Statement of Basis

Permit to Construct No. P-2008.0189
Project ID 62395

C.M. Owen Construction, LLC
Portable, Idaho

Facility ID 777-00433

Final

May 15, 2020

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

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
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
GACT	Generally Available Control Technology
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
kW	kilowatt
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

C. M. Owen Construction, LLC is a CMI model UDM 1200 portable hot mix asphalt plant (HMA) that consists of a parallel flow drum mix dryer, portable generators, an asphalt tank heater/asphalt tank, diesel fuel storage tanks, baghouse, and material transfer equipment. Materials transfer equipment may include front end loaders, storage bins, storage silos, conveyors, stock piles, and haul trucks.

Front end loaders are used to transfer the stockpiled aggregates to feed bins. Aggregate is dispensed from the bins onto a scale conveyor that weighs and delivers the aggregate to the drum mixer. Aggregate travels through the drum mix dryer, and when dried it is blended with liquid asphalt cement. The resulting hot mix asphalt is conveyed to a storage silo until it can be loaded into trucks for transport to the job site.

The drum dryer is a parallel flow design that uses proportioning aggregate (cold feed) controls for the process materials. Sized aggregate is introduced at the burner end. As the drum rotates, the aggregates and the combustion air move in parallel towards the dryer outlet. During the drying process the mixture is coated with liquid asphalt cement. The exhaust gases from the drum dryer and coater are collected and ducted to a baghouse by an induced draft fan.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

April 7, 2009	P-2008.0189, initial Permit to Construct (PTC), Permit status (A, but will become S upon issuance of this permit)

Application Scope

This PTC is a revision of an existing PTC.

The applicant has proposed to:

- change facility's name
- replace the scrubber that controls emissions from the HMA dryer stack with a baghouse

Application Chronology

February 27, 2020	DEQ received an application.
March 4, 2020	DEQ received an application fee and a processing fee.
March 16, 2020	DEQ determined that the application was complete.
April 27, 2020	DEQ made available the draft permit and statement of basis for peer and regional office review.
April 30, 2020	DEQ made available the draft permit and statement of basis for applicant review.
May 15, 2020	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Sources	Control Equipment
Drum mix plant 1580 Manufacturer: CMI Model: UDM 1200 Maximum capacity: 250 tons per hour Fuel types: Propane, natural gas, No. 2 fuel oil, and used oil Date of construction: 1979	Baghouse (ASP 51): Manufacturer: CWMF Model: P-50-720 PM_{10} control efficiency: 99.9%
Tank heater Manufacturer: CMI Model: UDM 1200 Fuel type: Propane, natural gas, No. 2 fuel oil, and used oil Date of construction: 1979	None
Generator Manufacturer: Caterpillar Model: 3412CDITA Engine number: BPG02595 Rated power: 545 Kilowatts Fuel type: No. 2 fuel oil Rated use: 40 gallons per hour Date of construction: 2005, purchased about July 1, 2005.	None
Generator Manufacturer: Whisper Watt Model: 45kw Rated power: 45 Kilowatts Fuel type: No. 2 fuel oil Rated use: 2 gallons per hour Date of construction: 2008	None

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 operations at the facility (see Appendix A) using DEQ's spreadsheet for a HMA plant. Emissions estimates of criteria pollutant, HAP PTE were based on emission factors from AP-42, allowed operation limits in the existing permit, and use of baghouse rather than a scrubber to control emissions from HMA plant stack.

Uncontrolled Potential to Emit

This project does not change uncontrolled potential to emit; therefore, uncontrolled potential to emit is not recalculated and is not included here.

Pre-Project Potential to Emit

This permitting action is to replace the scrubber with a baghouse to control emissions from the HMA drum dryer stack. As a result of this permitting action, the particulate emissions from the HMA drum dryer stack are expected to decrease. The pre-project PTE of the drum dryer stack is 1.62 T/yr for PM_{10} as listed in the SOB for the existing permit.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

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

Table 2 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Pollutant	A Drum Mix Max Emission Rate for Pollutant (T/yr) [(a)]	B Asphalt Tank Heater Max Emission Rate for Pollutant (T/yr) [(a)]	C IC Engine IC1 + IC2 Max Emission Rate for Pollutant (T/yr) [(a)]	D Load-out & Silo Filling, Emission Rate for Pollutant (T/yr) [(a)]	E POINT SOURCE TOTAL of Max Emission Rates from A, B, & C (T/yr) [(a)] Exclude Fugitives (D)
PM (total)	1.98	3.96E-02	1.29E+00	6.65E-02	3.31
PM-10 (total)	1.38	2.76E-02	1.29E+00	6.65E-02	2.70
PM-2.5	1.34	1.85E-02	2.91E-01	6.65E-02	1.65
CO	7.80	6.00E-02	3.95E+00	1.52E-01	11.81
NOx	3.30	2.88E-01	1.83E+01	---	21.91
SO2	5.34	8.52E-01	1.20E+00	---	7.40
VOC	1.92	6.67E-03	1.50E+00	2.42E-01	3.42

a) 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. This permitting action is expected to reduce particulate emissions from the HMA drum dryer stack. The following table presents the drum dryer PTE change for the particulates.

Table 3 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM_{10} (T/yr)
Pre-Project HMA Plant PTE	1.62
Post Project HMA Plant PTE	1.38
Changes in Potential to Emit	**-0.24**

TAP Emissions

TAP PTE increment is zero for this permitting action.

Post Project HAP Emissions

The total HAP is 0.66 T/yr according to DEQ's HMA spreadsheet for a HMA plant. Refer to Appendix A for more details.

Ambient Air Quality Impact Analyses

This permitting action does not cause emissions increase; therefore, modeling is not required.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

This permitting action does not change the restriction that the HMA plant is not allowed to move to PM_{10} and $PM_{2.5}$ nonattainment area. The requirement is assured by Permit Conditions 2.28.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.

SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.

SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.

UNK = Class is unknown.

For All Other Pollutants:

A = Use when permitted emissions of a pollutant are > 100 T/yr.

SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.

SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.

UNK = Class is unknown.

Table 4 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	>100	<100	**100**	SM
PM_{10}	>100	<100	**100**	SM
$PM_{2.5}$	>100	<100	**100**	SM
SO_2	<100	<100	**100**	B
NO_X	<100	<100	**100**	B
CO	<100	<100	**100**	B
VOC	<100	<100	**100**	B
HAP (single)	<10	<10	**10**	B
Total HAPs	<25	<25	**25**	B

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201..... Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the facility name change and for the replacement of the scrubber with a baghouse that controls emissions from the HMA drum dryer stack. 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 emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Condition 2.4.

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

IDAPA 58.01.01.301..... Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM_{10}, SO_2, NO_X, CO, and VOC or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated in DEQ's HMA spreadsheet in Appendix A of the SOB. 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 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)

The HMA plant is subject to 40 CFR 60 Subpart I. The 45 Kilowatt generator is subject to 40 CFR 60 Subpart IIII. This permitting action does not change the facility's NSPS applicability determination and the applicable NSPS requirements. Refer to the SOB for P-2008.0189 issued on April 7, 2009 for more details.

NESHAP Applicability (40 CFR 61)

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

MACT/GACT Applicability (40 CFR 63)

The 454 kW Caterpillar engine is subject to 40 CFR 63 Subpart ZZZZ. The facility is an area source for HAP emissions. The facility shall comply with the requirements in the subpart.

This permitting action is for a name change and for replacing the scrubber with a baghouse. The regulatory analysis for the engine was not provided in the application. DEQ has advised the applicant to submit a separate application to address the engines as currently the facility is using a different engine as permitted.

Permit Conditions Review

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

Permit Condition 1.1 states the purpose of this permitting action.

Permit Condition 1.3 states that this revised PTC replaces PTC No. P-2008.0189, issued on April 7, 2009.

Table 1.1 and Table 2.1 are revised to replace the scrubber with a baghouse.

Permit Condition 2.1 is revised to change the facility name and to replace the scrubber with a baghouse.

Old Permit Condition 2.3 is removed as it is included in the footnotes to Table 2.2.

Permit Condition 2.3 (old Permit Condition 2.4) and Table 2.2

Emissions limits in Table 2.2 are kept the same though the calculated emissions rates with the baghouse are lower than the existing emissions limits based on using scrubber; the existing emissions limits were used in the modeling for the existing PTC. The footnotes to Table 2.2 are revised to use the ones in the current PTC template.

Permit Condition 2.9 is revised to replace scrubber with baghouse.

Permit Condition 2.10 is revised to replace the scrubber O&M manual with baghouse O&M procedures that follows DEQ's internal guidance for a baghouse.

Old Permit Condition 2.12 about scrubber flow rate and pressure drop is removed.

Permit Condition 2.19 requires the permittee to perform a source test after the baghouse is installed. The source test language is updated.

Permit Condition 2.20 (Old Permit Condition 2.22) is revised to remove scrubber flow rate and scrubber pressure drop monitoring.

Permit Conditions 2.27, 2.28, 2.29 are revised to update the links to Portable Equipment Registration and Relocation Form, to the nonattainment area in Idaho, and to 40 CFR 60 Subpart A, respectively.

New Permit Condition 2.31 states that the permittee shall comply with applicable requirements in 40 CFR 63 Subpart ZZZZ for the 454 kW Caterpillar engine. DEQ has advised the permittee to submit a separate permit application to address engine issues. Detailed regulatory analysis would be addressed in that application.

PUBLIC REVIEW

Public Comment Opportunity

Because this permitting action does not authorize an increase in emissions, an opportunity for public comment period was not required in accordance with IDAPA 58.01.01.209.04.

APPENDIX A – EMISSIONS INVENTORIES

Hot Mix Asphalt EI Spreadsheet

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

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

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

User Input:

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

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

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

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

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

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

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

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

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

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

This emissions evaluation is based on IDAPA regulatory requirements current as of spreadsheet version date.
EFs are drawn from AP-42 factors available as of spreadsheet version date.
Average brake-specific fuel consumption of 7,000 Btu/hp-hr was assumed to convert from lb/MMBtu to lb/hp-hr.
Average diesel heating value is based on 19,300 Btu/lb with a density of 7.1 lb/gal.
AP-42 EFs for natural gas combustion (Tables 1.4-xx) are based on heat value of 1,020 Btu/scf.
~~Natural Gas~~ Diesel Oil 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.	777-00433	Spreadsheet Date	5/15/2020 13:30
Permit No.	P-2008.0189	DEQ Version Date	8/2/2018
Facility Owner/Company Name:	C. W. OWEN CONSTRUCTION, LLC - 00433		
Address:	Portable		
City, State, Zip:			
Facility Contact:	Beth Martin		
Contact Number/ e-mail:	208-787-6936 beth@cmowenconstruction.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	CMI/UDM 1200	Distallate (#2) Fuel Oil	1
Rated heat input capacity, MMBtu/hr	41.1	Used Oil or RFO4 Oil	1
Drum Dryer Hourly HMA Production, Tons/hour	150	Natural Gas	1
Max Production Per day, Tons per day	1,800	LPG or Propane	1
Max Annual HMA Production, Tons/year	120,000	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)	800	#2 Fuel Oil Max Sulfur Content	0.5000%
		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	1.096	**Fuel Type(s)**	**Fuel Toggle**
Hours of operation per day	24	#2 Fuel Oil	1
Operation, days per year (DEQ Assumption)	125.00	Fuel oil sulfur content	0.5000%
Max Hours of operation per year (DEQ Assumption)	3,000	Natural Gas	0

Asphaltic Oil Tank Heater Fuel Consumption Calculations	**#2 Fuel Oil**	**Natural Gas**
Heat Input Rating, MMBtu/hr	1.096	1.096
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]	8.00	1,075
Max Operational Hours per Year	3,000	3,000
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

Both engines in the permit are less than 600 hp. The total horse power of the two engines are entered into the following table. The sum of emissions from two separate runs that only includes one engine generates same value for this particular project.

