04)
Valeraldehyde			6.70E-05	AP42 Tbl 11.1-10 (3/04)
o-Xylene	2.00E-04	AP42 Tbl 11.1-10 (3/04)	2.00E-04	AP42 Tbl 11.1-10 (3/04)
Zinc	6.10E-05	AP42 Tbl 11.1-12 (3/04)	6.10E-05	AP42 Tbl 11.1-12 (3/04)
TAPS Carcinogenic				
Acetaldehyde			1.30E-03	AP42 Tbl 11.1-10 (3/04)
Arsenic	5.60E-07	AP42 Tbl 11.1-12 (3/04)	5.60E-07	AP42 Tbl 11.1-12 (3/04)
Benzene	3.90E-04	AP42 Tbl 11.1-10 (3/04)	3.90E-04	AP42 Tbl 11.1-10 (3/04)
Beryllium	0.00E+00	AP42 Tbl 11.1-12 (3/04)	0.00E+00	AP42 Tbl 11.1-12 (3/04)
Benzo(a)pyrene	9.80E-09	AP42 Tbl 11.1-10 (3/04)	9.80E-09	AP42 Tbl 11.1-10 (3/04)
Cadmium	4.10E-07	AP42 Tbl 11.1-12 (3/04)	4.10E-07	AP42 Tbl 11.1-12 (3/04)
Chromium, Hexavalent	4.50E-07	AP42 Tbl 11.1-12 (3/04)	4.50E-07	AP42 Tbl 11.1-12 (3/04)
Dioxin and Furans	1.20E-10	AP42 Tbl 11.1-10 (3/04)	1.20E-10	AP42 Tbl 11.1-10 (3/04)
Heptachlorodibenzo-p-dioxins (0.010)	1.90E-11	AP42 Tbl 11.1-10 (3/04)	1.90E-11	AP42 Tbl 11.1-10 (3/04)
Heptachlorodibenzo-p-furans (0.010)	1.10E-11	AP42 Tbl 11.1-10 (3/04)	1.10E-11	AP42 Tbl 11.1-10 (3/04)
Hexachlorodibenzo-p-dioxins (0.100)	1.20E-11	AP42 Tbl 11.1-10 (3/04)	1.20E-11	AP42 Tbl 11.1-10 (3/04)
Hexachlorodibenzo-p-Furans (0.100)	1.30E-11	AP42 Tbl 11.1-10 (3/04)	1.30E-11	AP42 Tbl 11.1-10 (3/04)
Octachlorodibenzo-p-dioxins (0.001)	2.50E-11	AP42 Tbl 11.1-10 (3/04)	2.50E-11	AP42 Tbl 11.1-10 (3/04)
Octachlorodibenzo-p-furans (0.001)	4.80E-12	AP42 Tbl 11.1-10 (3/04)	4.80E-12	AP42 Tbl 11.1-10 (3/04)
Pentachlorodibenzo-p-dioxins (0.500)	2.20E-11	AP42 Tbl 11.1-10 (3/04)	2.20E-11	AP42 Tbl 11.1-10 (3/04)
Pentachlorodibenzo-p-furans (0.500)	8.40E-11	AP42 Tbl 11.1-10 (3/04)	8.40E-11	AP42 Tbl 11.1-10 (3/04)
Tetrachlorodibenzo-p-dioxins (1.000)	9.30E-13	AP42 Tbl 11.1-10 (3/04)	9.30E-13	AP42 Tbl 11.1-10 (3/04)
Tetrachlorodibenzo-p-furans (0.100)	3.70E-12	AP42 Tbl 11.1-10 (3/04)	3.70E-12	AP42 Tbl 11.1-10 (3/04)
Formaldehyde	3.10E-03	AP42 Tbl 11.1-10 (3/04)	3.10E-03	AP42 Tbl 11.1-10 (3/04)
Nickel	6.30E-05	AP42 Tbl 11.1-12 (3/04)	6.30E-05	AP42 Tbl 11.1-12 (3/04)
Polyaromatic Hydrocarbons (PAH or POM)				
Benzo(a)anthracene	2.10E-07	AP42 Tbl 11.1-10 (3/04)	2.10E-07	AP42 Tbl 11.1-10 (3/04)
Benzo(b)fluoranthene	1.00E-07	AP42 Tbl 11.1-10 (3/04)	1.00E-07	AP42 Tbl 11.1-10 (3/04)
Benzo(k)fluoranthene	4.10E-08	AP42 Tbl 11.1-10 (3/04)	4.10E-08	AP42 Tbl 11.1-10 (3/04)
Chrysene	1.80E-07	AP42 Tbl 11.1-10 (3/04)	1.80E-07	AP42 Tbl 11.1-10 (3/04)
Dibenzo(a,h)anthracene				
Indeno(1,2,3-cd)pyrene	7.00E-09	AP42 Tbl 11.1-10 (3/04)	7.00E-09	AP42 Tbl 11.1-10 (3/04)
Benzo(a)pyrene	9.80E-09	AP42 Tbl 11.1-10 (3/04)	9.80E-09	AP42 Tbl 11.1-10 (3/04)
Total PAH				

DIESEL GENERATOR EMISSION FACTORS

American Paving Company

Criteria Pollutants	Emission Factor (lb/MMBtu)	Source
PM/PM-10	1.00E-01	AP42 Tbl 3.4-1 (10/96)
SO2	5.05E-01	AP42 Tbl 3.4-1 (10/96)
NOx	3.2	AP42 Tbl 3.4-1 (10/96)
CO	8.50E-01	AP42 Tbl 3.4-1 (10/96)
VOC	9.00E-02	AP42 Tbl 3.4-1 (10/96)
Toxic Air Pollutant Non-Carcinogenic		
Acrolein	7.88E-06	AP42 Tbl 3.4-3 (10/96)
Napthalene	1.30E-04	AP42 Tbl 3.3-2 (10/96)
Toluene	2.81E-04	AP42 Tbl 3.4-3 (10/96)
Xylenes	1.93E-04	AP42 Tbl 3.4-3 (10/96)
Carcigenic		
Acetldehyde	2.52E-05	AP42 Tbl 3.4-3 (10/96)
Benzene	7.76E-04	AP42 Tbl 3.4-3 (10/96)
Benzo(a)pyrene	2.57E-07	AP42 Tbl 3.3-2 (10/96)
Formaldehyde	7.89E-05	AP42 Tbl 3.4-3 (10/96)
Polyaromatic Hydrocarbons (PAH or POM)	3.43E-06	AP42 Tbl 3.4-4 (10/96)
Benzo(a)anthracene	6.22E-07	AP42 Tbl 3.4-4 (10/96)
Benzo(b)fluoranthene	1.11E-06	AP42 Tbl 3.4-4 (10/96)
Benzo(k)fluoranthene	2.18E-07	AP42 Tbl 3.4-4 (10/96)
Chrysene	1.53E-06	AP42 Tbl 3.4-4 (10/96)
Dibenzo(a,h)anthracene	3.46E-07	AP42 Tbl 3.4-4 (10/96)
Indeno(1,2,3-cd)pyrene	4.14E-07	AP42 Tbl 3.4-4 (10/96)
Benzo(a)pyrene	2.57E-07	AP42 Tbl 3.4-4 (10/96)