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	Caterpillar/3412CDITA+Whisper Watt	**Fuel Type(s)**	**IC Engine Toggle**
IC Engine Year Manufactured (yyyy)	2005+2008	#2 Fuel Oil (Diesel)	1
IC Engine Max Rated Power (bhp)	791	Max Sulfur weight percentage	0.5000%
IC Engine Max Rated Capacity (kW)	590 (545 kw + 45 kw)	Max Operational Hours/Day	12
		Max Operational Hours/Year	1,500
IC Engine 1 EPA Certification:	0	Calculated Max Fuel Use Rate, gal/hr	40.42
Not EPA-certified: Enter "0" (zero)		Calculated MMBtu/hr	5.54
Certified Tier I, Tier 2, Tier 3, or Tier 4: Enter 1, 2, 3, or 4			
Certified "BLUE SKY" engine: Enter 5			

Both engines in the permit are less than 600 hp. Engine rate is put as "0" for engines greater than 600 hp.

IC Engine 2 > 600 bhp (447 kW) AP-42 Section 3.4 (diesel fueled)			
IC Engine Make/Model		**Fuel Type(s)**	**IC Engine Toggle**
IC Engine Year Manufactured (yyyy)	0	#2 Fuel Oil (Diesel)	1
IC Engine Rated Capacity (bhp)	0	Max Sulfur weight percentage	0.0015%
IC Engine Max Rated Capacity (kW)	0	Max Operational Hours per Day	24
		Max Operational Hours per Year	1,500
IC Engine 2 EPA Certification:	0	Calculated Max Fuel Use Rate, gal/hr	0.00
Not EPA-certified: Enter "0" (zero)		Calculated MMBtu/hr	0.00
Certified Tier I, Tier 2, Tier 3, or Tier 4: Enter 1, 2, 3, or 4			
Certified "BLUE SKY" engine: Enter 5			

Aggregate Handling - Fugitive Emissions		
U = mean wind speed (miles per hour)	10	
Moisture/Control % Considerations:		
AP-42 Table 11.19.2-2, Note b. Moisture content of uncontrolled sources ranged from 0.21 to 1.3%		
AP-42 Table 11.19.2-2, Note b. Moisture content of controlled (water spray) sources ranged from 0.55 to 2.88% -->		
		--> ~91.3% control for screening, ~95% control for co
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% con
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

Facility: **C. W. OWEN CONSTRUCTION, LLC - 00433**
5/15/2020 13:30 **Permit/Facility ID: P-2008.0189 777-00433**

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

Fuel Type Toggle = 1
Max Hourly Production 150 T/hr
Max Daily Production 1,800 Tons/day
Max Annual Production 120,000 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	4.95	1.98	
PM-10 (total) [b]	0.023	3.45	1.38	
PM-2.5 [b1]	0.0223	3.35	1.34	
CO [c]	0.13	19.50	7.80	
NOx [c]	0.055	8.25	3.30	
SO_2 [c]	0.089	13.35	5.34	
VOC [d]	0.032	4.80	1.92	
Lead	1.50E-05	2.25E-03	9.00E-04	
HCl [d,e]	0.00021	0.0315	1.26E-02	
Dioxins[e,f]				
2,3,7,8-TCDD	2.10E-13	3.15E-11	1.26E-11	**2.88E-12**
Total TCDD	9.30E-13	1.40E-10	5.58E-11	**1.27E-11**
1,2,3,7,8-PeCDD	3.10E-13	4.65E-11	1.86E-11	**4.25E-12**
Total PeCDD	2.20E-11	3.30E-09	1.32E-09	**3.01E-10**
1,2,3,4,7,8-HxCDD	4.20E-13	6.30E-11	2.52E-11	**5.75E-12**
1,2,3,6,7,8-HxCDD	1.30E-12	1.95E-10	7.80E-11	**1.78E-11**
1,2,3,7,8,9-HxCDD	9.80E-13	1.47E-10	5.88E-11	**1.34E-11**
Total HxCDD	1.20E-11	1.80E-09	7.20E-10	**1.64E-10**
1,2,3,4,6,7,8-Hp-CDD	4.80E-12	7.20E-10	2.88E-10	**6.58E-11**
Total HpCDD	1.90E-11	2.85E-09	1.14E-09	**2.60E-10**
Octa CDD	2.50E-11	3.75E-09	1.50E-09	**3.42E-10**
Total PCDD[h]	7.90E-11	1.19E-08	4.74E-09	**1.08E-09**
Furans[e,f]				
2,3,7,8-TCDF	9.70E-13	1.46E-10	5.82E-11	**1.33E-11**
Total TCDF	3.70E-12	5.55E-10	2.22E-10	**5.07E-11**
1,2,3,7,8-PeCDF	4.30E-12	6.45E-10	2.58E-10	**5.89E-11**
2,3,4,7,8-PeCDF	8.40E-13	1.26E-10	5.04E-11	**1.15E-11**
Total PeCDF	8.40E-11	1.26E-08	5.04E-09	**1.15E-09**
1,2,3,4,7,8-HxCDF	4.00E-12	6.00E-10	2.40E-10	**5.48E-11**
1,2,3,6,7,8-HxCDF	1.20E-12	1.80E-10	7.20E-11	**1.64E-11**
2,3,4,6,7,8-HxCDF	1.90E-12	2.85E-10	1.14E-10	**2.60E-11**
1,2,3,7,8,9-HxCDF	8.40E-12	1.26E-09	5.04E-10	**1.15E-10**
Total HxCDF	1.30E-11	1.95E-09	7.80E-10	**1.78E-10**
1,2,3,4,6,7,8-HpCDF	6.50E-12	9.75E-10	3.90E-10	**8.90E-11**
1,2,3,4,7,8,9-HpCDF	2.70E-12	4.05E-10	1.62E-10	**3.70E-11**
Total HpCDF	1.00E-11	1.50E-09	6.00E-10	**1.37E-10**
Octa CDF	4.80E-12	7.20E-10	2.88E-10	**6.58E-11**
Total PCDF[h]	4.00E-11	6.00E-09	2.40E-09	**5.48E-10**
Total PCDD/PCDF[h]	1.20E-10	1.80E-08	7.20E-09	**1.64E-09**
Non-PAH HAPs[f]				
Acetaldehyde[e]	1.30E-03	1.95E-01	7.80E-02	**1.78E-02**
Acrolein[e]	2.60E-05	3.90E-03	1.56E-03	1.95E-03
Benzene[e]	3.90E-04	5.85E-02	2.34E-02	**5.34E-03**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	3.60E-02	1.44E-02	1.80E-02
Formaldehyde[e]	3.10E-03	4.65E-01	1.86E-01	**4.25E-02**
Hexane[e]	9.20E-04	1.38E-01	5.52E-02	6.90E-02
Isooctane	4.00E-05	6.00E-03	2.40E-03	3.00E-03
Methyl Ethyl Ketone[e]	2.00E-05	3.00E-03	1.20E-03	1.50E-03
Pentane[e]				
Propionaldehyde[e]	1.30E-04	1.95E-02	7.80E-03	9.75E-03
Quinone[e]	1.60E-04	2.40E-02	9.60E-03	1.20E-02
Methyl chloroform[e]	4.80E-05	7.20E-03	2.88E-03	3.60E-03
Toluene[e]	2.90E-03	4.35E-01	1.74E-01	2.18E-01
Xylene[e]	2.00E-04	3.00E-02	1.20E-02	1.50E-02
POM (7-PAH Group)		8.22E-05		**7.50E-06**

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	2.55E-02	1.02E-02	**2.33E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	2.10E-04	8.40E-05	**1.92E-05**
Acenaphthylene	2.20E-05	3.30E-03	1.32E-03	**3.01E-04**
Anthracene	3.10E-06	4.65E-04	1.86E-04	**4.25E-05**
Benzo(a)anthracene	2.10E-07	3.15E-05	1.26E-05	**2.88E-06**
Benzo(a)pyrene[e]	9.80E-09	1.47E-06	5.88E-07	**1.34E-07**
Benzo(b)fluoranthene	1.00E-07	1.50E-05	6.00E-06	**1.37E-06**
Benzo(e)pyrene	1.10E-07	1.65E-05	6.60E-06	**1.51E-06**
Benzo(g,h,i)perylene	4.00E-08	6.00E-06	2.40E-06	**5.48E-07**
Benzo(k)fluoranthene	4.10E-08	6.15E-06	2.46E-06	**5.62E-07**
Chrysene	1.80E-07	2.70E-05	1.08E-05	**2.47E-06**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	9.15E-05	3.66E-05	**8.36E-06**
Fluorene	1.10E-05	1.65E-03	6.60E-04	**1.51E-04**
Indeno(1,2,3-cd)pyrene	7.00E-09	1.05E-06	4.20E-07	**9.59E-08**
Naphthalene[e]	6.50E-04	9.75E-02	3.90E-02	**8.90E-03**
Perylene	8.80E-09	1.32E-06	5.28E-07	**1.21E-07**
Phenanthrene	2.30E-05	3.45E-03	1.38E-03	**3.15E-04**
Pyrene	3.00E-06	4.50E-04	1.80E-04	**4.11E-05**
Non-HAP Organic Compounds[f]				
Acetone[e]	8.30E-04	1.25E-01	4.98E-02	6.23E-02
Benzaldehyde	1.10E-04	1.65E-02	6.60E-03	8.25E-03
Butane	6.70E-04	1.01E-01	4.02E-02	5.03E-02
Butyraldehyde	1.60E-04	2.40E-02	9.60E-03	1.20E-02
Crotonaldehyde[e]	8.60E-05	1.29E-02	5.16E-03	6.45E-03
Ethylene	7.00E-03	1.05E+00	4.20E-01	5.25E-01
Heptane	9.40E-03	1.41E+00	5.64E-01	7.05E-01
Hexanal	1.10E-04	1.65E-02	6.60E-03	8.25E-03
Isovaleraldehyde	3.20E-05	4.80E-03	1.92E-03	2.40E-03
2-Methyl-1-pentene	4.00E-03	6.00E-01	2.40E-01	3.00E-01
2-Methyl-2-butene	5.80E-04	8.70E-02	3.48E-02	4.35E-02
3-Methylpentane	1.90E-04	2.85E-02	1.14E-02	1.43E-02
1-Pentene	2.20E-03	3.30E-01	1.32E-01	1.65E-01
n-Pentane	2.10E-04	3.15E-02	1.26E-02	1.58E-02
Valeraldehyde[e]	6.70E-05	1.01E-02	4.02E-03	5.03E-03
Metals[g]				
Antimony[e]	1.80E-07	2.70E-05	1.08E-05	1.35E-05
Arsenic[e]	5.60E-07	8.40E-05	3.36E-05	**7.67E-06**
Barium[e]	5.80E-06	8.70E-04	3.48E-04	4.35E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	6.15E-05	2.46E-05	**5.62E-06**
Chromium[e]	5.50E-06	8.25E-04	3.30E-04	4.13E-04
Cobalt[e]	2.60E-08	3.90E-06	1.56E-06	1.95E-06
Copper[e]	3.10E-06	4.65E-04	1.86E-04	2.33E-04
Hexavalent Chromium[e]	4.50E-07	6.75E-05	2.70E-05	**6.16E-06**
Manganese[e]	7.70E-06	1.16E-03	4.62E-04	5.78E-04
Mercury[e]	2.60E-06	3.90E-04	1.56E-04	1.95E-04
Molybdenum[e]				
Nickel[e]	6.30E-05	9.45E-03	3.78E-03	**8.63E-04**
Phosphorus[e]	2.80E-05	4.20E-03	1.68E-03	2.10E-03
Silver[e]	4.80E-07	7.20E-05	2.88E-05	3.60E-05
Selenium[e]	3.50E-07	5.25E-05	2.10E-05	2.63E-05
Thallium[e]	4.10E-09	6.15E-07	2.46E-07	3.08E-07
Vanadium[e]				
Zinc[e]	6.10E-05	9.15E-03	3.66E-03	4.58E-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.

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: **C. W. OWEN CONSTRUCTION, LLC - 00433**
5/15/2020 13:30 **Permit/ Facility ID: P-2008.0189 777-00433**

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

Fuel Type Toggle = 1
Max Hourly Production 150 Tons/hr
Max Daily Production 1,800 Tons/day
Max Annual Production 120,000 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	4.95	1.98	
PM-10 (total)[b]	0.023	3.45	1.38	
PM-2.5 [b1]	0.0223	3.35	1.34	
CO [c]	0.13	19.50	7.80	
NOx [c]	0.026	3.90	1.56	
SO_2 [c]	0.0034	0.51	0.20	
VOC [d]	0.032	4.80	1.92	
Lead	6.20E-07	9.30E-05	3.72E-05	
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	5.85E-02	2.34E-02	**5.34E-03**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	3.60E-02	1.44E-02	1.80E-02
Formaldehyde[e]	3.10E-03	4.65E-01	1.86E-01	**4.25E-02**
Hexane[e]	9.20E-04	1.38E-01	5.52E-02	6.90E-02
Isooctane	4.00E-05	6.00E-03	2.40E-03	3.00E-03
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	7.20E-03	2.88E-03	3.60E-03
Toluene[e]	1.50E-04	2.25E-02	9.00E-03	1.13E-02
Xylene[e]	2.00E-04	3.00E-02	1.20E-02	1.50E-02
POM (7-PAH Group)		1.70E-02		**1.55E-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	1.11E-02	4.44E-03	**1.01E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	2.10E-04	8.40E-05	**1.92E-05**
Acenaphthylene	8.60E-06	1.29E-03	5.16E-04	**1.18E-04**
Anthracene	2.20E-07	3.30E-05	1.32E-05	**3.01E-06**
Benzo(a)anthracene	2.10E-07	3.15E-05	1.26E-05	**2.88E-06**
Benzo(a)pyrene[e]	9.80E-09	1.47E-06	5.88E-07	**1.34E-07**
Benzo(b)fluoranthene	1.00E-07	1.50E-05	6.00E-06	**1.37E-06**
Benzo(e)pyrene	1.10E-07	1.65E-05	6.60E-06	**1.51E-06**
Benzo(g,h,I)perylene	4.00E-08	6.00E-06	2.40E-06	**5.48E-07**
Benzo(k)fluoranthene	4.10E-08	6.15E-06	2.46E-06	**5.62E-07**
Chrysene	1.80E-07	2.70E-05	1.08E-05	**2.47E-06**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	9.15E-05	3.66E-05	**8.36E-06**
Fluorene	3.80E-06	5.70E-04	2.28E-04	**5.21E-05**
Indeno(1,2,3-cd)pyrene	7.00E-09	1.05E-06	4.20E-07	**9.59E-08**
Naphthalene[e]	9.00E-05	1.35E-02	5.40E-03	**1.23E-03**
Perylene	8.80E-09	1.32E-06	5.28E-07	**1.21E-07**
Phenanthrene	7.60E-06	1.14E-03	4.56E-04	**1.04E-04**
Pyrene	5.40E-07	8.10E-05	3.24E-05	**7.40E-06**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	1.01E-01	4.02E-02	5.03E-02
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	1.05E+00	4.20E-01	5.25E-01
Heptane	9.40E-03	1.41E+00	5.64E-01	7.05E-01
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	6.00E-01	2.40E-01	3.00E-01
2-Methyl-2-butene	5.80E-04	8.70E-02	3.48E-02	4.35E-02
3-Methylpentane	1.90E-04	2.85E-02	1.14E-02	1.43E-02
1-Pentene	2.20E-03	3.30E-01	1.32E-01	1.65E-01
n-Pentane	2.10E-04	3.15E-02	1.26E-02	1.58E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	2.70E-05	1.08E-05	1.35E-05
Arsenic[e]	5.60E-07	8.40E-05	3.36E-05	**7.67E-06**
Barium[e]	5.80E-06	8.70E-04	3.48E-04	4.35E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	6.15E-05	2.46E-05	**5.62E-06**
Chromium[e]	5.50E-06	8.25E-04	3.30E-04	4.13E-04
Cobalt[e]	2.60E-08	3.90E-06	1.56E-06	1.95E-06
Copper[e]	3.10E-06	4.65E-04	1.86E-04	2.33E-04
Hexavalent Chromium[e]	4.50E-07	6.75E-05	2.70E-05	**6.16E-06**
Manganese[e]	7.70E-06	1.16E-03	4.62E-04	5.78E-04
Mercury[e]	2.40E-07	3.60E-05	1.44E-05	1.80E-05
Molybdenum[e]				
Nickel[e]	6.30E-05	9.45E-03	3.78E-03	**8.63E-04**
Phosphorus[e]	2.80E-05	4.20E-03	1.68E-03	2.10E-03
Silver[e]	4.80E-07	7.20E-05	2.88E-05	3.60E-05
Selenium[e]	3.50E-07	5.25E-05	2.10E-05	2.63E-05
Thallium[e]	4.10E-09	6.15E-07	2.46E-07	3.08E-07
Vanadium[e]				
Zinc[e]	6.10E-05	9.15E-03	3.66E-03	4.58E-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: **C. W. OWEN CONSTRUCTION, LLC - 00433**
5/15/2020 13:30 **Permit/Facility ID: P-2008.0189 777-00433**

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

Fuel Type Toggle = 1
Hourly Production 150 T/hr
Daily Production 1,800 Tons/day
Max Annual Production 120,000 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% = 1.000

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	4.95	1.98	
PM-10 (total) [b]	0.023	3.45	1.38	
PM-2.5 [b1]	0.0223	3.35	1.34	
CO [c]	0.13	19.50	7.80	
NOx [c]	0.055	8.25	3.30	
SO_2 [c]	0.089	13.35	5.34	
VOC [d]	0.032	4.80	1.92	
Lead	1.50E-05	2.25E-03	9.00E-04	
HCl [d,e]	No Data			
Dioxins[e]				
2,3,7,8-TCDD	2.10E-13	3.15E-11	1.26E-11	**2.88E-12**
Total TCDD	9.30E-13	1.4E-10	5.58E-11	**1.27E-11**
1,2,3,7,8-PeCDD	3.10E-13	4.65E-11	1.86E-11	**4.25E-12**
Total PeCDD	2.20E-11	3.3E-09	1.32E-09	**3.01E-10**
1,2,3,4,7,8-HxCDD	4.20E-13	6.3E-11	2.52E-11	**5.75E-12**
1,2,3,6,7,8-HxCDD	1.30E-12	1.95E-10	7.80E-11	**1.78E-11**
1,2,3,7,8,9-HxCDD	9.80E-13	1.47E-10	5.88E-11	**1.34E-11**
Total HxCDD	1.20E-11	1.8E-09	7.20E-10	**1.64E-10**
1,2,3,4,6,7,8-Hp-CDD	4.80E-12	7.2E-10	2.88E-10	**6.58E-11**
Total HpCDD	1.90E-11	2.85E-09	1.14E-09	**2.60E-10**
Octa CDD	2.50E-11	3.75E-09	1.50E-09	**3.42E-10**
Total PCDD[h]	7.90E-11	1.19E-08	4.74E-09	**1.08E-09**
Furans[e]				
2,3,7,8-TCDF	9.70E-13	1.46E-10	5.82E-11	**1.33E-11**
Total TCDF	3.70E-12	5.55E-10	2.22E-10	**5.07E-11**
1,2,3,7,8-PeCDF	4.30E-12	6.45E-10	2.58E-10	**5.89E-11**
2,3,4,7,8-PeCDF	8.40E-13	1.26E-10	5.04E-11	**1.15E-11**
Total PeCDF	8.40E-11	1.26E-08	5.04E-09	**1.15E-09**
1,2,3,4,7,8-HxCDF	4.00E-12	6E-10	2.40E-10	**5.48E-11**
1,2,3,6,7,8-HxCDF	1.20E-12	1.8E-10	7.20E-11	**1.64E-11**
2,3,4,6,7,8-HxCDF	1.90E-12	2.85E-10	1.14E-10	**2.60E-11**
1,2,3,7,8,9-HxCDF	8.40E-12	1.26E-09	5.04E-10	**1.15E-10**
Total HxCDF	1.30E-11	1.95E-09	7.80E-10	**1.78E-10**
1,2,3,4,6,7,8-HpCDF	6.50E-12	9.75E-10	3.90E-10	**8.90E-11**
1,2,3,4,7,8,9-HpCDF	2.70E-12	4.05E-10	1.62E-10	**3.70E-11**
Total HpCDF	1.00E-11	1.5E-09	6.00E-10	**1.37E-10**
Octa CDF	4.80E-12	7.2E-10	2.88E-10	**6.58E-11**
Total PCDF[h]	4.00E-11	6E-09	2.40E-09	**5.48E-10**
Total PCDD/PCDF[h]	1.20E-10	1.8E-08	7.20E-09	**1.64E-09**
Non-PAH HAPs[f]				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]	3.90E-04	5.85E-02	2.34E-02	**5.34E-03**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	3.60E-02	1.44E-02	1.80E-02
Formaldehyde[e]	3.10E-03	4.65E-01	1.86E-01	**4.25E-02**
Hexane[e]	9.20E-04	1.38E-01	5.52E-02	6.90E-02
Isooctane	4.00E-05	6.00E-03	2.40E-03	3.00E-03
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	7.20E-03	2.88E-03	3.60E-03
Toluene[e]	2.90E-03	4.35E-01	1.74E-01	2.18E-01
Xylene[e]	2.00E-04	3.00E-02	1.20E-02	1.50E-02
POM (7-PAH Group)		8.22E-05		**7.50E-06**