EMISSION FACTORS
#2 Fuel Oil Combustion

	Fuel Oil			
Criteria Pollutants	lb/1,000 gal	Source	lb/10^{12} Btu	Source
PM-10	2 + 1.3	AP42 Tbl 1.3-1&2 (9/98)		
SO2	142(S)	AP42 Tbl 1.3-1 (9/98)		
NOx	20	AP42 Tbl 1.3-1 (9/98)		
CO	5	AP42 Tbl 1.3-1 (9/98)		
VOC	0.252	AP42 Tbl 1.3-3 (9/98)		
Lead	1.26E-03	→	9	AP42 Tbl 1.3-10 (9/98)
Non-Criteria				
PM	2+1.3	AP42 Tbl 1.3-1 (9/98)		
Beryllium	5.60E-04	→	4	AP42 Tbl 1.3-10 (9/98)
Mercury	4.20E-04	→	3	AP42 Tbl 1.3-10 (9/98)
TAPS Non-Carcigenic				
Antimony	6.44E-03	AP42 Tbl 1.3-11 (9/98)	24 - 46	AP42 Tbl 1.3-11 (9/95)
Barium	0.00257**	AP42 Tbl 1.3-11 (9/98)		
Chlorine				
Chromium	4.20E-04	→	3	AP42 Tbl 1.3-10 (9/98)
Cobalt	1.69E-02	AP42 Tbl 1.3-11 (9/98)	77 - 121	AP42 Tbl 1.3-11 (9/95)
Copper	8.40E-04	→	6	AP42 Tbl 1.3-10 (9/98)
Dibutylphthalate				
Dichlorobenzene				
Ethylbenzene	6.36E-05	AP42 Tbl 1.3-9 (9/98)		
Hexane				
Manganese	8.40E-04	→	6	AP42 Tbl 1.3-10 (9/98)
Methyl Chloroform (1,1,1 Trichloroethane)	2.36E-04	AP42 Tbl 1.3-9 (9/98)		
Mercury	4.20E-04	→	3	AP42 Tbl 1.3-10 (9/98)
Molybdenum	0.000787**	AP42 Tbl 1.3-11 (9/98)		
Napthalene	1.13E-03	AP42 Tbl 1.3-9 (9/98)		
Pentane				
Phenol				
Phosphorous	0.00946**	AP42 Tbl 1.3-11 (9/98)		
Selenium	2.10E-03	→	15	AP42 Tbl 1.3-10 (9/98)
Toluene	6.20E-03	AP42 Tbl 1.3-9 (9/98)		
Vanadium	0.0318**	AP42 Tbl 1.3-11 (9/98)		
o-Xylene	1.09E-04	AP42 Tbl 1.3-9 (9/98)		
Zinc	5.60E-04	→	4	AP42 Tbl 1.3-10 (9/98)
TAPS Carcigenic				
Arsenic[c]	5.60E-04	→	4	AP42 Tbl 1.3-10 (9/98)
Benzene[c]	2.14E-04	AP42 Tbl 1.3-9 (9/98)		
Beryllium[c]	5.60E-04		4	AP42 Tbl 1.3-10 (9/98)
Benzo(a)pyrene[c]		→		
Bis(2-ethylhexyl)phthalate[c]				
Cadmium[c]	4.20E-04	→	3	AP42 Tbl 1.3-10 (9/98)
Formaldehyde[c]	3.30E-02	AP42 Tbl 1.3-8 (9/98)		
3-Methylchloranthrene				
Nickel[c]	4.20E-04	→	3	AP42 Tbl 1.3-10 (9/98)
Polyaromatic Hydrocarbons (PAH or POM)[c,d]	1.17E-05	AP42 Tbl 1.3-9 (9/98)		
Benzo(a)anthracene	4.01E-06	AP42 Tbl 1.3-9 (9/98)		
Benzo(b)fluoranthene	1.48E-06	AP42 Tbl 1.3-9 (9/98)		
Benzo(k)fluoranthene	inc w/above	AP42 Tbl 1.3-9 (9/98)		
Chrysene	2.38E-06	AP42 Tbl 1.3-9 (9/98)		
Dibenzo(a,h)anthracene	1.67E-06	AP42 Tbl 1.3-9 (9/98)		
Indeno(1,2,3-cd)pyrene	2.14E-06	AP42 Tbl 1.3-9 (9/98)		
Benzo(a)pyrene				

* Formaldehyde also listed in AP42 Tbl 1.3-9 as 3.3E-02 lb/1000gal
** Tbl 1.3-11 No 6 Fuel oil
*** Vaporizing Burner Factor Used

HOT-MIX ASPHALT PLANT FUGITIVE EMISSION FACTORS

American Paving Company

Asphalt Volatility (V)	-0.5
HMA Mix Temp (°F)	325

Emission Source	Pollutant	Predictive Emission Equation	Emission Factor (lb/ton)	Source
Plant Load-out	Total PM	EF = 0.000181 + 0.00141(-V)e((0.0251)(T + 460) - 20.43) =	5.219E-04	AP-42 Tbl 11.1-14 (3/04)
	Organic PM	EF = 0.00141(-V)e((0.0251)(T + 460) - 20.43) =	3.409E-04	AP-42 Tbl 11.1-14 (3/04)
	TOC	EF = 0.0172(-V)e((0.0251)(T + 460) - 20.43) =	4.159E-03	AP-42 Tbl 11.1-14 (3/04)
	CO	EF = 0.00558(-V)e((0.0251)(T + 460) - 20.43) =	1.349E-03	AP-42 Tbl 11.1-14 (3/04)
Silo Filling	Total PM	EF = 0.000332 + 0.00105(-V)e((0.0251)(T + 460) - 20.43) =	5.859E-04	AP-42 Tbl 11.1-14 (3/04)
	Organic PM	EF = 0.00105(-V)e((0.0251)(T + 460) - 20.43) =	2.539E-04	AP-42 Tbl 11.1-14 (3/04)
	TOC	EF = 0.0504(-V)e((0.0251)(T + 460) - 20.43) =	1.219E-02	AP-42 Tbl 11.1-14 (3/04)
	CO	EF = 0.00488(-V)e((0.0251)(T + 460) - 20.43) =	1.180E-03	AP-42 Tbl 11.1-14 (3/04)

Organic Particulate-Based Emission Factors

Toxic Air Pollutant	% of Organic PM		Load-out	Silo Filling	Total	
Non-Carcinogenic	Load-out	Silo Filling	lb/ton	lb/ton	lb/ton	Source
Naphthalene	1.25E+00	1.82	4.262E-06	4.621E-06	8.882E-06	AP-42 Tbl 11.1-15 (3/04)
Phenol	1.18E+00	ND	4.023E-06	ND	4.023E-06	AP-42 Tbl 11.1-15 (3/04)
Carcinogenic						
Benzo(a)pyrene	2.30E-03	ND	7.842E-09	ND	7.842E-09	AP-42 Tbl 11.1-15 (3/04)
Polyaromatic Hydrocarbons			4.601E-07	6.753E-07	1.135E-06	AP-42 Tbl 11.1-15 (3/04)
Benzo(a)anthracene	1.90E-02	0.056	6.478E-08	1.422E-07	2.070E-07	AP-42 Tbl 11.1-15 (3/04)
Benzo(b)fluoranthene	7.60E-03	ND	2.591E-08	ND	2.591E-08	AP-42 Tbl 11.1-15 (3/04)
Benzo(k)fluoranthene	2.20E-03	ND	7.501E-09	ND	7.501E-09	AP-42 Tbl 11.1-15 (3/04)
Chrysene	1.03E-01	0.21	3.512E-07	5.332E-07	8.843E-07	AP-42 Tbl 11.1-15 (3/04)
Dibenzo(a,h)anthracene	3.70E-04	ND	1.261E-09	ND	1.261E-09	AP-42 Tbl 11.1-15 (3/04)
Indeno(1,2,3-cd)pyrene	4.70E-04	ND	1.602E-09	ND	1.602E-09	AP-42 Tbl 11.1-15 (3/04)
Benzo(a)pyrene	2.30E-03	ND	7.842E-09	ND	7.842E-09	AP-42 Tbl 11.1-15 (3/04)