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	2.55E-02	1.02E-02	**2.33E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	2.10E-04	8.40E-05	**1.92E-05**
Acenaphthylene	2.20E-05	3.30E-03	1.32E-03	**3.01E-04**
Anthracene	3.10E-06	4.65E-04	1.86E-04	**4.25E-05**
Benzo(a)anthracene	2.10E-07	3.15E-05	1.26E-05	**2.88E-06**
Benzo(a)pyrene[e]	9.80E-09	1.47E-06	5.88E-07	**1.34E-07**
Benzo(b)fluoranthene	1.00E-07	1.50E-05	6.00E-06	**1.37E-06**
Benzo(e)pyrene	1.10E-07	1.65E-05	6.60E-06	**1.51E-06**
Benzo(g,h,I)perylene	4.00E-08	6.00E-06	2.40E-06	**5.48E-07**
Benzo(k)fluoranthene	4.10E-08	6.15E-06	2.46E-06	**5.62E-07**
Chrysene	1.80E-07	2.70E-05	1.08E-05	**2.47E-06**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	9.15E-05	3.66E-05	**8.36E-06**
Fluorene	1.10E-05	1.65E-03	6.60E-04	**1.51E-04**
Indeno(1,2,3-cd)pyrene	7.00E-09	1.05E-06	4.20E-07	**9.59E-08**
Naphthalene[e]	0.00065	9.75E-02	3.90E-02	**8.90E-03**
Perylene	8.80E-09	1.32E-06	5.28E-07	**1.21E-07**
Phenanthrene	2.30E-05	3.45E-03	1.38E-03	**3.15E-04**
Pyrene	3.00E-06	4.50E-04	1.80E-04	**4.11E-05**
Non-HAP Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	1.01E-01	4.02E-02	5.03E-02
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	1.05E+00	4.20E-01	5.25E-01
Heptane	9.40E-03	1.41E+00	5.64E-01	7.05E-01
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	6.00E-01	2.40E-01	3.00E-01
2-Methyl-2-butene	5.80E-04	8.70E-02	3.48E-02	4.35E-02
3-Methylpentane	1.90E-04	2.85E-02	1.14E-02	1.43E-02
1-Pentene	2.20E-03	3.30E-01	1.32E-01	1.65E-01
n-Pentane	2.10E-04	3.15E-02	1.26E-02	1.58E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	2.70E-05	1.08E-05	1.35E-05
Arsenic[e]	5.60E-07	8.40E-05	3.36E-05	**7.67E-06**
Barium[e]	5.80E-06	8.70E-04	3.48E-04	4.35E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	6.15E-05	2.46E-05	**5.62E-06**
Chromium[e]	5.50E-06	8.25E-04	3.30E-04	4.13E-04
Cobalt[e]	2.60E-08	3.90E-06	1.56E-06	1.95E-06
Copper[e]	3.10E-06	4.65E-04	1.86E-04	2.33E-04
Hexavalent Chromium[e]	4.50E-07	6.75E-05	2.70E-05	**6.16E-06**
Manganese[e]	7.70E-06	1.16E-03	4.62E-04	5.78E-04
Mercury[e]	2.60E-06	3.90E-04	1.56E-04	1.95E-04
Molybdenum[e]				
Nickel[e]	6.30E-05	9.45E-03	3.78E-03	**8.63E-04**
Phosphorus[e]	2.80E-05	4.20E-03	1.68E-03	2.10E-03
Silver[e]	4.80E-07	7.20E-05	2.88E-05	3.60E-05
Selenium[e]	3.50E-07	5.25E-05	2.10E-05	2.63E-05
Thallium[e]	4.10E-09	6.15E-07	2.46E-07	3.08E-07
Vanadium[e]				
Zinc[e]	6.10E-05	9.15E-03	3.66E-03	4.58E-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: **C. W. OWEN CONSTRUCTION, LLC - 00433**
5/15/2020 13:30 **Permit/ Facility ID: P-2008.0189 777-00433**

LPG or Propane Fired Drum Mix Asphalt Plant With Fabric Filter

Fuel Type Toggle = 1
Max Hourly Production 150 Tons/hr
Max Daily Production 1,800 Tons/day
Max Annual Production 120,000 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	4.95	1.98	
PM-10 (total)[b]	0.023	3.45	1.38	
PM-2.5 [b1]	0.0223	3.35	1.34	
CO [c]	0.13	19.50	7.80	
NOx [c1] (Natural Gas EF x 1.5)	0.039	5.85	2.34	
SO_2 [c]	0.0034	0.51	0.20	
VOC [d]	0.032	4.80	1.92	
Lead	6.20E-07	0.000093	3.72E-05	
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	5.85E-02	2.34E-02	**5.34E-03**
1,3-Butadiene[e]				
Ethylbenzene[e]	2.40E-04	3.60E-02	1.44E-02	1.80E-02
Formaldehyde[e]	3.10E-03	4.65E-01	1.86E-01	**4.25E-02**
Hexane[e]	9.20E-04	1.38E-01	5.52E-02	6.90E-02
Isooctane	4.00E-05	6.00E-03	2.40E-03	3.00E-03
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]	4.80E-05	7.20E-03	2.88E-03	3.60E-03
Toluene[e]	1.50E-04	2.25E-02	9.00E-03	1.13E-02
Xylene[e]	2.00E-04	3.00E-02	1.20E-02	1.50E-02
POM (7-PAH Group)		8.22E-05		**7.50E-06**

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	1.11E-02	4.44E-03	**1.01E-03**
3-Methylchloranthrene[e]				
Acenaphthene	1.40E-06	2.10E-04	8.40E-05	**1.92E-05**
Acenaphthylene	8.60E-06	1.29E-03	5.16E-04	**1.18E-04**
Anthracene	2.20E-07	3.30E-05	1.32E-05	**3.01E-06**
Benzo(a)anthracene	2.10E-07	3.15E-05	1.26E-05	**2.88E-06**
Benzo(a)pyrene[e]	9.80E-09	1.47E-06	5.88E-07	**1.34E-07**
Benzo(b)fluoranthene	1.00E-07	1.50E-05	6.00E-06	**1.37E-06**
Benzo(e)pyrene	1.10E-07	1.65E-05	6.60E-06	**1.51E-06**
Benzo(g,h,I)perylene	4.00E-08	6.00E-06	2.40E-06	**5.48E-07**
Benzo(k)fluoranthene	4.10E-08	6.15E-06	2.46E-06	**5.62E-07**
Chrysene	1.80E-07	2.70E-05	1.08E-05	**2.47E-06**
Dibenzo(a,h)anthracene				
Dichlorobenzene				
Fluoranthene	6.10E-07	9.15E-05	3.66E-05	**8.36E-06**
Fluorene	3.80E-06	5.70E-04	2.28E-04	**5.21E-05**
Indeno(1,2,3-cd)pyrene	7.00E-09	1.05E-06	4.20E-07	**9.59E-08**
Naphthalene[e]	9.00E-05	1.35E-02	5.40E-03	**1.23E-03**
Perylene	8.80E-09	1.32E-06	5.28E-07	**1.21E-07**
Phenanthrene	7.60E-06	1.14E-03	4.56E-04	**1.04E-04**
Pyrene	5.40E-07	8.10E-05	3.24E-05	**7.40E-06**
Non-HAPs Organic Compounds[f]				
Acetone[e]				
Benzaldehyde				
Butane	6.70E-04	1.01E-01	4.02E-02	5.03E-02
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	7.00E-03	1.05E+00	4.20E-01	5.25E-01
Heptane	9.40E-03	1.41E+00	5.64E-01	7.05E-01
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene	4.00E-03	6.00E-01	2.40E-01	3.00E-01
2-Methyl-2-butene	5.80E-04	8.70E-02	3.48E-02	4.35E-02
3-Methylpentane	1.90E-04	2.85E-02	1.14E-02	1.43E-02
1-Pentene	2.20E-03	3.30E-01	1.32E-01	1.65E-01
n-Pentane	2.10E-04	3.15E-02	1.26E-02	1.58E-02
Valeraldehyde				
Metals[g]				
Antimony[e]	1.80E-07	2.70E-05	1.08E-05	1.35E-05
Arsenic[e]	5.60E-07	8.40E-05	3.36E-05	**7.67E-06**
Barium[e]	5.80E-06	8.70E-04	3.48E-04	4.35E-04
Beryllium[e]				
Cadmium[e]	4.10E-07	6.15E-05	2.46E-05	**5.62E-06**
Chromium[e]	5.50E-06	8.25E-04	3.30E-04	4.13E-04
Cobalt[e]	2.60E-08	3.90E-06	1.56E-06	1.95E-06
Copper[e]	3.10E-06	4.65E-04	1.86E-04	2.33E-04
Hexavalent Chromium[e]	4.50E-07	6.75E-05	2.70E-05	**6.16E-06**
Manganese[e]	7.70E-06	1.16E-03	4.62E-04	5.78E-04
Mercury[e]	2.40E-07	3.60E-05	1.44E-05	1.80E-05
Molybdenum[e]				
Nickel[e]	6.30E-05	9.45E-03	3.78E-03	**8.63E-04**
Phosphorus[e]	2.80E-05	4.20E-03	1.68E-03	2.10E-03
Silver[e]	4.80E-07	7.20E-05	2.88E-05	3.60E-05
Selenium[e]	3.50E-07	5.25E-05	2.10E-05	2.63E-05
Thallium[e]	4.10E-09	6.15E-07	2.46E-07	3.08E-07
Vanadium[e]				
Zinc[e]	6.10E-05	9.15E-03	3.66E-03	4.58E-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.

5/15/2020 13:30 **Permit/Facility ID: P-2008.0189 777-00433**

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 8.00 gal/hr
Max Daily Operation 24 hr/day
Max Annual Operation 3,000 hrs/yr

User Input Weight % Sulfur = 0.5000%
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	2.64E-02	0.04	
PM-10 (total)[b] (filterable+cond)	0.0023	1.84E-02	0.03	
PM-2.5 (total)[b] (filterable+cond)	0.00154	0.012	0.02	
CO[b] ("C" EF Rating Factor)	0.005	4.00E-02	0.06	
NOx[b]	0.024	1.92E-01	0.29	
SO_2[b]	0.071	0.57	0.85	
VOC[d] (NMTOC EF)	5.56E-04	4.45E-03	6.67E-03	
Lead[f]	1.51E-06	1.21E-05	1.81E-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	5.52E-12	8.28E-12	**1.89E-12**
1,2,3,6,7,8-HxCDD				
1,2,3,7,8,9-HxCDD[c]	7.60E-13	6.08E-12	9.12E-12	**2.08E-12**
Total HxCDD				
1,2,3,4,6,7,8-Hp-CDD[c]	1.50E-11	1.20E-10	1.80E-10	**4.11E-11**
Total $HpCDD_c$	2.00E-11	1.60E-10	2.40E-10	**5.48E-11**
Octa CDD[c]	1.60E-10	1.28E-09	1.92E-09	**4.38E-10**
Total PCDD[c]	2.00E-10	1.60E-09	2.40E-09	**5.48E-10**
Furans[e]				
2,3,7,8-TCDF				
Total TCDF[c]	3.30E-12	2.64E-11	3.96E-11	**9.04E-12**
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF[c]	4.80E-13	3.84E-12	5.76E-12	**1.31E-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	1.60E-11	2.40E-11	**5.48E-12**
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF[c]	9.70E-12	7.76E-11	1.16E-10	**2.66E-11**
Octa CDF[c]	1.20E-11	9.60E-11	1.44E-10	**3.29E-11**
Total PCDF[c]	3.10E-11	2.48E-10	3.72E-10	**8.49E-11**
Total PCDD/PCDF[c]	2.30E-10	1.84E-09	2.76E-09	**6.30E-10**
Non-PAH HAPs				
Acetaldehyde[e]				
Acrolein[e]				
Benzene[e]				
1,3-Butadiene[e]				
Ethylbenzene[e]				
Formaldehyde[c,e]	3.50E-06	2.80E-05	4.20E-05	**9.59E-06**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[e]				
Xylene[e]				
POM (7-PAH Group)		8.00E-07		**2.74E-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	4.24E-06	6.36E-06	**1.45E-06**
Acenaphthylene[c]	2.00E-07	1.60E-06	2.40E-06	**5.48E-07**
Anthracene[c]	1.80E-07	1.44E-06	2.16E-06	**4.93E-07**
Benzo(a)anthracene				
Benzo(a)pyrene[e]				
Benzo(b)fluoranthene[c]	1.00E-07	8.00E-07	1.20E-06	**2.74E-07**
Benzo(e)pyrene				
Benzo(g,h,i)perylene				
Benzo(k)fluoranthene				
Chrysene				
Dibenzo(a.h)anthracene				
Dichlorobenzene				
Fluoranthene[c]	4.40E-08	3.52E-07	5.28E-07	**1.21E-07**
Fluorene[c]	3.20E-08	2.56E-07	3.84E-07	**8.77E-08**
Indeno(1,2,3-cd)pyrene				
Naphthalene[c,e]	1.70E-05	1.36E-04	2.04E-04	**4.66E-05**
Perylene				
Phenanthrene[c]	4.90E-06	3.92E-05	5.88E-05	**1.34E-05**
Pyrene[c]	3.20E-08	2.56E-07	3.84E-07	**8.77E-08**
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	4.20E-05	6.30E-05	4.20E-05
Arsenic[e]	1.32E-06	1.06E-05	1.58E-05	**3.62E-06**
Barium[e]	2.57E-06	2.06E-05	3.08E-05	2.06E-05
Beryllium[e]	2.78E-08	2.22E-07	3.34E-07	**7.61E-08**
Cadmium[e]	3.98E-07	3.18E-06	4.77E-06	**1.09E-06**
Chromium[e]	8.45E-07	6.76E-06	1.01E-05	6.76E-06
Cobalt[e]	6.02E-06	4.81E-05	7.22E-05	4.81E-05
Copper[e]	1.76E-06	1.41E-05	2.11E-05	1.41E-05
Hexavalent Chromium[e]	2.48E-07	1.98E-06	2.98E-06	**6.79E-07**
Manganese[e]	3.00E-06	2.40E-05	3.60E-05	2.40E-05
Mercury[e]	1.13E-07	9.04E-07	1.36E-06	9.04E-07
Molybdenum[e]	7.87E-07	6.29E-06	9.44E-06	6.29E-06
Nickel[e]	8.45E-05	6.76E-04	1.01E-03	**2.31E-04**
Phosphorus[e]	9.46E-06	7.57E-05	1.13E-04	7.57E-05
Silver[e]				
Selenium[e]	6.83E-07	5.46E-06	8.19E-06	5.46E-06
Thallium[e]				
Vanadium[e]	3.18E-05	2.54E-04	3.82E-04	2.54E-04
Zinc[e]	2.91E-05	2.33E-04	3.49E-04	2.33E-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.

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Silo Filling Operations AP-42 Section 11.1

Emissions Toggle = 1
Max Hourly Production 150 T/hr
Max Daily Production 1,800 Tons/day
Max Annual Production 120,000 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	0.0879	0.0352	
PM-10 (total)[b]	5.86E-04	0.0879	0.0352	
PM-2.5[b]	5.86E-04	0.0879	0.0352	
CO[b]	1.18E-03	0.1770	0.0708	
NOx				
SO_2				
VOC[d,g]	1.22E-04	1.83E-02	0.0073	
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	5.85E-04	2.34E-04	0.0001
1,3-Butadiene[e]				
Ethylbenzene[e]	4.63E-06	6.95E-04	2.78E-04	3.47E-04
Formaldehyde[e]	8.41E-05	1.26E-02	5.05E-03	0.0012
Hexane[e]	1.22E-05	1.83E-03	7.31E-04	9.14E-04
Isooctane	3.78E-08	5.67E-06	2.27E-06	2.83E-06
Methyl Ethyl Ketone[e]	4.75E-06	7.13E-04	2.85E-04	3.56E-04
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]		0.00E+00	0.00E+00	
Toluene[e]	7.56E-06	1.13E-03	4.53E-04	5.67E-04
Xylene[e]	3.13E-05	4.70E-03	1.88E-03	2.35E-03
POM (7-PAH Group)		1.01E-04		**9.25E-06**

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	2.01E-03	8.03E-04	1.83E-04
3-Methylchloranthrene[e]				
Acenaphthene	1.19E-06	1.79E-04	7.16E-05	1.63E-05
Acenaphthylene	3.55E-08	5.33E-06	2.13E-06	4.87E-07
Anthracene	3.30E-07	4.95E-05	1.98E-05	4.52E-06
Benzo(a)anthracene	1.42E-07	2.13E-05	8.53E-06	1.95E-06
Benzo(a)pyrene[e]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(e)pyrene	2.41E-08	3.62E-06	1.45E-06	3.30E-07
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	8.00E-05	3.20E-05	7.30E-06
Dibenzo(a,h)anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dichlorobenzene				
Fluoranthene	3.81E-07	5.71E-05	2.29E-05	5.22E-06
Fluorene	2.56E-06	3.85E-04	1.54E-04	3.51E-05
Indeno(1,2,3-cd)pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene[e]	4.62E-06	6.93E-04	2.77E-04	6.33E-05
Perylene	7.62E-08	1.14E-05	4.57E-06	1.04E-06
Phenanthrene	4.57E-06	6.86E-04	2.74E-04	6.26E-05
Pyrene	1.12E-06	1.68E-04	6.70E-05	1.53E-05
Non-HAP Organic Compounds				
Acetone[e]	6.70E-06	1.01E-03	0.0004	5.03E-04
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	1.34E-04	2.01E-02	0.0080	1.01E-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	150	T/hr
Max Daily Production	1,800	Tons/day
Max Annual Production	120,000	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[a]				
Bromomethane[e]	5.97E-07	8.96E-05	0.0000	4.48E-05
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	1.95E-06	2.92E-04	0.0001	1.46E-04
Chloroethane (Ethyl chloride[e])	4.87E-07	7.31E-05	0.0000	3.66E-05
Chloromethane (Methyl chloride[e])	2.80E-06	4.20E-04	0.0002	2.10E-04
Cumene[e]				
n-Hexane (see Hexane[e])				
Methylene chloride (Dichloromethane[e])	3.29E-08	4.94E-06	1.97E-06	2.47E-06
MTBE				
Styrene[e]	6.58E-07	9.87E-05	3.95E-05	4.94E-05
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	3.66E-03	0.0015	1.83E-03
o-Xylene[e] (added into Xylene[e])	6.95E-06	1.04E-03	0.0004	5.21E-04
Phenol[e,f]				
Non-HAP Organic Compounds				
Methane	3.17E-03	4.75E-01	0.1901	2.38E-01

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

Facility: **C. W. OWEN CONSTRUCTION, LLC - 00433**
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Load-out Operations AP-42 Section 11.1

Emissions Toggle = 1
Max Hourly Production 150 T/hr
Max Daily Production 1,800 Tons/day
Max Annual Production 120,000 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	0.078	0.03	
PM-10 (total) [b]	5.22E-04	0.078	0.03	
PM-2.5 [b]	5.22E-04	0.078	0.03	
CO [b]	1.35E-03	0.202	0.08	
NOx				
SO_2				
VOC [d,g]	3.91E-03	0.586	0.23	
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	3.24E-04	1.30E-04	**2.96E-05**
1,3-Butadiene[e]				
Ethylbenzene[e]	1.16E-05	1.75E-03	6.99E-04	8.73E-04
Formaldehyde[e]	3.66E-06	5.49E-04	2.20E-04	**5.01E-05**
Hexane[e]	6.24E-06	9.36E-04	3.74E-04	4.68E-04
Isooctane	7.49E-08	1.12E-05	4.49E-06	5.61E-06
Methyl Ethyl Ketone[e]	2.04E-06	3.06E-04	1.22E-04	1.53E-04
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[e]	8.73E-06	1.31E-03	5.24E-04	6.55E-04
Xylene[e]	5.03E-05	7.55E-03	3.02E-03	3.77E-03
POM (7-PAH Group)		6.90E-05		**6.30E-06**

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	1.22E-03	4.87E-04	**1.11E-04**
3-Methylchloranthrene[e]				
Acenaphthene	8.86E-07	1.33E-04	5.32E-05	**1.21E-05**
Acenaphthylene	9.55E-08	1.43E-05	5.73E-06	**1.31E-06**
Anthracene	2.39E-07	3.58E-05	1.43E-05	**3.27E-06**
Benzo(a)anthracene	6.48E-08	9.72E-06	3.89E-06	**8.87E-07**
Benzo(a)pyrene[e]	7.84E-09	1.18E-06	4.70E-07	**1.07E-07**
Benzo(b)fluoranthene	2.59E-08	3.89E-06	1.55E-06	**3.55E-07**
Benzo(e)pyrene	2.66E-08	3.99E-06	1.60E-06	**3.64E-07**
Benzo(g,h,I)perylene	6.48E-09	9.72E-07	3.89E-07	**8.87E-08**
Benzo(k)fluoranthene	7.50E-09	1.13E-06	4.50E-07	**1.03E-07**
Chrysene	3.51E-07	5.27E-05	2.11E-05	**4.81E-06**
Dibenzo(a,h)anthracene	1.26E-09	1.89E-07	7.57E-08	**1.73E-08**
Dichlorobenzene				
Fluoranthene	1.70E-07	2.56E-05	1.02E-05	**2.34E-06**
Fluorene	2.63E-06	3.94E-04	1.58E-04	**3.60E-05**
Indeno(1,2,3-cd)pyrene	1.60E-09	2.40E-07	9.61E-08	**2.20E-08**
Naphthalene[e]	4.26E-06	6.39E-04	2.56E-04	**5.84E-05**
Perylene	7.50E-08	1.13E-05	4.50E-06	**1.03E-06**
Phenanthrene	2.76E-06	4.14E-04	1.66E-04	**3.78E-05**
Pyrene	5.11E-07	7.67E-05	3.07E-05	**7.01E-06**
Non-HAP Organic Compounds				
Acetone[e]	1.95E-06	2.92E-04	1.17E-04	1.46E-04
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene	2.95E-05	4.43E-03	1.77E-03	2.21E-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: **C. W. OWEN CONSTRUCTION, LLC - 00433**
5/15/2020 13:30 **Permit/Facility ID: P-2008.0189 777-00433**

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

Fuel Type Toggle =	1	
Max Hourly Production	150	T/hr
Max Daily Production	1,800	Tons/day
Max Annual Production	120,000	Tons/yr

Pollutant	Emission Factor[a] Loadout (lb/ton)	Emissions (lb/hr) 1-hr Average	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
non-PAH HAPs[g]				
Bromomethane[e]	3.99E-07	5.99E-05	2.40E-05	2.99E-05
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	5.41E-07	8.11E-05	3.24E-05	4.05E-05
Chloroethane (Ethyl chloride[e])	8.73E-09	1.31E-06	5.24E-07	6.55E-07
Chloromethane (Methyl chloride[e])	6.24E-07	9.36E-05	3.74E-05	4.68E-05
Cumene[e]	4.57E-06	6.86E-04	2.74E-04	3.43E-04
n-Hexane (see Hexane[e])				
Methylene chloride (Dichloromethane[e])				
MTBE				
Styrene[e]	3.04E-07	4.55E-05	1.82E-05	2.28E-05
Tetrachloroethene (Tetrachloroethylene[e])	3.20E-07	4.80E-05	1.92E-05	2.40E-05
1,1,1-Trichloroethane (Methyl chloroform[e])				
Trichloroethene (Trichloroethylene[e])				
Trichlorofluoromethane	5.41E-08	8.11E-06	3.24E-06	4.05E-06
m-/p-Xylene[e] (added into Xylene[e])	1.71E-05	2.56E-03	1.02E-03	1.28E-03
o-Xylene[e] (added into Xylene[e])	3.33E-05	4.99E-03	2.00E-03	2.50E-03
Phenol[e,f]	4.02E-06	6.03E-04	2.41E-04	3.02E-04
Non-HAP Organic Compounds				
Methane	2.70E-04	4.05E-02	1.62E-02	2.03E-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: C. W. OWEN CONSTRUCTION, LLC - 00433
5/15/2020 13:30 **Permit** P-2008.0189 **Facility ID:** 777-00433