Organic Volatile-Based Emission Factors

Toxic Air Pollutant	% of TOC		Load-out	Silo Filling	Total	
Non-Carcinogenic	Load-out	Silo Filling	lb/ton	lb/ton	lb/ton	Source
Acetone	0.046	0.055	1.913E-06	6.703E-06	8.616E-06	AP-42 Tbl 11.1-16 (3/04)
Carbon Disulfide	0.013	0.016	5.407E-07	1.950E-06	2.491E-06	AP-42 Tbl 11.1-16 (3/04)
Cumene	0.11	ND	4.575E-06	ND	4.575E-06	AP-42 Tbl 11.1-16 (3/04)
Ethylbenzene	0.28	0.038	1.165E-05	4.631E-06	1.628E-05	AP-42 Tbl 11.1-16 (3/04)
Hexane	0.15	0.1	6.238E-06	1.219E-05	1.843E-05	AP-42 Tbl 11.1-16 (3/04)
Methyl ethyl ketone	0.049	0.039	2.038E-06	4.753E-06	6.791E-06	AP-42 Tbl 11.1-16 (3/04)
Styrene	0.0073	0.0054	3.036E-07	6.581E-07	9.617E-07	AP-42 Tbl 11.1-16 (3/04)
Toluene	0.21	0.062	8.734E-06	7.556E-06	1.629E-05	AP-42 Tbl 11.1-16 (3/04)
Trichloroethene	0	ND	0	ND	0	AP-42 Tbl 11.1-16 (3/04)
o, m, p, Xylene	0.41	0.2	1.705E-05	2.437E-05	4.143E-05	AP-42 Tbl 11.1-16 (3/04)
Carcinogenic						
Benzene	0.052	0.032	2.163E-06	3.900E-06	6.062E-06	AP-42 Tbl 11.1-16 (3/04)
Formaldehyde	0.088	0.69	3.660E-06	8.409E-05	8.775E-05	AP-42 Tbl 11.1-16 (3/04)
Methylene Chloride	0	0.00027	0	3.290E-08	3.290E-08	AP-42 Tbl 11.1-16 (3/04)
Tetrachloroethene	0.0077	ND	3.202E-07	ND	3.202E-07	AP-42 Tbl 11.1-16 (3/04)

APPENDIX B

State Application Forms

American Paving Company
ADM Milemaker 160
Hot Mix Asphalt Plant

Hot Mix Asphalt Plant **Form HMAP**

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 2
02/14/07

Please see instructions on page 4 before filling out the form.

GENERAL INFORMATION

Company Name:	American Paving Company		
Facility Name:	ADM Milemaker 160	**Facility ID No:**	
Brief Project Description:	Modify Permit to include used oil for dryer burner fuel		
Mailing Address:	PO Box 395		
City:	Meridian	**State:**	Idaho
Zip Code:	83860	**County:**	Ada
General Nature of Business & Products:	Produce Asphaltic Concrete		

Contact Name, Title:	Craig Gibson, President		
Phone:	(208) 888-7988	**Cell:**	
Email:			

Owner or Responsible Official Name, Title:	Craig Gibson, President
Phone:	(208) 888-7988
Email:	

Proposed Initial Plant Location:	19752 Simplot Blvd		
Nearest City:	Greenleaf	Estimated Startup Date:	
County:	Canyon		

Reason for Application:	☐ Permit to construct a new source ☐ Permit to operate an existing unpermitted source ☒ Permit to modify/revise an existing permitted source (identify the permit below) Permit No.: 777-00123 Issue Date: 12/21/1999 Facility ID: _____

☒ Check here to indicate you would like to review a draft permit prior to final issuance.

Comments:

HOT-MIX ASPHALT PLANT INFORMATION

Manufacturer:	ADM	**Model:**	Milemaker Series 160
Manufacture Date:		**Type HMA Plant:**	☒ Drum Mix ☐ Batch Mix
Maximum Hourly Asphalt Production:	160 (tons/hour)		
Requested Annual Asphalt Production:	250,000 (tons/year)		
Burner Fuel Type:	# 2 fuel oil, used oil (natural gas, #2 fuel oil, used oil, etc.)		
Maximum Burner Fuel Usage Rate:	49.3 MMBtu/hr ☐ scf/hour or ☐ gallons/hour		
Type Air Pollution Control Device:	babhouse (baghouse, scrubber, etc.)		
Control Device Manufacturer:	ADM	**Model:**	
Stack Parameters:	Stack Height from Ground (ft): 33	Stack Exhaust Flow Rate (acfm):	23,965
	Stack Inside Diameter (ft): 2.23	Stack Exhaust Gas Temperature (°F):	300

ASPHALT TANK HEATER

Fuel Type:	# 2 fuel oil, used oil (natural gas, #2 fuel oil, used oil, etc.)		
Maximum Fuel Usage Rate:	10.29 gal/hr (units/hour) (units/year) ☐ gallons ☐ ft^3 ☐ other:		
Type Air Pollution Control Device:	none ☐ MMBtu ☐ HP		
Stack Parameters:	Stack Height from Ground (ft): 12	Stack Exhaust Flow Rate (acfm):	378
	Stack Inside Diameter (ft): 0.833	Stack Exhaust Gas Temperature (°F):	300

Is this an NSPS-affected facility? ☒ Yes ☐ No

To determine if the HMA facility is a New Source Performance Standards (NSPS)-affected facility, consider the following:

Were any of the following constructed or modified after June 11, 1973, such that the equipment becomes an affected facility as defined in 40 Code of Federal Regulations, Part 60, Section 90 (40 CFR 60.90) *Standards of Performance for Hot-Mix Asphalt Facilities*:

- Dryers
- Systems for screening, handling, storing, and weighing of hot aggregate
- Systems for loading, transferring, and storing of mineral filler
- Systems for mixing hot-mix asphalt
- Leading, transfer, and storage systems associated with emission control systems

Modification is defined in 40 CFR 60.14. The Code of Federal Regulations can be accessed from the website http://www.gpoaccess.gov/cfr/.

Has a performance test been conducted in accordance with 40 CFR 60.93 that demonstrates particulate matter emissions are less than or equal to 0.04 gr/dscf (grains per dry standard cubic foot) at the HMA stack?

☒ Yes ☐ No

If Yes, state the date the test was conducted: 9/8/1995.