ERROR - GENERATOR RATING IS GREATER THAN 447 kW

G1 Electrical Generator < 600 hp (447 kW)

Fuel Type Toggle =	1	
Fuel Consumption Rate	40.42	gal/hr
Calculated MMBtu/hr	5.538	MMBtu/hr
Max Daily Operation	12	hr/day
Max Annual Operation	1,500	hrs/yr

Rated Power (kW): 590

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

Conversion Factors:

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

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

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

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM = PM10
EMISSION FACTORS USED FOR G1 (lb/MMBtu):	**4.41**	**0.36**		**0.95**	**0.310**

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

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

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

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

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

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

Facility: C. W. OWEN CONSTRUCTION, LLC - 00433
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IC Engine 1 Powering an Electrical Generator < 600 hp (447 kW) AP-42 Section 3.3 (diesel fueled)

Fuel Type Toggle = 1 590 kw
Fuel Consumption Rate 40.42 gal/hr
Calculated MMBtu/hr 5.538 MMBtu/hr
Max Daily Operation 12 hr/day
Max Annual Operation 1,500 hrs/yr

User Input Weight % Sulfur = 0.5000%
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% = 1.00
Not an EPA-Certified Generator

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) **Annual** or 24-hr Average
PM (total) [b]	0.31	1.717	1.29E+00	
PM-10 (total) [b]	0.31	1.717	1.29E+00	
PM-2.5	0.07	0.388	2.91E-01	
CO [b]	0.95	5.261	3.95E+00	
NOx[b]	4.41	24.424	1.83E+01	
SO_2 [b] (total SOx presumed SO2)	0.29	1.61E+00	1.20E+00	
VOC [b] (total TOC--> VOCs)	0.36	1.994	1.50E+00	
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	4.25E-03	3.19E-03	**7.27E-04**
Acrolein[c]	9.25E-05	5.12E-04	3.84E-04	2.56E-04
Benzene[c,e]	9.33E-04	5.17E-03	3.88E-03	**8.85E-04**
1,3-Butadiene[c,e]	3.91E-05	2.17E-04	1.62E-04	**3.71E-05**
Ethylbenzene[e]				
Formaldehyde[c,e]	1.18E-03	6.54E-03	4.90E-03	**1.12E-03**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c,e]	4.09E-04	2.27E-03	1.70E-03	1.13E-03
Xylene[c,e]	2.85E-04	1.58E-03	1.18E-03	7.89E-04
POM (7-PAH Group)		1.90E-05		**3.26E-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	7.86E-06	5.90E-06	**1.35E-06**
Acenaphthylene[c]	5.06E-06	2.80E-05	2.10E-05	**4.80E-06**
Anthracene[c]	1.87E-06	1.04E-05	7.77E-06	**1.77E-06**
Benzo(a)anthracene[c]	1.68E-06	9.30E-06	6.98E-06	**1.59E-06**
Benzo(a)pyrene[c,e]	1.88E-07	1.04E-06	7.81E-07	**1.78E-07**
Benzo(b)fluoranthene[c]	9.91E-08	5.49E-07	4.12E-07	**9.40E-08**
Benzo(e)pyrene				
Benzo(g,h,I)perylene[c]	4.89E-07	2.71E-06	2.03E-06	**4.64E-07**
Benzo(k)fluoranthene[c]	1.55E-07	8.58E-07	6.44E-07	**1.47E-07**
Chrysene[c]	3.53E-07	1.96E-06	1.47E-06	**3.35E-07**
Dibenzo(a,h)anthracene[c]	5.83E-07	3.23E-06	2.42E-06	**5.53E-07**
Dichlorobenzene				
Fluoranthene[c]	7.61E-06	4.21E-05	3.16E-05	**7.22E-06**
Fluorene[c]	2.92E-05	1.62E-04	1.21E-04	**2.77E-05**
Indeno(1,2,3-cd)pyrene[c]	3.75E-07	2.08E-06	1.56E-06	**3.56E-07**
Naphthalene[c,e]	8.48E-05	4.70E-04	3.52E-04	**8.04E-05**
Perylene				
Phenanthrene[c]	2.94E-05	1.63E-04	1.22E-04	**2.79E-05**
Pyrene[c]	4.78E-06	2.65E-05	1.99E-05	**4.53E-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: **C. W. OWEN CONSTRUCTION, LLC - 00433**
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Max Hourly Production	150	T/hr	96%	T/hr is Aggregate & RAP =	**144 T/hr**
Max Daily Production	1,800	Tons/day	96%	T/day is Aggregate & RAP =	**1,728 T/day**
Max Annual Production	120,000	Tons/yr	96%	T/yr is Aggregate & RAP =	**115,200 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: **144 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	0.48	0.24	0.19	0.04	0.95	0.48	0.38	0.09
PM-10 (total)	1.56E-03	0.23	0.11	0.09	0.02	0.45	0.23	0.18	0.04
PM-2.5	2.37E-04	0.03	0.02	0.01	0.00	0.07	0.03	0.03	0.01

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: **144 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	4.76E-02	2.38E-02	1.90E-02	4.35E-03	9.52E-02	4.76E-02	3.81E-02	8.69E-03
PM-10 (total)	1.56E-03	2.25E-02	1.13E-02	9.00E-03	2.06E-03	4.50E-02	2.25E-02	1.80E-02	4.11E-03
PM-2.5	2.37E-04	3.41E-03	1.70E-03	1.36E-03	3.11E-04	6.82E-03	3.41E-03	2.73E-03	6.23E-04

Aggregate Scalping Screen, AP-42 11.19 (8/04) Aggregate flow across scalping screen onto conveyor: **144 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	0.360	1.80E-01	1.44E-01	3.29E-02
PM-10 (total)	0.0087	0.125	6.26E-02	5.01E-02	1.14E-02
PM-2.5	1.30E-04	0.002	9.36E-04	7.49E-04	1.71E-04

Aggregate Conveyor to Drum (~top end of the drum) Aggregate transfer from conveyor to drum dryer (1 transfer point): **144 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	4.76E-02	2.38E-02	1.90E-02	4.35E-03
PM-10 (total)	1.56E-03	2.25E-02	1.13E-02	9.00E-03	2.06E-03
PM-2.5	2.37E-04	3.41E-03	1.70E-03	1.36E-03	3.11E-04

Facility: **C. W. OWEN CONSTRUCTION, LLC - 00433**
5/15/2020 13:30 **Permit/Facility ID: P-2008.0189 777-00433**

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

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

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

Green House Gas Emissions When Combusting #2 Fuel Oil

Asphalt Plant Emissions	Emission Factor (EF)	EF Units	EF Source	Emissions (T/yr)	Global Warming Potential	CO_2e (T/yr)
CO_2	33.00	lb/T	AP-42 Table 11.1-7	1,980.00	1.00	1,980.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	0.72	21.00	15.12
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.031193	310.00	9.67

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

Green House Gas Emissions When Combusting Used Oil

Asphalt Plant Emissions	Emission Factor (EF)	EF Units	EF Source	Emissions (T/yr)	Global Warming Potential	CO_2e (T/yr)
CO_2	33.00	lb/T	AP-42 Table 11.1-7	1,980.00	1.00	1,980.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	0.72	21.00	15.12
N_2O	0.53	lb/10^3 gal	AP-42 Table 1.3-8	0.063586	310.00	19.71

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	1,980.00	1.00	1,980.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	0.72	21.00	15.12
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.031193	310.00	9.67

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	193.41	1	193.41
Methane	0.0000023	lb/scf	AP-42 Table 1.4-2	3.71E-03	21	0.08
N_2O	0.0000022	lb/scf	AP-42 Table 1.4-2	3.55E-03	310	1.10

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	1,980.00	1.00	1,980.00
Methane	0.012	lb/T	AP-42 Table 11.1-8	0.72	21.00	15.12
N_2O	0.26	lb/10^3 gal	AP-42 Table 1.3-8	0.031193	310.00	9.67

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	688.35	1.00	688.35

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	0.00	1.00	0.00

Total Green House Gas Emissions

Total Emissions	CO_2e (T/yr)
CO_2	2,861.76
Methane	15.20
N_2O	20.81
Grand Total	**2,897.77**

Facility: C. W. OWEN CONSTRUCTION, LLC - 00433

5/15/2020 13:30 **Permit/Facility ID:** P-2008.0189 777-00433

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: **150** Tons/hour 800 Hours/year **120,000** Tons/year **1,800** Tons/day

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

B. Tank Heater: **1.0960** MMBtu/hr **3,000** Hours/year **24** hrs/day

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

C1. IC Engine 1: **40.42** gal/hour **1500** Hours/year IC Engine < 600hp #2 Fuel Oil **12** hrs/day

C2. IC Engine 2: **0.00** gal/hour **1500** Hours/year IC Engine > 600hp #2 Fuel Oil **24** hrs/day

Pollutant	A **Drum Mix** Max Emission Rate for Pollutant (lb/hr)	B **Asphalt Tank Heater** Max Emission Rate for Pollutant (lb/hr)	C **IC Engine 1 + IC Engine 2** Max Emission Rate for Pollutant (lb/hr)	D **Load-out & Silo Filling** Emission Rate for Pollutant (lb/hr)	E **TOTAL** of Max Emission Rates from A, B, C & D (lb/hr)
PM (total)	4.95	2.64E-02	1.72E+00	1.66E-01	6.86
PM-10 (total)	3.45	1.84E-02	1.72E+00	1.66E-01	5.35
PM-2.5	3.35	1.23E-02	3.88E-01	1.66E-01	3.91
CO	19.50	4.00E-02	5.26E+00	3.79E-01	25.18
NOx	8.25	1.92E-01	2.44E+01		32.87
SO_2	13.35	5.68E-01	1.61E+00		15.52
VOC	4.80	4.45E-03	1.99E+00	6.05E-01	7.40
Lead	2.25E-03	1.21E-05	0.00E+00		2.26E-03
HCl [e]	3.15E-02	0.00E+00	0.00E+00		3.15E-02
Dioxins[e]					
2,3,7,8-TCDD	2.88E-12				**2.88E-12**
Total TCDD	1.27E-11				**1.27E-11**
1,2,3,7,8-PeCDD	4.25E-12				**4.25E-12**
Total PeCDD	3.01E-10				**3.01E-10**
1,2,3,4,7,8-HxCDD	5.75E-12	1.89E-12			**7.64E-12**
1,2,3,6,7,8-HxCDD	1.78E-11				**1.78E-11**
1,2,3,7,8,9-HxCDD	1.34E-11	2.08E-12			**1.55E-11**
Total HxCDD	1.64E-10				**1.64E-10**
1,2,3,4,6,7,8-Hp-CDD	6.58E-11	4.11E-11			**1.07E-10**
Total HpCDD	2.60E-10	5.48E-11			**3.15E-10**
Octa CDD	3.42E-10	4.38E-10			**7.81E-10**
Total PCDD[h]	1.08E-09	5.48E-10			**1.63E-09**
Furans[e]					
2,3,7,8-TCDF	1.33E-11				**1.33E-11**
Total TCDF	5.07E-11	9.04E-12			**5.97E-11**
1,2,3,7,8-PeCDF	5.89E-11				**5.89E-11**
2,3,4,7,8-PeCDF	1.15E-11				**1.15E-11**
Total PeCDF	1.15E-09	1.31E-12			**1.15E-09**
1,2,3,4,7,8-HxCDF	5.48E-11				**5.48E-11**
1,2,3,6,7,8-HxCDF	1.64E-11				**1.64E-11**
2,3,4,6,7,8-HxCDF	2.60E-11				**2.60E-11**
1,2,3,7,8,9-HxCDF	1.15E-10				**1.15E-10**
Total HxCDF	1.78E-10	5.48E-12			**1.84E-10**
1,2,3,4,6,7,8-HpCDF	8.90E-11				**8.90E-11**
1,2,3,4,7,8,9-HpCDF	3.70E-11				**3.70E-11**
Total HpCDF	1.37E-10	2.66E-11			**1.64E-10**
Octa CDF	6.58E-11	3.29E-11			**9.86E-11**
Total PCDF[h]	5.48E-10	8.49E-11			**6.33E-10**
Total PCDD/PCDF[h]	1.64E-09	6.30E-10	0.00E+00		**2.27E-09**
Non-PAH HAPs					
Acetaldehyde[e]	1.78E-02		7.27E-04		**1.85E-02**
Acrolein[e]	1.95E-03		2.56E-04		2.21E-03
Benzene[e]	5.34E-03	0.00E+00	8.85E-04	8.30E-05	**6.31E-03**
1,3-Butadiene[e]			3.71E-05		**3.71E-05**
Ethylbenzene[e]	1.80E-02			1.22E-03	1.92E-02
Formaldehyde[e]	4.25E-02	9.59E-06	1.12E-03	1.20E-03	**4.48E-02**
Hexane[e]	6.90E-02	0.00E+00		1.38E-03	7.04E-02
Isooctane	3.00E-03			8.45E-06	3.01E-03
Methyl Ethyl Ketone[e]	1.50E-03			5.09E-04	2.01E-03
Pentane[e]		0.00E+00			0.00E+00
Propionaldehyde[e]	9.75E-03				9.75E-03
Quinone[e]	1.20E-02				1.20E-02
Methyl chloroform[e]	3.60E-03				3.60E-03
Toluene[e]	2.18E-01	0.00E+00	1.13E-03	1.22E-03	2.20E-01
Xylene[e]	1.50E-02		7.89E-04	6.12E-03	2.19E-02
POM (7-PAH Group)[e]	7.50E-06	2.74E-07	3.26E-06	1.56E-05	**2.66E-05**
TOTAL PAH HAPs	1.21E-02	6.30E-05	1.59E-04	6.74E-04	**1.30E-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	2.33E-03	0.00E+00		2.94E-04	**2.62E-03**
3-Methylchloranthrene[e]	0.00E+00	0.00E+00			**0.00E+00**
Acenaphthene	1.92E-05	1.45E-06	1.35E-06	2.85E-05	**5.05E-05**
Acenaphthylene	3.01E-04	5.48E-07	4.80E-06	1.79E-06	**3.09E-04**
Anthracene	4.25E-05	4.93E-07	1.77E-06	7.79E-06	**5.25E-05**
Benzo(a)anthracene[e]	2.88E-06	0.00E+00	1.59E-06	2.84E-06	**7.30E-06**
Benzo(a)pyrene[e]	1.34E-07	0.00E+00	1.78E-07	1.07E-07	**4.20E-07**
Benzo(b)fluoranthene[e]	1.37E-06	2.74E-07	9.40E-08	3.55E-07	**2.09E-06**
Benzo(e)pyrene	1.51E-06	0.00E+00		6.95E-07	**2.20E-06**
Benzo(g,h,I)perylene	5.48E-07	0.00E+00	4.64E-07	8.87E-08	**1.10E-06**
Benzo(k)fluoranthene[e]	5.62E-07	0.00E+00	1.47E-07	1.03E-07	**8.11E-07**
Chrysene[e]	2.47E-06	0.00E+00	3.35E-07	1.21E-05	**1.49E-05**
Dibenzo(a,h)anthracene[e]	0.00E+00	0.00E+00	5.53E-07	1.73E-08	**5.70E-07**
Dichlorobenzene	0.00E+00	0.00E+00			**0.00E+00**
Fluoranthene	8.36E-06	1.21E-07	7.22E-06	7.55E-06	**2.32E-05**
Fluorene	1.51E-04	8.77E-08	2.77E-05	7.11E-05	**2.50E-04**
Indeno(1,2,3-cd)pyrene[e]	9.59E-08	0.00E+00	3.56E-07	2.20E-08	**4.73E-07**
Naphthalene[e]	8.90E-03	4.66E-05	8.04E-05	1.22E-04	**9.15E-03**
Perylene	1.21E-07	0.00E+00		2.07E-06	**2.19E-06**
Phenanthrene	3.15E-04	1.34E-05	2.79E-05	1.00E-04	**4.57E-04**
Pyrene	4.11E-05	8.77E-08	4.53E-06	2.23E-05	**6.80E-05**
Non-HAP Organic Compounds					
Acetone[e]	6.23E-02	0.00E+00		6.49E-04	6.29E-02
Benzaldehyde	8.25E-03	0.00E+00			8.25E-03
Butane	5.03E-02	0.00E+00			5.03E-02
Butyraldehyde	1.20E-02	0.00E+00			1.20E-02
Crotonaldehyde[e]	6.45E-03	0.00E+00			6.45E-03
Ethylene	5.25E-01	0.00E+00		1.23E-02	5.37E-01
Heptane	7.05E-01	0.00E+00			7.05E-01
Hexanal	8.25E-03	0.00E+00			8.25E-03
Isovaleraldehyde	2.40E-03	0.00E+00			2.40E-03
2-Methyl-1-pentene	3.00E-01	0.00E+00			3.00E-01
2-Methyl-2-butene	4.35E-02	0.00E+00			4.35E-02
3-Methylpentane	1.43E-02	0.00E+00			1.43E-02
1-Pentene	1.65E-01	0.00E+00			1.65E-01
n-Pentane	1.58E-02	0.00E+00			1.58E-02
Valeraldehyde[e]	5.03E-03	0.00E+00			5.03E-03
Metals					
Antimony[e]	1.35E-05	4.20E-05			5.55E-05
Arsenic[e]	7.67E-06	3.62E-06			**1.13E-05**
Barium[e]	4.35E-04	2.06E-05			4.56E-04
Beryllium[e]	0.00E+00	7.61E-08			**7.61E-08**
Cadmium[e]	5.62E-06	1.09E-06			**6.71E-06**
Chromium[e]	4.13E-04	6.76E-06			4.19E-04
Cobalt[e]	1.95E-06	4.81E-05			5.01E-05
Copper[e]	2.33E-04	1.41E-05			2.47E-04
Hexavalent Chromium[e]	6.16E-06	6.79E-07			**6.84E-06**
Manganese[e]	5.78E-04	2.40E-05			6.01E-04
Mercury[e]	1.95E-04	9.04E-07			1.96E-04
Molybdenum[e]	0.00E+00	6.29E-06			6.29E-06
Nickel[e]	8.63E-04	2.31E-04			**1.09E-03**
Phosphorus[e]	2.10E-03	7.57E-05			2.18E-03
Silver[e]	3.60E-05	0.00E+00			3.60E-05
Selenium[e]	2.63E-05	5.46E-06			3.17E-05
Thallium[e]	3.08E-07	0.00E+00			3.08E-07
Vanadium[e]	0.00E+00	2.54E-04			2.54E-04
Zinc[e]	4.58E-03	2.33E-04			4.81E-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: **150** Tons/hour 800 Hours/year **120,000** Tons/year HMA throughput **1,800** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater: **1.0960** MMBtu/hr **3,000** Hours/year **24** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil
C1. IC Engine 1: **40.42** gal/hour **1500** Hours/year #2 Fuel Oil Generator < 600hp **12** hrs/day
C2. IC Engine 2: **0.00** gal/hour **1500** Hours/year #2 Fuel Oil Generator > 600hp **24** hrs/day

Pollutant	**A** **Drum Mix** Max Emission Rate for Pollutant (lb/hr)	**B** **Asphalt Tank Heater** Max Emission Rate for Pollutant (lb/hr)	**C** **IC Engine** Max Emission Rate for Pollutant (lb/hr)	**D** **Load-out & Silo Filling** Emission Rate for Pollutant (lb/hr)	**E** **TOTAL** of Max Emission Rates from A, B, C & D (lb/hr)
non-PAH HAPs[g]					
Bromomethane[e]				7.47E-05	7.47E-05
2-Butanone (see Methyl Ethyl Ketone)					
Carbon disulfide[e]				1.87E-04	1.87E-04
Chloroethane (Ethyl chloride[e])				3.72E-05	3.72E-05
Chloromethane (Methyl chloride[e])				2.57E-04	2.57E-04
Cumene				3.43E-04	3.43E-04
n-Hexane					
Methylene chloride (Dichloromethane[e])				2.47E-06	2.47E-06
MTBE					
Styrene[e]				7.21E-05	7.21E-05
Tetrachloroethene (Tetrachloroethylene[e])				2.40E-05	2.40E-05
1,1,1-Trichloroethane (Methyl chloroform[e])					
Trichloroethene (Trichloroethylene[e])					
Trichlorofluoromethane				4.05E-06	4.05E-06
m-/p-Xylene[e]				3.11E-03	3.11E-03
o-Xylene[e]				3.02E-03	3.02E-03
Phenol[e,f]				3.02E-04	3.02E-04
Non-HAP Organic Compounds					
Methane				2.58E-01	2.58E-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: C. W. OWEN CONSTRUCTION, LLC - 00433

5/15/2020 13:30 **Permit/Facility ID:** P-2008.0189 777-00433

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: **150** Tons/hour 800 Hours/year **120,000** Tons/year HMA throughput **1,800** hrs/day

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

B. Tank Heater: **1.0960** MMBtu/hr **3,000** Hours/year **24** hrs/day

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

C1. IC Engine 1: **40.42** gal/hour **1500** Hours/year IC Engine <600hp #2 Fuel Oil **12** hrs/day

C2. IC Engine 2: **0.00** gal/hour **1500** Hours/year IC Engine > 600hp #2 Fuel Oil **24** hrs/day