Provide a copy of the performance test results with this application if you want DEQ to consider it in determining the frequency of performance testing requirements for your hot-mix asphalt plant.

ELECTRICAL GENERATOR SET INFORMATION (IF APPLICABLE)

Manufacturer:	Cummins	**Model:**	DFHB
Maximum Rated Capacity:	800 ☐ Hp ☒ kW		
Fuel Type:	☐ Gasoline ☒ Diesel ☐ Natural Gas ☐ Propane		
Maximum Fuel Usage Rate:	54.81 ☒ gal./hr. ☐ cfh		
Maximum Daily Hrs. of Operations:	24 (hours/day)		
Maximum Annual Hrs. of Operations:	2,083 (hours/year)		
Stack Parameters:	Stack Height from Ground (ft): 13	Stack Exhaust Flow Rate (acfm): 6,602	
	Stack Inside Diameter (ft): 0.67	Stack Exhaust Gas Temperature (°F): 924	

Manufacturer:		**Model:**	
Maximum Rated Capacity:	☐ Hp ☐ kW		
Fuel Type:	☐ Gasoline ☐ Diesel ☐ Natural Gas ☐ Propane		
Maximum Fuel Usage Rate:	☐ gal./hr. ☐ cfh		
Maximum Daily Hrs. of Operations:	(hours/day)		
Maximum Annual Hrs. of Operations:	(hours/year)		
Stack Parameters:	Stack Height from Ground (ft): _____	Stack Exhaust Flow Rate (acfm): _____	
	Stack Inside Diameter (ft): _____	Stack Exhaust Gas Temperature (°F): _____	

☐ **$1,000 PTC application fee enclosed**

Certification of Truth, Accuracy, and Completeness (by Responsible Official)
I hereby certify that based on information and belief formed after reasonable inquiry, the statements and information contained in this and any attached and/or referenced document(s) are true, accurate, and complete in accordance with IDAPA 58.01.01.123-124.

Craig Gibson
Responsible Official Signature

President
Responsible Official Title

5-31-07
Date

Craig Gibson
Print or Type Responsible Official Name

Instructions for Form HMAP

PTC APPLICATION OVERVIEW

This application is for the construction and operation of portable and stationary hot mix asphalt plants in all areas of Idaho except any nonattainment area. Nonattainment areas are identified on the DEQ website at http://www.deq.idaho.gov/air/data_reports/monitoring/overview.cfm#Idaho. If you are planning to locate in a nonattainment area, please call the Air Permit Hotline at 1-877-5PERMIT prior to submitting an application.

PTC APPLICATION INSTRUCTIONS

Please fill in the same company name, facility name (if different), facility ID number, and brief project description as on Form CS. This is useful if application pages are separated.

1. **Application.** Complete the attached PTC application.
2. **Portable Equipment Relocation Form.** Complete the Portable Equipment Relocation Form (PERF). An electronic copy of the PERF can be obtained from the DEQ website http://www.deq.idaho.gov/air/permits_forms/forms/ptc_relocation.pdf (or http://www.deq.idaho.gov/air/permits_forms/forms/ptc_relocation.doc for Word format). **Important note:** addition to being submitted with this PTC application, a PERF must also be completed and filed at DEQ at least 10 days in advance of relocating any of the equipment covered in this application.
3. **Fees.** In accordance with the *Rules for the Control of Air Pollution in Idaho* (IDAPA 58.01.01.224 and .226), DEQ cannot process this application unless it is accompanied by a one thousand dollar ($1,000) application fee. If the purpose of this permit is to change the name or ownership of the holder of a PTC when DEQ determines no other review or analysis is required, the application fee is waived. The rules can be accessed at http://adm.idaho.gov/adminrules/rules/idapa58/0101.pdf.
4. **Mail.** Please mail the completed PTC application and PERF form – on CD if possible – and the $1,000 application fee to the address below. The processing of this PTC application cannot commence without payment.

Air Quality Program Office – Application Processing
Department of Environmental Quality
1410 North Hilton
Boise, ID 83706-1255

APPENDIX C

Air Dispersion Screen Modeling Analysis

American Paving Company
ADM Milemaker 160
Hot Mix Asphalt Plant

Air Dispersion Modeling Report

American Paving Company

1. Introduction

This air dispersion screen modeling analysis is being submitted with an application to modify American Paving Company's Permit to Construct # 777-00123. The modeling analysis was performed to determine the impact to the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants and to determine the operating limits for the facility to meet ambient air quality standards for toxic air pollutants.

2. Modeling Requirements and Methodology

2.1 Applicable Impact Limits and Required Analysis for Criteria Pollutants

Table 1 shows the averaging periods and regulatory limits used to determine the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. Background concentrations are added to the modeled concentration to determine if the NAAQS limit has been exceeded.

Table 1. NAAQS Analysis

Pollutant	Averaging Period	Limit ($\mu g/m^3$)
PM-10	24-hour	150
	Annual	50
SO2	3-hour	1,300
	24-hour	365
	Annual	80
NO2	Annual	100
CO	1-hour	40,000
	8-hour	10,000
Lead (Pb)	Quarterly	1.5

2.2 Toxic Air Pollutants Impact Analysis

An ambient air assessment for a Toxic Air Pollutant (TAP) is required when the estimated emissions exceed the emission screening level (EL).

2.3 Modeling Parameters and Methods

Screen modeling was used for the air dispersion analysis. Because the facility is portable the use of site-specific data required in a refined model cannot be used.

Table 2 summarizes the parameters used for the screen modeling analysis.

Table 2. Modeling Parameters

Parameter	Description/Values
Model	SCREEN3
Meteorology	All Stability and Wind Speed
Model Options	Regulatory Default
Land Use	Rural
Terrain	Simple
Building Downwash	NA
Receptors	1 - 50,000 meters
Facility Location	Portable

The screen model generates a maximum 1-hour concentration. To calculate longer-term concentrations the following persistence factors were used:

3-hr	0.9
8-hr	0.7
24hr	0.4
Quarterly	0.225
Annual	0.08 - Criteria air pollutants
Annual	0.125 - Toxic air pollutants

2.4 Emission Rates

Emission estimates for the drum mix asphalt plant were calculated using emission factors from AP-42 Section 11.1 based on a potential asphalt production rate of 160 tons per hour and a limited annual production of 250,000 tons per year. PM/PM10 emissions were calculated from the grain loading limit in 40 CFR 60.92 of 0.04 gr/dscf and an average flow rate of 11,684 dry standard cubic feet per minute from the September 1995 performance test results. Emissions are controlled by a baghouse.

Table 3. Drum Mix Asphalt Plant Emissions

Maximum Rated Production (tons/hr)	160
Limited Annual Production (tons/yr)	250,000
Dryer Stack Exhaust Flow (dscf/min)	11,684

Criteria Pollutant	Emission Factor (lb/ton)	Actual Emissions (lb/hr)	(tons/yr)
PM10	0.04 gr/dscf	4.006	3.130
SO2	0.0580	9.280	7.250
NOx	0.0550	8.800	6.875
CO	0.1300	20.800	16.250
VOC	0.0320	5.120	4.000
Lead	1.50E-05	0.002	0.002

Toxic Air Pollutant	Emission Factor (lb/ton)	Actual Emissions Potential (lb/hr)	Average (lb/hr)	(tons/yr)
Non-Carcinogens				
None	----	----	----	----
Carcinogens				
Acetaldehyde	1.30E-03	2.08E-01	3.71E-02	1.63E-01
Arsenic	5.60E-07	8.96E-05	1.60E-05	7.00E-05
Benzene	3.90E-04	6.24E-02	1.11E-02	4.88E-02
Cadmium	4.10E-07	6.56E-05	1.17E-05	5.13E-05
Chromium, Hexavalent	4.50E-07	7.20E-05	1.28E-05	5.63E-05
Dioxin and Furans (TEQ)	5.71E-11	9.14E-09	1.63E-09	7.14E-09
Formaldehyde	3.10E-03	4.96E-01	8.85E-02	3.88E-01
Nickel	6.30E-05	1.01E-02	1.80E-03	7.88E-03
Polyaromatic Hydrocarbons	5.48E-07	8.76E-05	1.56E-05	6.85E-05

Emission estimates for the generator were calculated using emission factors from AP-42 Section 3.4 using an annual operating limit of 2083 hours per year. Generator emissions are uncontrolled. Table 4 summarizes the criteria and toxic air pollutant emissions for the generator. Only those toxic air pollutants that exceeded the emission screening levels are included in these tables.

Table 4. 800 kW Generator Emission Rates

Heat Input (MMBtu/hr) =	7.51
Operating Hours (hr/yr) =	2,083

Criteria Pollutant	Emission Factor lb/MMBtu	Actual Emissions (lb/hr)	(tons/yr)
PM-10	0.100	0.751	0.782
SO2	0.505	3.792	3.950
NOx	3.200	24.031	25.028
CO	0.850	6.383	6.648
VOC	0.090	0.676	0.704
Lead	----	----	----

Toxic Air Pollutant	Emission Factor lb/MMBtu	Actual Emissions Potential (lb/hr)	Annual Ave. (lb/hr)	(tons/yr)
Non-Carcinogenic				
None	-----	-----	-----	
Carcinogenic				
Acetaldehyde	2.52E-05	1.892E-04	4.500E-05	1.971E-04
Benzene	7.76E-04	5.827E-03	1.386E-03	6.069E-03
Formaldehyde	7.89E-05	5.925E-04	1.409E-04	6.171E-04
Polyaromatic Hydrocarbons	4.50E-06	3.377E-05	8.030E-06	3.517E-05

Emission Estimates for the 1.41 MMBtu oil fired heater were calculated from Emission factors in AP-42 Section 1.3.

Table 5. Tank Heater Emissions

Operating Parameters	
Heat Input (MMBtu/hr) =	1.41
Fuel Heat Value (Btu/gal) =	137,000
Operating Hours (hr/yr) =	2,083
Fuel Consumption (gal/hr) =	10.29
Fuel Consumption (gal/yr) =	21,438.175

Criteria Pollutants	Emission Factor lb/1,000 gal	Actual Emissions Potential (lb/hr)	(tons/yr)
PM-10	2 + 1.3	0.034	0.035
SO2 (0.5% S)	142(S)	0.731	0.761
NOx	20	0.206	0.214
CO	5	0.051	0.054
VOC	0.252	2.594E-03	0.003
Lead	1.26E-03	1.297E-05	8.327E-14

Toxic Air Pollutant Non-Carcinogenic	Emission Factor (lb/1,000 gal)	Actual Emissions Potential (lb/hr)	Annual Ave. (lb/hr)	(tons/yr)
None	-----	-----	-----	
Carcinogenic				
Acetaldehyde				
Arsenic	5.60E-04	5.764E-06	1.370E-06	6.003E-06
Benzene	2.14E-04	2.202E-06	5.237E-07	2.294E-06
Cadmium	4.20E-04	4.323E-06	1.028E-06	4.502E-06
Chromium, Hexavalent				
Dioxin and Furons (TEQ)				
Formaldehyde	3.30E-02	3.396E-04	8.076E-05	3.537E-04
Nickel	4.20E-04	4.323E-06	1.028E-06	4.502E-06
Polyaromatic Hydrocarbons	1.17E-05	1.202E-07	2.858E-08	1.252E-07

2.6 Emissions Release Parameters

Table 5 shows the release parameters for the modeled sources

Table 6. Emission Source Release Parameters

Source (ID Code)	Source Type	Stack Height (ft)	Stack Diameter (ft)	Stack Gas Temp. (°F)	Exit Velocity (m/s)	Stack Gas Flow (acfm)
Asphalt Dryer Stack	Point	33	2.231	300.0	31.142	23,964
800 kW Generator	Point	13	0.670	924.0	95.141	6,602
Asphalt Tank Heater	Point	12	0.833	300.0	3.524	378

3. Modeling Results

3.1 Criteria Air Pollutant Analysis

The screen modeling was performed using an emission rate of 1 lb/hour to get maximum 1-hour concentration. This concentration was then multiplied by the appropriate persistence factor to obtain the long-term concentrations at the 1-lb/hour emission rate. The long-term concentration is multiplied by the emission rate to get the ambient impact. An example calculation is shown below.

$$\text{Ambient Impact} = \text{Modeled 1-hr Concentration}\ \frac{\mu g/m^3}{lb/hr} \times \text{Persistence Factor} \times \text{Emission Rate}\ lb/hr$$

$$\text{Dryer Stack 24-hr } PM_{10} \text{ Ambient Impact} = \frac{3.425\ \mu g/m^3}{lb/hr} \times 0.4 \times 4.0059\ lb/hr = \mathbf{5.4881\ \mu g/m^3}$$

Results of the significant impact analysis for the criteria air pollutants are shown in Table 6. The potential ambient impact for all of the criteria air pollutants except CO exceeded the significant contribution levels for both the hot mix asphalt plant dryer stack and the generator.

Table 7 shows the results of the full impact analysis for PM_{10}, SO_2, NO_2, and lead with the background concentration values added to the modeled ambient impacts. Background concentrations used in the NAAQS are from the Idaho Department of Environmental Quality for small town and suburban areas.

Idaho Department of Environmental Quality small town / suburban background concentrations:

PM_{10}	24-hr	81 $\mu g/m^3$
	Annual	27 $\mu g/m^3$
CO	1-hr:	10,200 $\mu g/m^3$
	8-hr:	3,400 $\mu g/m^3$
NO_2	Annual:	32 $\mu g/m^3$
SO_2	3-hr:	42 $\mu g/m^3$
	24-hr:	26 $\mu g/m^3$
	Annual:	8 $\mu g/m^3$
Pb	Quarterly	0.03 $\mu g/m^3$

The ambient impacts for the toxic air pollutants that exceeded the emission screening levels are shown in Table 8.

4. Conclusion

The air dispersion modeling analysis show the ambient air impacts to be below the applicable NAAQS and TAP standards.

Print outs of the screen model results for the HMA dryer stack, the generator and the oiled fired asphalt tank heater are included with a disk containing the input and output files.

Table 7. Full Impact NAAQS Analysis for Criteria Air Pollutants

Source	Dryer Stack	Generator	Heater
Screen Modeled 1-hr Concentration at 1 lb/hr (μg/m³)	3.425	12.82	212.3
3-hr Concentration at 0.9 Persistence Factor (μg/m³)	3.0825	11.538	191.07
8-hr Concentration at 0.7 Persistence Factor (μg/m³)	2.3975	8.974	148.61
24-hr Concentration at 0.4 Persistence Factor (μg/m³)	1.37	5.128	84.92
Quarterly Concentration at 0.225 Persistence Factor (μg/m³)	0.770625	2.885	47.768
Annual Concentration at 0.08 Persistence Factor (μg/m³)	0.274	1.0256	16.984

Pollutant	Averaging Period	Emission Rates Dryer Stack (lb/hr)	Generator (lb/hr)	Heater (lb/hr)	Dryer Impact (μg/m³)	Generator Impact (μg/m³)	Heater Impact (μg/m³)
PM-10	24-hour	4.006	0.751	0.034	5.4881	3.8509	2.8842
	Annual				1.0976	0.7702	0.5768
Sulfur Dioxide (SO_2)	3-hour	9.28	3.792	0.731	28.6056	43.7561	139.6206
	24-hour				12.7136	19.4472	62.0536
	Annual				2.54272	3.8894	12.4107
Nitrogen Dioxide (NO_2)	Annual	8.800	24.031	0.206	2.4112	24.6459	3.4960
Carbon Monoxide (CO)	1-hour	20.80	6.383	0.051	71.2400	81.8321	10.9249
	8-hour				49.8680	57.2825	7.6474
Lead	Quarterly	0.002	0.00	1.297E-05	1.85E-03	0.0000	0.0006

Pollutant	Averaging Period	Total Impact (μg/m³)	Background Concentration (μg/m³)	Total Ambient Concentration (μg/m³)	Regulatory Limit (μg/m³)	Percent of NAAQS
PM-10	24-hour	12.2232	81.0	93.2	150.0	62.15
	Annual	2.4446	27.0	29.4	50.0	58.89
Sulfur Dioxide (SO_2)	3-hour	211.9823	42.0	254.0	1,300.0	19.54
	24-hour	94.2143	26.0	120.2	365.0	32.94
	Annual	18.8429	8.0	26.8	80.0	33.55
Nitrogen Dioxide (NO_2)	Annual	30.5531	32.0	62.6	100.0	62.55
Carbon Monoxide (CO)	1-hour	163.9970	10,200.0	10,364.0	40,000	25.91
	8-hour	114.7979	3,400.0	3,514.8	10,000	35.15
Lead	Quarterly	0.0025	3.00E-02	0.0	1.5	2.16

Table 8. Acceptable Ambient Concentration Analysis for Toxic Air Pollutants

Source	Dryer Stack	Generator	Heater
Screen Modeled 1-hr Concentration at 1 lb/hr (μg/m³)	3.425	12.82	212.3
Annual Concentration at 0.125 Persistence Factor (μg/m³)	0.4281	1.6025	26.5375

Toxic Air Pollutant	Averaging Period	Emission Rates Dryer (lb/hr)	Generator (lb/hr)	Heater (lb/hr)	Dryer Impact (μg/m³)	Generator Impact (μg/m³)	Heater Impact (μg/m³)
Acetaldehyde	Annual	3.710E-02	1.37E-03		1.588E-02	2.195E-03	
Arsenic	Annual	1.598E-05		1.370E-06	6.842E-06		3.637E-05
Benzene	Annual	1.113E-02	1.67E-03	5.237E-07	4.765E-03	2.670E-03	1.390E-05
Cadmium	Annual	1.170E-05		1.028E-06	5.009E-06		2.728E-05
Chromium, Hexavalent	Annual	1.284E-05			5.498E-06		
Dioxin and Furans (TEQ)	Annual	8.724E-11			3.735E-11		
Formaldehyde	Annual	8.847E-02	2.107E-03	8.076E-05	3.788E-02	3.377E-03	2.143E-03
Nickel	Annual	1.798E-03		1.028E-06	7.697E-04		2.728E-05
Polyaromatic Hydrocarbons	Annual	1.563E-05	6.13E-06	2.858E-08	6.693E-06	9.824E-06	7.586E-07

Toxic Air Pollutant	Averaging Period	Total Impact (μg/m³)	AACC (μg/m³)	Percent of AACC
Acetaldehyde	Annual	1.808E-02	4.50E-01	4.02
Arsenic	Annual	4.321E-05	2.30E-04	18.79
Benzene	Annual	7.449E-03	1.20E-01	6.21
Cadmium	Annual	3.229E-05	5.60E-04	5.77
Chromium, Hexavalent	Annual	5.498E-06	8.30E-05	6.62
Dioxin and Furans (TEQ)	Annual	3.735E-11	2.20E-08	0.17
Formaldehyde	Annual	4.340E-02	7.70E-02	56.36
Nickel	Annual	7.970E-04	4.20E-03	18.98
Polyaromatic Hydrocarbons	Annual	1.728E-05	3.00E-04	5.76

05/14/07
13:56:25

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Asphalt Dryer Stack

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	0.126000
STACK HEIGHT (M)	=	10.0584
STK INSIDE DIAM (M)	=	0.6800
STK EXIT VELOCITY (M/S)	=	31.1423
STK GAS EXIT TEMP (K)	=	422.0389
AMBIENT AIR TEMP (K)	=	293.1500
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	0.0000
MIN HORIZ BLDG DIM (M)	=	0.0000
MAX HORIZ BLDG DIM (M)	=	0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 10.781 M**4/S**3; MOM. FLUX = 77.875 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	137.48	3.47	3.45	NO
100.	0.5416	3	10.0	10.0	3200.0	22.80	12.65	7.75	NO
200.	3.346	3	10.0	10.0	3200.0	22.80	23.87	14.45	NO
300.	3.194	3	8.0	8.0	2560.0	25.98	34.59	20.83	NO
400.	2.997	4	10.0	10.0	3200.0	22.79	29.68	15.70	NO
500.	2.822	4	8.0	8.0	2560.0	25.98	36.43	18.85	NO
600.	2.624	4	8.0	8.0	2560.0	25.98	42.96	21.69	NO
700.	2.359	4	5.0	5.0	1600.0	35.53	49.72	25.11	NO
800.	2.270	4	5.0	5.0	1600.0	35.53	56.05	27.75	NO
900.	2.136	4	5.0	5.0	1600.0	35.53	62.31	30.35	NO
1000.	2.003	4	4.5	4.5	1440.0	38.36	68.60	33.10	NO
1100.	1.874	4	4.0	4.0	1280.0	41.90	74.87	35.32	NO
1200.	1.764	4	4.0	4.0	1280.0	41.90	80.95	37.22	NO
1300.	1.664	4	3.5	3.5	1120.0	46.45	87.14	39.40	NO
1400.	1.580	4	3.5	3.5	1120.0	46.45	93.13	41.19	NO
1500.	1.499	4	3.5	3.5	1120.0	46.45	99.09	42.95	NO
1600.	1.429	4	3.0	3.0	960.0	52.51	105.19	45.10	NO
1700.	1.381	5	1.0	1.0	10000.0	75.69	84.68	35.57	NO
1800.	1.438	5	1.0	1.0	10000.0	75.69	88.97	36.52	NO
1900.	1.487	5	1.0	1.0	10000.0	75.69	93.25	37.45	NO
2000.	1.530	5	1.0	1.0	10000.0	75.69	97.52	38.38	NO
2100.	1.557	5	1.0	1.0	10000.0	75.69	101.77	39.21	NO
2200.	1.578	5	1.0	1.0	10000.0	75.69	106.01	40.03	NO
2300.	1.596	5	1.0	1.0	10000.0	75.69	110.23	40.83	NO
2400.	1.609	5	1.0	1.0	10000.0	75.69	114.44	41.63	NO
2500.	1.619	5	1.0	1.0	10000.0	75.69	118.63	42.41	NO
2600.	1.625	5	1.0	1.0	10000.0	75.69	122.81	43.19	NO
2700.	1.628	5	1.0	1.0	10000.0	75.69	126.98	43.95	NO
2800.	1.629	5	1.0	1.0	10000.0	75.69	131.13	44.71	NO
2900.	1.628	5	1.0	1.0	10000.0	75.69	135.27	45.46	NO
3000.	1.624	5	1.0	1.0	10000.0	75.69	139.40	46.20	NO
3500.	1.664	6	1.0	1.0	10000.0	64.50	106.79	32.89	NO
4000.	1.684	6	1.0	1.0	10000.0	64.50	120.18	34.54	NO
4500.	1.682	6	1.0	1.0	10000.0	64.50	133.41	36.10	NO
5000.	1.665	6	1.0	1.0	10000.0	64.50	146.50	37.58	NO
5500.	1.637	6	1.0	1.0	10000.0	64.50	159.45	38.99	NO
6000.	1.603	6	1.0	1.0	10000.0	64.50	172.28	40.35	NO
6500.	1.565	6	1.0	1.0	10000.0	64.50	185.00	41.66	NO
7000.	1.524	6	1.0	1.0	10000.0	64.50	197.61	42.92	NO
7500.	1.477	6	1.0	1.0	10000.0	64.50	210.11	44.00	NO
8000.	1.431	6	1.0	1.0	10000.0	64.50	222.53	45.05	NO
8500.	1.387	6	1.0	1.0	10000.0	64.50	234.86	46.06	NO
9000.	1.344	6	1.0	1.0	10000.0	64.50	247.10	47.04	NO
9500.	1.302	6	1.0	1.0	10000.0	64.50	259.26	48.00	NO
10000.	1.263	6	1.0	1.0	10000.0	64.50	271.35	48.92	NO
15000.	0.9514	6	1.0	1.0	10000.0	64.50	388.74	57.05	NO
20000.	0.7492	6	1.0	1.0	10000.0	64.50	501.19	62.27	NO
25000.	0.6157	6	1.0	1.0	10000.0	64.50	609.95	66.69	NO
30000.	0.5213	6	1.0	1.0	10000.0	64.50	715.76	70.57	NO
40000.	0.3986	6	1.0	1.0	10000.0	64.50	920.36	76.10	NO
50000.	0.3221	6	1.0	1.0	10000.0	64.50	1117.53	80.71	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

224.	3.425	3	10.0	10.0	3200.0	22.80	26.57	16.04	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

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DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** INVERSION BREAK-UP FUMIGATION CALC. ***
 CONC (UG/M**3)    =     0.000
 DIST TO MAX (M)   =  1713.41

DIST TO MAX IS < 2000. M.  CONC SET = 0.0

     ************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ************************************
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CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	3.425	224.	0.

05/22/07
10:47:26

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

800 kW Generator

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	0.126000
STACK HEIGHT (M)	=	3.9624
STK INSIDE DIAM (M)	=	0.2042
STK EXIT VELOCITY (M/S)	=	95.1411
STK GAS EXIT TEMP (K)	=	768.7056
AMBIENT AIR TEMP (K)	=	293.1500
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	0.0000
MIN HORIZ BLDG DIM (M)	=	0.0000
MAX HORIZ BLDG DIM (M)	=	0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 6.017 M**4/S**3; MOM. FLUX = 35.985 M**4/S**2.

*** FULL METEOROLOGY ***

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*** SCREEN AUTOMATED DISTANCES ***
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*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	86.27	2.80	2.78	NO
100.	11.99	4	20.0	20.0	6400.0	8.08	8.25	4.74	NO
200.	11.11	4	10.0	10.0	3200.0	12.19	15.74	8.82	NO
300.	9.172	4	8.0	8.0	2560.0	14.25	22.80	12.45	NO
400.	7.435	4	5.0	5.0	1600.0	20.42	29.83	15.98	NO
500.	6.493	4	5.0	5.0	1600.0	20.42	36.45	18.89	NO
600.	5.675	4	4.0	4.0	1280.0	24.54	43.12	22.01	NO
700.	5.045	4	3.5	3.5	1120.0	27.48	49.65	24.96	NO
800.	4.533	4	3.0	3.0	960.0	31.40	56.12	27.91	NO
900.	4.137	4	3.0	3.0	960.0	31.40	62.38	30.49	NO
1000.	3.797	4	2.5	2.5	800.0	36.89	68.77	33.44	NO
1100.	3.516	4	2.5	2.5	800.0	36.89	74.90	35.40	NO
1200.	3.257	4	2.5	2.5	800.0	36.89	80.99	37.30	NO
1300.	3.047	5	1.0	1.0	10000.0	58.03	66.52	29.83	NO
1400.	3.134	5	1.0	1.0	10000.0	58.03	70.92	30.88	NO
1500.	3.196	5	1.0	1.0	10000.0	58.03	75.30	31.92	NO
1600.	3.284	6	1.0	1.0	10000.0	48.83	53.55	22.74	NO
1700.	3.419	6	1.0	1.0	10000.0	48.83	56.42	23.35	NO
1800.	3.537	6	1.0	1.0	10000.0	48.83	59.27	23.95	NO
1900.	3.638	6	1.0	1.0	10000.0	48.83	62.12	24.55	NO
2000.	3.725	6	1.0	1.0	10000.0	48.83	64.95	25.14	NO
2100.	3.765	6	1.0	1.0	10000.0	48.83	67.78	25.64	NO
2200.	3.797	6	1.0	1.0	10000.0	48.83	70.60	26.14	NO
2300.	3.819	6	1.0	1.0	10000.0	48.83	73.41	26.63	NO
2400.	3.834	6	1.0	1.0	10000.0	48.83	76.20	27.11	NO
2500.	3.841	6	1.0	1.0	10000.0	48.83	78.99	27.58	NO
2600.	3.843	6	1.0	1.0	10000.0	48.83	81.78	28.05	NO
2700.	3.839	6	1.0	1.0	10000.0	48.83	84.55	28.51	NO
2800.	3.831	6	1.0	1.0	10000.0	48.83	87.31	28.97	NO
2900.	3.818	6	1.0	1.0	10000.0	48.83	90.07	29.42	NO
3000.	3.802	6	1.0	1.0	10000.0	48.83	92.81	29.87	NO
3500.	3.628	6	1.0	1.0	10000.0	48.83	106.43	31.69	NO
4000.	3.440	6	1.0	1.0	10000.0	48.83	119.86	33.39	NO
4500.	3.253	6	1.0	1.0	10000.0	48.83	133.12	35.00	NO
5000.	3.073	6	1.0	1.0	10000.0	48.83	146.23	36.53	NO
5500.	2.903	6	1.0	1.0	10000.0	48.83	159.21	37.99	NO
6000.	2.744	6	1.0	1.0	10000.0	48.83	172.06	39.38	NO
6500.	2.597	6	1.0	1.0	10000.0	48.83	184.79	40.72	NO
7000.	2.461	6	1.0	1.0	10000.0	48.83	197.41	42.01	NO
7500.	2.333	6	1.0	1.0	10000.0	48.83	209.93	43.11	NO
8000.	2.217	6	1.0	1.0	10000.0	48.83	222.35	44.18	NO
8500.	2.110	6	1.0	1.0	10000.0	48.83	234.69	45.21	NO
9000.	2.011	6	1.0	1.0	10000.0	48.83	246.94	46.21	NO
9500.	1.920	6	1.0	1.0	10000.0	48.83	259.11	47.18	NO
10000.	1.837	6	1.0	1.0	10000.0	48.83	271.21	48.12	NO
15000.	1.258	6	1.0	1.0	10000.0	48.83	388.64	56.36	NO
20000.	0.9487	6	1.0	1.0	10000.0	48.83	501.11	61.64	NO
25000.	0.7572	6	1.0	1.0	10000.0	48.83	609.89	66.11	NO
30000.	0.6276	6	1.0	1.0	10000.0	48.83	715.70	70.02	NO
40000.	0.4680	6	1.0	1.0	10000.0	48.83	920.31	75.58	NO
50000.	0.3717	6	1.0	1.0	10000.0	48.83	1117.50	80.22	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

122.	12.82	4	20.0	20.0	6400.0	8.08	9.99	5.66	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

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**********************************
*** SUMMARY OF SCREEN MODEL RESULTS ***
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CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	12.82	122.	0.

05/14/07
13:59:09

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Asphalt Tank Heater

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	0.126000
STACK HEIGHT (M)	=	3.6576
STK INSIDE DIAM (M)	=	0.2539
STK EXIT VELOCITY (M/S)	=	3.5235
STK GAS EXIT TEMP (K)	=	422.0389
AMBIENT AIR TEMP (K)	=	293.1500
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	0.0000
MIN HORIZ BLDG DIM (M)	=	0.0000
MAX HORIZ BLDG DIM (M)	=	0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 0.170 M**4/S**3; MOM. FLUX = 0.139 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	9.33	0.51	0.35	NO
100.	201.1	4	1.5	1.5	480.0	7.44	8.27	4.78	NO
200.	165.6	4	1.0	1.0	320.0	9.33	15.65	8.65	NO
300.	108.2	4	1.0	1.0	320.0	9.33	22.67	12.20	NO
400.	73.62	4	1.0	1.0	320.0	9.33	29.50	15.36	NO
500.	53.04	4	1.0	1.0	320.0	9.33	36.18	18.37	NO
600.	44.92	6	1.0	1.0	10000.0	17.32	21.59	10.44	NO
700.	45.80	6	1.0	1.0	10000.0	17.32	24.77	11.61	NO
800.	44.31	6	1.0	1.0	10000.0	17.32	27.91	12.60	NO
900.	42.15	6	1.0	1.0	10000.0	17.32	31.02	13.56	NO
1000.	39.71	6	1.0	1.0	10000.0	17.32	34.11	14.49	NO
1100.	37.16	6	1.0	1.0	10000.0	17.32	37.17	15.33	NO
1200.	34.74	6	1.0	1.0	10000.0	17.32	40.21	16.14	NO
1300.	32.47	6	1.0	1.0	10000.0	17.32	43.22	16.93	NO
1400.	30.37	6	1.0	1.0	10000.0	17.32	46.21	17.70	NO
1500.	28.44	6	1.0	1.0	10000.0	17.32	49.19	18.45	NO
1600.	26.67	6	1.0	1.0	10000.0	17.32	52.14	19.18	NO
1700.	25.05	6	1.0	1.0	10000.0	17.32	55.08	19.90	NO
1800.	23.57	6	1.0	1.0	10000.0	17.32	58.00	20.61	NO
1900.	22.21	6	1.0	1.0	10000.0	17.32	60.90	21.30	NO
2000.	20.97	6	1.0	1.0	10000.0	17.32	63.79	21.98	NO
2100.	19.86	6	1.0	1.0	10000.0	17.32	66.67	22.55	NO
2200.	18.84	6	1.0	1.0	10000.0	17.32	69.53	23.11	NO
2300.	17.91	6	1.0	1.0	10000.0	17.32	72.38	23.66	NO
2400.	17.05	6	1.0	1.0	10000.0	17.32	75.22	24.20	NO
2500.	16.26	6	1.0	1.0	10000.0	17.32	78.05	24.73	NO
2600.	15.52	6	1.0	1.0	10000.0	17.32	80.86	25.26	NO
2700.	14.84	6	1.0	1.0	10000.0	17.32	83.66	25.77	NO
2800.	14.21	6	1.0	1.0	10000.0	17.32	86.45	26.27	NO
2900.	13.62	6	1.0	1.0	10000.0	17.32	89.23	26.77	NO
3000.	13.07	6	1.0	1.0	10000.0	17.32	92.01	27.26	NO
3500.	10.88	6	1.0	1.0	10000.0	17.32	105.72	29.24	NO
4000.	9.265	6	1.0	1.0	10000.0	17.32	119.23	31.08	NO
4500.	8.022	6	1.0	1.0	10000.0	17.32	132.56	32.81	NO
5000.	7.043	6	1.0	1.0	10000.0	17.32	145.72	34.43	NO
5500.	6.255	6	1.0	1.0	10000.0	17.32	158.74	35.97	NO
6000.	5.608	6	1.0	1.0	10000.0	17.32	171.62	37.44	NO
6500.	5.070	6	1.0	1.0	10000.0	17.32	184.38	38.84	NO
7000.	4.615	6	1.0	1.0	10000.0	17.32	197.03	40.19	NO
7500.	4.239	6	1.0	1.0	10000.0	17.32	209.57	41.35	NO
8000.	3.915	6	1.0	1.0	10000.0	17.32	222.02	42.46	NO
8500.	3.632	6	1.0	1.0	10000.0	17.32	234.37	43.53	NO
9000.	3.383	6	1.0	1.0	10000.0	17.32	246.64	44.57	NO
9500.	3.163	6	1.0	1.0	10000.0	17.32	258.82	45.57	NO
10000.	2.967	6	1.0	1.0	10000.0	17.32	270.93	46.55	NO
15000.	1.786	6	1.0	1.0	10000.0	17.32	388.45	55.02	NO
20000.	1.272	6	1.0	1.0	10000.0	17.32	500.96	60.42	NO
25000.	0.9770	6	1.0	1.0	10000.0	17.32	609.76	64.97	NO
30000.	0.7876	6	1.0	1.0	10000.0	17.32	715.60	68.95	NO
40000.	0.5687	6	1.0	1.0	10000.0	17.32	920.23	74.59	NO
50000.	0.4420	6	1.0	1.0	10000.0	17.32	1117.43	79.29	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

57.	212.3	3	2.0	2.0	640.0	6.49	7.57	4.59	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

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**************************************
*** SUMMARY OF SCREEN MODEL RESULTS ***
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CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	212.3	57.	0.