Pollutant	A **Drum Mix** Max Emission Rate for Pollutant (T/yr)	B **Asphalt Tank Heater** Max Emission Rate for Pollutant (T/yr)	C **IC Engine IC1 + IC2** Max Emission Rate for Pollutant (T/yr)	D **Load-out & Silo Filling** Emission Rate for Pollutant (T/yr)	E **POINT SOURCE TOTAL** of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
PM (total)	1.98	3.96E-02	1.29E+00	6.65E-02	3.31
PM-10 (total)	1.38	2.76E-02	1.29E+00	6.65E-02	2.70
PM-2.5	1.34	1.85E-02	2.91E-01	6.65E-02	1.65
CO	7.80	6.00E-02	3.95E+00	1.52E-01	11.81
NOx	3.30	2.88E-01	1.83E+01		21.91
SO_2	5.34	8.52E-01	1.20E+00		7.40
VOC	1.92	6.67E-03	1.50E+00	2.42E-01	3.42
Lead	9.00E-04	1.81E-05	0.00E+00		9.18E-04
HCl [e]	1.26E-02	0.00E+00	0.00E+00		1.26E-02
Dioxins[e]					
2,3,7,8-TCDD	1.26E-11				1.26E-11
Total TCDD	5.58E-11				5.58E-11
1,2,3,7,8-PeCDD	1.86E-11				1.86E-11
Total PeCDD	1.32E-09				1.32E-09
1,2,3,4,7,8-HxCDD	2.52E-11	8.28E-12			3.35E-11
1,2,3,6,7,8-HxCDD	7.80E-11				7.80E-11
1,2,3,7,8,9-HxCDD	5.88E-11	9.12E-12			6.79E-11
Total HxCDD	7.20E-10				7.20E-10
1,2,3,4,6,7,8-Hp-CDD	2.88E-10	1.80E-10			4.68E-10
Total HpCDD	1.14E-09	2.40E-10			1.38E-09
Octa CDD	1.50E-09	1.92E-09			3.42E-09
Total PCDD[h]	4.74E-09	2.40E-09			7.14E-09
Furans[e]					
2,3,7,8-TCDF	5.82E-11				5.82E-11
Total TCDF	2.22E-10	3.96E-11			2.62E-10
1,2,3,7,8-PeCDF	2.58E-10				2.58E-10
2,3,4,7,8-PeCDF	5.04E-11				5.04E-11
Total PeCDF	5.04E-09	5.76E-12			5.05E-09
1,2,3,4,7,8-HxCDF	2.40E-10				2.40E-10
1,2,3,6,7,8-HxCDF	7.20E-11				7.20E-11
2,3,4,6,7,8-HxCDF	1.14E-10				1.14E-10
1,2,3,7,8,9-HxCDF	5.04E-10				5.04E-10
Total HxCDF	7.80E-10	2.40E-11			8.04E-10
1,2,3,4,6,7,8-HpCDF	3.90E-10				3.90E-10
1,2,3,4,7,8,9-HpCDF	1.62E-10				1.62E-10
Total HpCDF	6.00E-10	1.16E-10			7.16E-10
Octa CDF	2.88E-10	1.44E-10			4.32E-10
Total PCDF[h]	2.40E-09	3.72E-10			2.77E-09
Total PCDD/PCDF[h]	7.20E-09	2.76E-09			9.96E-09
Non-PAH HAPs					
Acetaldehyde[e]	7.80E-02		3.19E-03		8.12E-02
Acrolein[e]	1.56E-03		3.84E-04		1.94E-03
Benzene[e]	2.34E-02	0.00E+00	3.88E-03	3.64E-04	2.73E-02
1,3-Butadiene[e]	0.00E+00		1.62E-04		1.62E-04
Ethylbenzene[e]	1.44E-02			9.77E-04	1.44E-02
Formaldehyde[e]	1.86E-01	4.20E-05	4.90E-03	5.26E-03	1.91E-01
Hexane[e]	5.52E-02	0.00E+00		1.11E-03	5.52E-02
Isooctane	2.40E-03			6.76E-06	2.40E-03
Methyl Ethyl Ketone[e]	1.20E-03			4.07E-04	1.20E-03
Pentane[e]	0.00E+00	0.00E+00			0.00E+00
Propionaldehyde[e]	7.80E-03				7.80E-03
Quinone[e]	9.60E-03				9.60E-03
Methyl chloroform[e]	2.88E-03				2.88E-03
Toluene[e]	1.74E-01	0.00E+00	1.70E-03	9.77E-04	1.76E-01
Xylene[e]	1.20E-02	0.00E+00	1.18E-03	4.90E-03	1.32E-02
TOTAL Federal HAPs (T/yr)=					**6.63E-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	1.02E-02	0.00E+00		1.29E-03	1.02E-02
3-Methylchloranthrene[e]	0.00E+00	0.00E+00			0.00E+00
Acenaphthene	8.40E-05	6.36E-06	5.90E-06	1.25E-04	9.63E-05
Acenaphthylene	1.32E-03	2.40E-06	2.10E-05	7.86E-06	1.34E-03
Anthracene	1.86E-04	2.16E-06	7.77E-06	3.41E-05	1.96E-04
Benzo(a)anthracene[e]	1.26E-05	0.00E+00	6.98E-06	1.24E-05	1.96E-05
Benzo(a)pyrene[e]	5.88E-07	0.00E+00	7.81E-07	4.70E-07	1.37E-06
Benzo(b)fluoranthene[e]	6.00E-06	1.20E-06	4.12E-07	1.55E-06	7.61E-06
Benzo(e)pyrene	6.60E-06	0.00E+00		3.04E-06	6.60E-06
Benzo(g,h,I)perylene	2.40E-06	0.00E+00	2.03E-06	3.89E-07	4.43E-06
Benzo(k)fluoranthene[e]	2.46E-06	0.00E+00	6.44E-07	4.50E-07	3.10E-06
Chrysene[e]	1.08E-05	0.00E+00	1.47E-06	5.31E-05	1.23E-05
Dibenzo(a,h)anthracene[e]	0.00E+00	0.00E+00	2.42E-06	7.57E-08	2.42E-06
Dichlorobenzene	0.00E+00	0.00E+00			0.00E+00
Fluoranthene	3.66E-05	5.28E-07	3.16E-05	3.31E-05	6.87E-05
Fluorene	6.60E-04	3.84E-07	1.21E-04	3.11E-04	7.82E-04
Indeno(1,2,3-cd)pyrene[e]	4.20E-07	0.00E+00	1.56E-06	9.61E-08	1.98E-06
Naphthalene[e]	3.90E-02	2.04E-04	3.52E-04	5.33E-04	3.96E-02
Perylene	5.28E-07	0.00E+00		9.07E-06	5.28E-07
Phenanthrene	1.38E-03	5.88E-05	1.22E-04	4.40E-04	1.56E-03
Pyrene	1.80E-04	3.84E-07	1.99E-05	9.77E-05	2.00E-04
Non-HAP Organic Compounds					
Acetone[e]	4.98E-02	0.00E+00		5.19E-04	4.98E-02
Benzaldehyde	6.60E-03	0.00E+00			6.60E-03
Butane	4.02E-02	0.00E+00			4.02E-02
Butyraldehyde	9.60E-03	0.00E+00			9.60E-03
Crotonaldehyde[e]	5.16E-03	0.00E+00			5.16E-03
Ethylene	4.20E-01	0.00E+00		9.81E-03	4.20E-01
Heptane	5.64E-01	0.00E+00			5.64E-01
Hexanal	6.60E-03	0.00E+00			6.60E-03
Isovaleraldehyde	1.92E-03	0.00E+00			1.92E-03
2-Methyl-1-pentene	2.40E-01	0.00E+00			2.40E-01
2-Methyl-2-butene	3.48E-02	0.00E+00			3.48E-02
3-Methylpentane	1.14E-02	0.00E+00			1.14E-02
1-Pentene	1.32E-01	0.00E+00			1.32E-01
n-Pentane[e]	1.26E-02	0.00E+00			1.26E-02
Valeraldehyde[e]	4.02E-03	0.00E+00			4.02E-03
Metals					
Antimony[e]	1.08E-05	6.30E-05			7.38E-05
Arsenic[e]	3.36E-05	1.58E-05			4.94E-05
Barium[e]	3.48E-04	3.08E-05			3.79E-04
Beryllium[e]	0.00E+00	3.34E-07			3.34E-07
Cadmium[e]	2.46E-05	4.77E-06			2.94E-05
Chromium[e]	3.30E-04	1.01E-05			3.40E-04
Cobalt[e]	1.56E-06	7.22E-05			7.38E-05
Copper[e]	1.86E-04	2.11E-05			2.07E-04
Hexavalent Chromium[e]	2.70E-05	2.98E-06			3.00E-05
Manganese[e]	4.62E-04	3.60E-05			4.98E-04
Mercury[e]	1.56E-04	1.36E-06			1.57E-04
Molybdenum[e]	0.00E+00	9.44E-06			9.44E-06
Nickel[e]	3.78E-03	1.01E-03			4.79E-03
Phosphorus[e]	1.68E-03	1.13E-04			1.79E-03
Silver[e]	2.88E-05	0.00E+00			2.88E-05
Selenium[e]	2.10E-05	8.19E-06			2.92E-05
Thallium[e]	2.46E-07				2.46E-07
Vanadium[e]	0.00E+00	3.82E-04			3.82E-04
Zinc[e]	3.66E-03	3.49E-04			4.01E-03

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

A. Drum Mix Plant: **150** Tons/hour 800 Hours/year **120,000** Tons/year **1,800** Tons/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater: **1.0960** MMBtu/hr **3,000** Hours/year **24** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil
C1. Generator G1: **40.42** gal/hour **1500** Hours/year #2 Fuel Oil IC Engine <600hp **12** hrs/day
C2. Generator G2: **0.00** gal/hour **1500** Hours/year #2 Fuel Oil IC Engine > 600hp **24** hrs/day

Pollutant	**A Drum Mix** Max Emission Rate for Pollutant (T/yr)	**B Asphalt Tank Heater** Max Emission Rate for Pollutant (T/yr)	**C Generator** Max Emission Rate for Pollutant (T/yr)	**D Load-out, Silo Filling, & Tank Storage** Emission Rate for Pollutant (T/yr)	**E POINT SOURCE TOTAL** of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
non-PAH HAPs[g]					
Bromomethane[e]				5.98E-05	0.00E+00
2-Butanone (see Methyl Ethyl Ketone)					0.00E+00
Carbon disulfide[e]				1.49E-04	0.00E+00
Chloroethane (Ethyl chloride[e])				2.98E-05	0.00E+00
Chloromethane (Methyl chloride[e])				2.06E-04	0.00E+00
Cumene				2.74E-04	0.00E+00
n-Hexane				0.00E+00	0.00E+00
Methylene chloride (Dichloromethane[e])				1.97E-06	0.00E+00
MTBE					0.00E+00
Styrene[e]				5.77E-05	0.00E+00
Tetrachloroethene (Tetrachloroethylene[e])				1.92E-05	0.00E+00
1,1,1-Trichloroethane (Methyl chloroform[e])				0.00E+00	0.00E+00
Trichloroethene (Trichloroethylene[e])				0.00E+00	0.00E+00
Trichlorofluoromethane				3.24E-06	0.00E+00
m-/p-Xylene[e]				2.49E-03	0.00E+00
o-Xylene[e]				2.41E-03	0.00E+00
Phenol[e,f]				2.41E-04	0.00E+00
Non-HAP Organic Compounds					
Methane				2.06E-01	0.00E+00

e) IDAPA Toxic Air Pollutant

APPENDIX B – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

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:
Address:
City:
State:
Zip Code:
Facility Contact:
Title:
AIRS No.:

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	0.0	0	0.0
SO_2	0.0	0	0.0
CO	0.0	0	0.0
PM10	1.4	1.62	-0.2
VOC	0.0	0	0.0
Total:	0.0	1.62	**-0.2**
Fee Due	**$ 500.00**		

Comments: