Statement of Basis

Permit to Construct P-2011.0116
Project No. 60896

Atlas Sand and Rock, Inc.
Lewiston, Idaho

Facility ID No. 069-00059

Facility Review

CZ

December 21, 2011
Carole Zundel
Permit Writer

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

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations for non-carcinogens
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
Btu	British thermal units
CAM	Compliance Assurance Monitoring
CBP	concrete batch plant
CFR	Code of Federal Regulations
CO	carbon monoxide
cy/day	cubic yard per day
cy/hr	cubic yard per hour
cy/yr	cubic yard per year
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
gr/dscf	grains (1 lb = 7,000 grains) per dry standard cubic foot
HAP	hazardous air pollutants
hr/yr	hours per year
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/cy	pound per cubic yard
lb/10^3 gal	pound per thousand gallons
lb/gal	pound per gallon
lb/hr	pounds per hour
lb/MMBtu	pound per million British thermal unit
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
MMscf/hr	million standard cubic feet per hour
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SO_2	sulfur dioxide
T/yr	tons per consecutive 12-calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TCEQ	Texas Commission on Environmental Quality
UTM	Universal Transverse Mercator
VOC	volatile organic compounds
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Atlas Sand and Rock, Inc. is a truck mix concrete batch plant that may consist of the following: aggregate stockpiles, a cement storage silo, a cement supplement (flyash) storage silo, a weigh batcher, conveyors and an electric power supply. The facility combines aggregate, flyash and cement, and transfers the mixture into a truck drum along with a measured amount of water for in-transit mixing of the concrete. Electrical power will be supplied to the facility from the local power grid. Also, water heater(s) may be used to heat the water in cold weather prior to use for the mixing of concrete.

Permitting History

This permit is the initial PTC for a concrete batch plant.

Application Scope

This permit is the initial PTC for a concrete batch plant. The initial application was for a general permit, but it was determined that the minimum setback requirements between the concrete batch plant and the asphalt plant that is in the same pit were not met, so a regular PTC is being issued.

Application Chronology

July 11, 2011	A PTC application and combined application and processing fee ($1,500) were received for a general permit.
July 26, 2011	Supplemental information was received from the Applicant.
July 18 – August 2, 2011	A 15-day opportunity for a public comment period was held. No request for a public comment period was received.
July 27, 2011	Supplemental information was received from the Applicant.
August 3, 2011	P-2011.0116 project 60896 application was deemed complete.
September 7, 2011	DEQ made available the draft permit and statement of basis for peer and regional office review.
December 6, 2011	DEQ made available the draft permit and statement of basis for applicant review.
December 21, 2011	DEQ received the permit processing fee.

TECHNICAL ANALYSIS

Emissions Units and Control Devices

Table 1 CONCRETE BATCH PLANT AND CONTROL DEVICE INFORMATION[a]

Emissions Unit Description	Control Device Description	Emissions Discharge Point ID No. and/or Description
Concrete Batch Plant – Truck Mix Manufacturer: Wemco/Spomace Model: Not available Manufacture Date: 06/1995 Maximum capacity: 125 cy/hr Maximum production: 500 cy/day 150,000 cy/yr	Cement Storage Silo Baghouse No. 1[c]: Manufacturer: Besser Appco Model: DCS 260 Cement Storage Silo Baghouse No. 2[c]: Manufacturer: FFAS, Fabric Air Filter Systems Model: 16-1M-16TK Cement Supplement Storage Silo Flyash Baghouse No. 3[c]: Manufacturer: Besser Appco Model: DCS 260 Truck Load-out Baghouse Control Efficiency: 99% Material Transfer Point Water Sprays or Equivalent Control Efficiency: 75%	Baghouse No. 1 stack Stack height: 65 feet Exit diameter: 1 foot Exit air flow rate: 550 acfm Exit Temperature: Ambient Control efficiency: 99% Baghouse No. 2 stack Stack height: 85 feet Exit diameter: 1 foot Exit Temperature: Ambient Control efficiency: 99% Baghouse No. 3 stack Stack height: 60 feet Exit diameter: 1 foot Exit air flow rate: 550 acfm Exit Temperature: Ambient Control efficiency: 99% Load-out Baghouse or Load-out Boot w/ water ring: Control efficiency: 99% Materials Transfer: Control Efficiency: 75%
Natural Gas Water heater(s) (or equivalent)[b] Maximum Rating: 1.2 MMBtu/hr Maximum Fuel Usage: MMscf/yr	No control devices	Stack height: 11 feet Exit Flow Rate: 1200 acfm

a. Note that this table is for informational purposes only and the actual operation at the facility may deviate slightly.
b. "or equivalent" is defined as equipment which has an equivalent or less brake horsepower than listed in this table, which does not result in an increase in emissions, and which does not result in the emission of a toxic air pollutant not previously emitted.
c. Both the storage silo baghouse and supplement storage silo flyash baghouse are considered process equipment and therefore there is no associated control efficiency. Controlled PM_{10} emission factors were used when determining PTE and for modeling purposes.

Emissions Inventories

The emissions inventory for this portable concrete batch plant was developed by DEQ and is based on AP-42 Section 11.12 emission factors for central-mix and truck-mix concrete batch plants and the following assumptions: 125 cy per hour concrete production capacity and concrete production limits of 500 cy per day and 150,000 cy per year. Baghouse/cartridge filter capture efficiencies were presumed to be 99.0% in DEQ's generic emissions estimation.

The emissions analysis developed by DEQ, at most, assumes one central-mix or truck-mix concrete batch plant. All possible equipment may not be included in the facility specific emissions inventory. Only equipment identified within the application material will be included in the inventory.

Fugitive emissions of particulate matter (PM), $PM_{2.5}$ and PM_{10} from batch plant material transfer points were assumed to be controlled by manual water sprays, sprinklers, or spray bars, or an equivalent method (e.g., enclosing the entire process inside a building) that reduce the emissions by an estimated 75%. The assumed 75% control efficiency is based on the Western Regional Air Partnership Fugitive Dust Handbook. According to the Handbook, water suppressant of material handling can range from 50-90% control. Assuming the average of 70% and including another 5% due to Best Management Practices required by the permit allow for 75% control to be a conservative estimate.

Aggregate is washed before delivery to the batch plant site, and water is used on-site to control the temperature of the aggregate. Particulate matter and PM_{10} emissions from the weigh batcher transfer point are controlled by a baghouse/cartridge, and truck mix load-out emissions are controlled by a boot. Capture efficiency of the truck mix load-out boot with water ring or baghouse or equivalent was estimated at 99%.

Controlled emissions of particulate toxic air pollutants (TAPs) were estimated based on the presence of a baghouse on the cement/cement supplement silos, a baghouses/cartridge on the weigh batcher, and 99% control for truck load-out emissions. Hexavalent chromium content was estimated at 20% of total chromium for cement, and 30% of total chromium for the cement supplement/fly ash. The hexavalent chromium percentages were taken from a University of North Dakota study, by the Energy and Environmental Research Center, Center for Air Toxic Metals. Detailed emissions calculations can be found in Appendix A of this document.

Emissions Inventory for 1.2 MMBtu/hr Water Heater

Atlas Sand and Rock, Inc.has a 1.2 MMBtu/hr natural gas-fired water heater. The water heater will be used on a limited basis and thus have a fuel usage limit. The usage is based on calculations associated with the rated capacity of the unit, the heating value and the annual hours of operation. Natural gas emissions are derived from AP-42, Section 1.4 (07/98) where the heating value was assumed to be 1,020 MMBtu/MMscf. The heating value was assumed to be 91.5 MMBtu/10^3 gal. Note that the water heater does not have any control devices associated with it. Detailed emissions calculations can be found in Appendix A of this document.

Emissions Inventory for Transfer Points

Determining emissions from a concrete batch plant also includes transfer emissions from the number of drop points throughout the process. The PM_{10} emissions from the truck mix loading operations are defined by an equation which includes the wind speed at each drop point and the moisture content of cement and cement supplement and a number of exponents and constants defined by AP-42 Equation 11.12-1(6/06). An average value of wind speed and moisture content are 7 mph and 6%, respectively[1]. The following equation of particulate emissions is specific to PM_{10}. The resulting emissions were used to determine a factor to help evaluate wind speed variations in AERMOD modeling.

$$E = k(0.0032) * \left[\frac{U^a}{M^b}\right] + c$$

Where:
k = particle size multiplier
a = exponent
b = exponent
c = constant
U = mean wind speed
M = moisture content

The second transfer emissions calculations were used to determine conveyor emissions for both coarse and fine aggregate to a conveyor. It was assumed that 82% or 164 cy/hr of the concrete produced was aggregate. This percentage was based on 1,865 lb coarse aggregate, 1,428 lb sand, 564 lb cement/supplement and 167 lb water for a total of 4,024 lb concrete as defined by AP-42 Table 11.12-5 (06/06). The fine and coarse aggregate contributions were separated into 36% and 46% of the total concrete production[2]. Employing emission factors from AP-42 Table 11.12-5 (6/06) for conveyor transfer and assuming 75% control efficiency as stated earlier for conveyor transfer PM_{10} emissions were calculated for each transfer point. For both fine and coarse aggregate, the facility has three transfer points.

Table 2 FACILITY WIDE CRITERIA POLLUTANT EMISSION ESTIMATES

Emissions Unit	PM_{10}	SO^2	NO_x	CO	VOC	Lead
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Concrete Batch Plant	0.32	--	--	--	--	1.19E-05
Natural Gas Water Heater	0.04	0.003	0.52	0.43	0.03	2.6E-06
Process Fugitives (transfer/drop points)	0.28	--	--	--	--	--
Total	**0.64**	**0.00**	**0.52**	**0.43**	**0.03**	**0.00**

A summary of the estimated controlled emissions of toxic air pollutants (TAP) is provided in the Emissions Inventory within Appendix A. The emission estimates are total summation values of each unit used at the facility which are outlined in the previous table.

Ambient Air Quality Impact Analyses

A circular grid with 5.0 meter receptor spacing, extending out to 100 meters was used in the non-site-specific modeling performed by DEQ. To establish a setback distance, the following procedure was followed for various production levels and operational configurations:

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[1] 7 mph was the average wind speed obtained from an average of 19 Idaho airports throughout the state from 1996-2006. This data is from the Western Regional Climate Center (http://www.wrcc.dri.edu/htmlfiles/westwind.final.html#IDAHO). 4.17 % and 1.77% were the average percentages for sand and aggregate respectively. These values are based on EPA tests conducted at Cheney Enterprises. The percentages used in AP-42 are typical for most concrete batching operations.

[2] The percentages of coarse and fine aggregate are based on the AP-42 concrete composition. One cubic yard of concrete as defined by AP-42 is 4024 total pounds. Similarly, coarse aggregate is 1865 pounds or 46% of the total and sand (fine) aggregate is 1428 pounds or 36%.

1. Trigger values for the modeling analyses were determined (see Appendix C for details). These are values, when combined with background concentrations, indicated an exceedance of a standard. They were calculated by subtracting the background value from the standard (because the model does not specifically include background in the results). The following are trigger values:

Table 3 AMBIENT AIR IMPACT ANALYSIS TRIGGER VALUES

Pollutants	Averaging Period	Trigger Value ($\mu g/m^3$)
PM_{10}	24-hr	77
	Annual	24
SO_2	3-hr	1266
	24-hr	339
	Annual	72
CO	1-hr	36400
	8-hr	7700
NO_2	Annual	83

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

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

4. The minimum setback distance was then calculated. This was the furthest distance between an emissions point and the controlling receptor.

The applicant has demonstrated compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard so long as the setback distance and other permit conditions are complied with. The applicant has also demonstrated compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Nez Perce County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Permit to Construct (IDAPA 58.01.01.201)

The proposed project does not meet the permit to construct exemption criteria in IDAPA 58.01.01.220–223.

A concrete batch plant with associated water heater are not categorically exempt and therefore do not meet the criteria of IDAPA 58.01.01.221 or 222. As a result, a permit to construct is required in accordance with IDAPA 58.01.01.201. 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)

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 are not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

The sources of PM_{10} emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is incorporated and assessed by Permit Conditions 7 and 8.

Rules For Control of Fugitive Dust (IDAPA 650-651)

All sources of fugitive dust emissions at the facility are subject to the State of Idaho rules for controlling fugitive dust. Reasonable precautions shall be taken to prevent particulate matter from becoming airborne. This requirement is incorporated and assessed by Permit Conditions 4, 5, and 6.

Standards for New Sources (IDAPA 58.01.01.676)

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This requirement is incorporated and assessed by Permit Condition 3.

Rules For Control of Odors (IDAPA 58.01.01.775-776)

No person shall allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids into the atmosphere in such quantities as to cause air pollution. This requirement is incorporated and assessed by Permit Conditions 9 and 10.

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

The facility is not classified as a major facility as defined in IDAPA 58.01.01.008.10. The facility is not a synthetic minor facility, because without limits on the potential to emit, the emissions of regulated air pollutants, the facility would not exceed major source thresholds. Therefore, the requirements of IDAPA 58.01.01.300–399 are not applicable to this permitting action.

PSD Classification (40 CFR 52.21 and IDAPA 205)

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 facility is not subject to the requirements of 40 CFR 60 Subpart IIII – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, and 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines because there are not engines on site.

NESHAP Applicability (40 CFR 61)

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

MACT Applicability (40 CFR 63)

This concrete batch plant does not emit or have the potential to emit more than 10 tons or more per year of any HAP or 25 tons or more per year of any combination of HAPs. Major source Maximum Achievable Control Technology (MACT) requirements therefore do not apply to this facility.

Area source MACT requirements that would apply to the IC engines include Subpart ZZZZ:

40 CFR 63, Subpart ZZZZ.....National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines

Atlas Sand and Rock, Inc. is not subject to this subpart as there are no engines onsite.

CAM Applicability (40 CFR 64)

The facility is not classified as a major source (refer to Title V Classification section). Because the facility does not require a Title V permit, the requirements of CAM are not applicable.

Permit Conditions Review

This section describes the permit conditions for this initial permit.

Scope

Purpose

Permit Condition 1.

States that the purpose is to permit a concrete batch plant

Permit Condition 2.

The table in this condition outlines those regulated sources within the permit.

Facility-wide Conditions

Fuel Specifications

Permit Condition 3.

This condition identifies the allowable fuels that may be combusted in the water heater. Natural gas is the only allowed fuel.

Fuel Monitoring and Recordkeeping

No monitoring is required because the emissions were estimated at full capacity (8,760 hours per year).

Fugitive Dust Control

Permit Condition 4

This permit condition requires that the plant take corrective action where practical to control fugitive dust when operating.

Permit Condition 5

More fugitive dust control is required by implementing Best Management Practices. Visible emissions are determined by a see/no see basis at the facility boundary. If visible emissions are present, the permittee must take appropriate action to correct the problem or perform a Method 22 test. The methods provided in this condition are options that the permittee may use to control any dust problems.

Fugitive Dust Control Monitoring & Recordkeeping

Permit Condition 6

Requires the permittee to conduct inspections each day that the plant is operating to assess the control of fugitive emissions and specifies corrective actions to take if fugitive dust is not reasonably controlled.

Visible Emissions

Permit Condition 7

The condition is in accordance with the opacity limit of 20% as stated by IDAPA 58.01.01.625.

Visible Emissions Monitoring & Recordkeeping

Permit Condition 8

Visible emissions and/or opacity monitoring is required on a monthly basis. This includes a see/no see evaluation of baghouse stacks. If there are any visible emissions, corrective actions must be taken within 24 hours. If the problem persists, a Method 9 opacity test must be performed in accordance with IDAPA 58.01.01.625. Corrective actions and reported exceedances shall be made in accordance with IDAPA 58.01.01.130-136. Records of all inspections need to be maintained as well.

Odors

Permit Condition 9

The permittee must operate in accordance with IDAPA 58.01.01.776.01 to minimize odors associated with the facility.

Permit Condition 10

Maintaining records of odor complaints, and corrective action taken demonstrates compliance with this condition.

Co-location

Permit Condition 11

The concrete batch plant may only co-locate with one (1) rock crushing facility. Co-location is defined as being within 1,000 ft of the nearest emission unit. This includes the concrete batch plant, silos and the center of any stockpile.

Concrete Batch Plant

Description

Permit Condition 12

The process description is provided to outline the activity at the facility.

Permit Condition 13

The table in this condition outlines the associated emission control devices for each regulated unit.

Emissions Limits

Permit Condition 14

The emissions limits for a natural gas water heater are listed in IDAPA 58.01.01.676. Specifically, the permittee shall not discharge PM to the atmosphere from any fuel-burning equipment source in excess of 0.050 gr/dscf of effluent gas corrected to 3% oxygen by volume for liquid or 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume for gaseous fuels.

Operating Requirements

Permit Condition 15

This permit condition limits the finished concrete production and required setback for any future site. A setback distance from the property boundary was used in the ambient air quality impact analysis to demonstrate compliance with NAAQS and TAP increments. Because the equipment is portable and the location may be changed from its initial location, compliance with a minimum setback distance limit is required. The setback distances are based on a number of criteria which include the use of an engine, control devices such as baghouses, boot enclosures, water ring and other suppressants.

One of the biggest drivers when establishing the setback distances was truck loadout. It is accepted by the DEQ that a boot enclosure alone provides 95% control. This acceptance is based on several previously issued permits that demonstrated through manufacturer information. To increase the flexibility of the permit and allow for small setback distances the permittee has the option to increase the loadout control to 99%. The permittee can increase the control efficiency to 99% in one of two ways; either 1) route all loadout emissions to a baghouse or 2) equip the boot enclosure with a water-fog-ring spray system. A BACT analysis done by the Texas Commission of Environmental Quality (TCEQ) in 2006 suggested that the appropriate control efficiency for the water ring was 85%. Multiply (1-95%) and (1-85%) returns a value of .0075. 1- .0075 = .9925 or 99.25%. Therefore adding the water fog ring to the boot enclosure obtains 99% control efficiency for truck loadout.

The fugitive dust control ranges from 75% to 95%. The additional 20% is obtained by mandating the enclosing of aggregate/sand piles with three-sided barriers and covering piles or adding additional suppressants.

Setback distances of both line power and engine use are included in the condition. This allows for the facility to move from one site that requires an engine for power to another site in which line power is available without requiring a permit revision.

Permit Condition 16

This condition limits the total amount of hours the facility may operate in any given day.

Permit Condition 17

A baghouse filter/cartridge system must be installed on any storage silo and all control equipment must be operated with a developed procedures document. This is required to control particulate emissions and demonstrate compliance with NAAQS standards.

Permit Condition 18

A water spray bar or equivalent must be installed and all control equipment must be operated with a developed procedures document. This is required to control particulate emissions and demonstrate compliance with NAAQS standards.

Permit Condition 19

Within 60 days of start up, the permittee needs to develop a procedures document outlining operations and maintenance schedules. This is to demonstrate that all required control equipment is being operated and maintained properly.

Permit Condition 20

To achieve 99% control efficiency for truck loadout emissions the permittee must route the emissions to a baghouse or install a water ring with at a minimum 85% control efficiency in conjunction with the boot enclosure. This option was added to reduce the setback distances available within the permit.

Monitoring & Recordkeeping Requirements

Permit Condition 21

Concrete production monitoring is required daily, monthly and annually. This is necessary to demonstrate compliance with the production limits.

Permit Condition 22

Setback monitoring is required to demonstrate compliance with the setback distance requirements. This must be done each time the CBP relocates or anytime the layout has changed. Also, atmospheric characteristics must be documented to verify that assumed emission factors during the analysis to accurate for the location of the plant.

Permit Condition 23

Daily records of the hours of operation of the facility must be kept to demonstrate compliance with the hours of operation permit condition.

General Provisions

General Compliance

Permit Condition 24

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

Permit Condition 25

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

Permit Condition 26

The obligation to comply general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

Inspection & Entry

Permit Condition 27

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

Construction & Operation Notification

Permit Condition 28

The construction and operation notification provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.

Performance Testing

Permit Condition 29

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

Permit Condition 30

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

Permit Condition 31

The performance test report provision requires that the permittee report any performance test results to DEQ within 30 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

Monitoring & Recordkeeping

Permit Condition 32

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

Excess Emissions

Permit Condition 33

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130.

Certification

Permit Condition 34

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

False Statements

Permit Condition 35

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

Tampering

Permit Condition 36

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

Transferability

Permit Condition 37

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

Severability

Permit Condition 38

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

PUBLIC REVIEW

Public Comment Opportunity

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

APPENDIX A – EMISSIONS INVENTORIES

Data Entry Form

Facility Information

Company:	Atlas Sand and Rock, Inc.
Facility ID:	069-000569
Permit No.:	P-2011.0116 Proj 60896
Source Type:	Concrete Batch Plant
Manufacturer/Model:	Wemco/Spomac

Production Rates

Maximum Hourly Production Rate:	125		
Proposed Daily Production Rate:	500	cy/day	4.00
Proposed Maximum Annual Production Rate:	150,000	cy/year	hr/day

Operating Hours

Maximum daily hours of operation for facility?	12

Concrete Batch Plant Specifications

Is the facility a Truck Mix (T) or Central mix (C)?	T
What level of Control is used for loadout, either Truck or Central?	99%
What level of Control is used for fugitive emissions?	75%

Water Heater Usage

Does this facility use a water heater?	Yes		
How many units?	1	Rating	
What type of fuel, Diesel, Natural Gas or Propane for unit 1?	Natural Gas	1.2	MMBtu/hr
If multiple units, what type of fuel, Diesel, Natural Gas or Propane for unit 2?	N/A		MMBtu/hr
Maximum annual hours of water heaters?	880		

Internal Combustion Engine(s)

Do you have any internal combustion engines?	No
How many small engines (less than or equal to 600 bhp) are being used?	0
Size of small engine #1 (<=600 bhp)? (If no engine enter 0)	0
Size of small engine #2 (<=600 bhp)? (If no engine enter 0)	0
Size of large engine (greater than 600 bhp)? (If no engine enter 0)	0

Note: If there is no small or large engine enter -1 for the certification

	Small #1	Small #2	Large Engine
Select the EPA Certification:	-1	-1	-1
Not EPA-certified: Enter "0" (zero)			
Certified Tier I, Tier 2, Tier 3, or Tier 4: Enter 1, 2, 3, or 4			
Certified "BLUE SKY" engine: Enter 5			

Enter the number of operating hours for the small engine(s)	0
Enter the number of operating hours for the large engine	0

Transfer Points

Enter the number of transfer points in the facility? (2 is the default)	3

CRITERIA POLLUTANT EMISSION INVENTORY for Portable Concrete Batch Plant

12/21/11 17:00

Facility Information

Company:	Atlas Sand and Rock, Inc.
Facility ID:	069-00059
Permit No.:	P-2011.0116 Proj 60896
Source Type:	Concrete Batch Plant
Manufacturer/Model:	Wemco/Spomac

Assumptions Implied or Stated in Application:

See control assumptions

Truck Mix (T) or Central Mix (C): T

INCREASE IN Production[4]

Maximum Hourly Production Rate:	125	cy/hr		Per manufacturer
Proposed Daily Production Rate:	500	cy/day	4.00	Hours of operation per day at max capacity
Proposed Maximum Annual Production Rate:	150,000	cy/year		
Cement Storage Silo Capacity:	4540	ft³ of aerated cement		
Cement Storage Silo Large Compartment Capacity for cement only:	65%	of the silo capacity		
Cement Storage Silo small Compartment Capacity for cement or ash:	35%	of the silo capacity		

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Tip: Blue text or numbers are meant to be changed.
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Change in PM_{10} Emissions due to this PTC

Emissions Point	$PM_{2.5}$ Emission Factor[1] (lb/cy)		PM_{10} Emission Factor[2] (lb/cy)		Controlled Emission Rate $PM_{2.5}$, Max.	Controlled Emission Rate PM_{10}, Max.	Controlled Emission Rate $PM_{2.5}$, 24-hour average		Controlled Emission Rate PM_{10}, 24-hour average		Controlled Emission Rate $PM_{2.5}$, annual average		Controlled Emission Rate PM_{10}, annual average		Control Assumptions:
	Controlled	Uncontrolled	Controlled	Uncontrolled	lb/hr[3]	lb/hr[3]	lb/hr[4]	lb/day[4]	lb/hr[4]	lb/day[4]	lb/hr[5]	T/yr[5]	lb/hr[5]	T/yr[5]	
Aggregate delivery to ground storage		0.00096		0.0031	0.03	0.10	0.01	0.12	0.016	0.39	4.11E-03	1.80E-02	0.013	0.058	75% Water Sprays at Operator's Discretion
Sand delivery to ground storage		0.00025		0.0007	0.01	0.02	1.30E-03	0.03	0.004	0.09	1.07E-03	4.69E-03	0.003	0.013	75% Water Sprays at Operator's Discretion
Aggregate transfer to conveyor		0.00096		0.0031	0.03	0.10	0.01	0.12	0.016	0.39	4.11E-03	1.80E-02	0.013	0.058	75% Water Sprays at Operator's Discretion
Sand transfer to conveyor		0.00025		0.0007	0.01	0.02	1.30E-03	0.03	0.004	0.09	1.07E-03	4.69E-03	0.003	0.013	75% Water Sprays at Operator's Discretion
Aggregate transfer to elevated storage		0.00096		0.0031	0.03	0.10	0.01	0.12	0.016	0.39	4.11E-03	1.80E-02	0.013	0.058	75% Water Sprays at Operator's Discretion
Sand transfer to elevated storage		0.00025		0.0007	0.01	0.02	1.30E-03	0.03	0.004	0.09	1.07E-03	4.69E-03	0.003	0.013	75% Water Sprays at Operator's Discretion
Cement delivery to Silo (controlled EF)	0.0003		0.0001		3.75E-02	1.04E-02	6.25E-03	1.50E-01	1.74E-03	4.17E-02	5.14E-03	2.25E-02	1.43E-03	6.26E-03	0.00% Baghouse is process equipment, use controlled EF
Cement supplement delivery to Silo (controlled EF)	0.000045		0.0002		5.63E-03	2.24E-02	9.38E-04	2.25E-02	3.73E-03	8.94E-02	7.71E-04	3.38E-03	3.06E-03	1.34E-02	0.00% Baghouse is process equipment, use controlled EF
Weigh hopper loading (sand & aggregate batcher loading)		0.001185		0.0040	1.48E-03	4.94E-03	2.47E-04	5.93E-03	8.23E-04	1.98E-02	2.03E-04	8.89E-04	6.77E-04	2.96E-03	99.0% Sealed boot (vents back to silo) or baghouse.
Truck mix loading, Table 11.12-2, "0.278 lb/ton of cement+flyash" x ((491 lb cement + 73 lb flyash)/cy concrete) / 2000 lb = 0.0784 lb/cy		0.023		0.0784	2.88E-02	0.10	0.00	0.12	0.02	0.39	3.94E-03	1.73E-02	0.01	0.06	99.0% Boot, enclosure, or equivalent or baghouse or boot w/water ring
Central mix loading, Table 11.12-2, "0.134 lb/ton of cement+flyash" x ((491 lb cement + 73 lb flyash)/cy concrete) / 2000 lb = 0.0378 lb/cy		0.0000		0.0000	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00	0.00	99.0% Baghouse control
Point Sources Total Emissions		2.45E-02		8.26E-02	7.34E-02	1.36E-01	1.22E-02	2.93E-01	2.26E-02	5.43E-01	1.00E-02	4.40E-02	1.86E-02	8.14E-02	
Process Fugitive Emissions		0.00363		0.0114	0.11	0.36	0.02	0.45	0.06	1.43	0.02	0.07	0.05	0.21	
Facility Wide Total: Point Sources + Process Fugitives (Except for Road Dust and Windblown Dust)				0.0940		0.49	0.03	0.75	0.08	1.97			0.07	0.30	

POINT SOURCE EMISSIONS for FACILITY CLASSIFICATION[6]

	Controlled EF	at	1,095,000 cy/yr	T/yr
Facility Classification Total PM[6]	6.40E-03			4.60E+00
Facility Classification Total PM10[6,8]	4.21E-03			2.31E+00

1 The EFs were calculated using EFs in lb/ton of material handled from Table 11.12-5, and a percentage of PM that is considered to be PM 2.5. The percentage used to establish the EFs were based on AP-42, Appendix B, Table B-2.2, Category 3. It was established that the fraction that is PM 2.5 is 15%.

2 The EFs were calculated using EFs in lb/ton of material handled from Table 11.12-2, typical composition per cubic yard of concrete (1865 lb aggregate, 1428 lbs sand, 491 lbs cement, 73 lbs cement supplement, and 20 gallons of water = 4024 lb/cy), and closely match Table 11.12-5 values (version 6/06) when rounded to the same number of figures. AP-42 lists the same EFs for uncontrolled and controlled emissions, so control estimates are based on the assumed control levels input on the right hand side of the table.

3 Max. hourly rate includes reductions associated with control assumptions.

4 Hourly emissions rate (24-hr average) = Max.hourly emissions rate x (hrs per day) / 24.
Daily emissions rate = max emissions rate (1-hr average) x proposed hrs/day.

5 Annual average hourly emissions rate = EF (lb/cy) x proposed annual production rate (cy/yr) / (8760 hr/yr).
Annual emissions rate = EF (lb/cy) x proposed annual production rate (cy/yr) /(2000 lb/T)

6 Controlled EFs for PM = 0.0002 (cement silo) + 0.0003 (flyash silo) +0.0079(weigh batcher)
for PM10 = 0.0001 (cement silo) + 0.0002 (flyash silo) +0.0040 (weigh batcher)

7 Emissions for Facility Classification are based on baghouses as process equipment, 24-hr day, 8760 hr/yr = 3,000 cy/day, and 1,095,000 cy/yr

8 Emissions for Facility Classification do not include truck mix loading emissions; this is typically considered a fugitive emission source for concrete batch plants.

Lead emissions

Emissions Point	Lead Emission Factor[1] (lb/ton of material loaded)		Increase in Emissions from this PTC: Emission Rate, Max.	Emissions for Comparison with DEQ Modeling Threshold		Emission Rate, Quarterly	Emissions for Facility Classification	
	Controlled with fabric	Uncontrolled	lb/hr, 1-hr avg.[2]	lb/month[3]	T/yr[4]	lb/hr qtrly avg[5]		T/yr
Cement delivery to silo[2]	1.09E-08	7.90E-07	3.34E-07	4.07E-05	4.01E-04	5.57E-08	Point Source	1.47E-06
Cement supplement delivery to Silo[3]	5.20E-07	ND	2.37E-06	2.89E-04	2.85E-03	3.95E-07	Point Source	1.04E-05
Truck Loadout (with 99.9% control)[5]		3.62E-06	1.28E-06	1.55E-04	1.53E-03	2.13E-07	Fugitive	5.59E-06
Central Silo (with 0.00% control)		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Fugitive	0.00E+00
Total			3.98E-06	4.85E-04	0.005		Point Sources	1.19E-05
DEQ Modeling Threshold				100	0.6			
Modeling Required?				No	No			

1 The emissions factors are from AP-42, Table 11.12-8 (version 06/06)
2 Max. hourly rate = EF x pound of cement/yd³ of concrete x max. hourly concrete production rate/(2000 lb/T)
3 lb/mo = EF x pound of material/yd³ of concrete x max. daily concrete production rate x (365/12)/(2000 lb/T)
4 T/yr = EF x pound of material/yd³ of concrete x max. annual concrete production rate/(2000 lb/T)
5 lb/hr, qtrly avg = lb/mo x 3 months per qtr / (8760/4)hrs per qtr

Toxic Air Pollutant (TAPs) EMISSIONS INVENTORY, Concrete Batch Plant

12/21/2011 17:00

Facility Information

Company:	Atlas Sand and Rock, Inc.
Facility ID:	069-000569
Permit No.:	P-2011.0116 Proj 60896
Source Type:	Concrete Batch Plant
Manufacturer:	Wemco/Spomac

Emissions estimates are based on EFs in AP-42, Table 11.12-8 (version 06/06) and the following composition of one yard of concrete:

Coarse aggregate		1865 pounds
Sand		1428 pounds
Cement		491 pounds
Cement supplement		73 pounds
Water		20 gallons
Concrete		**4024 pounds**

Truck Mix Loadout Factor: 1

Central Mix Batching Factor: 0

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Increase in Production

Maximum Hourly Production Rate:	125	cy/hr	
Proposed Daily Production Rate:	500	cy/day	
Proposed Maximum Annual Production Rate:	150,000	cy/year	

Uncontrolled (Unlimited Production Rate)

	24 hrs/day,
3,000 cy/day	7 day/wk,
1,095,000 cy/year	52 wks/year

TAP Emission Factors from AP-42, Table 11.12-8 (Version 06/06)

Emissions Point	Arsenic EF (lb/ton of material loaded)		Beryllium EF (lb/ton of material loaded)		Cadmium EF (lb/ton of material loaded)		Chromium EF (lb/ton of material loaded)		Manganese EF (lb/ton of material loaded)		Nickel EF (lb/ton of material loaded)		Phosphorus EF (lb/ton of material loaded)		Selenium EF (lb/ton of material loaded)		Chromium VI
	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Percent of total Cr that is Cr+6
Cement delivery to silo (with baghouse)	**4.24E-09**	1.68E-06	**4.86E-10**	1.79E-06	**4.86E-10**	2.34E-07	**2.90E-08**	2.62E-07	**1.17E-07**	2.02E-04	**4.18E-08**	1.76E-05	ND	**1.18E-05**	ND	ND	**20%**
Cement supplement delivery to Silo (with baghouse)	**1.00E-06**	ND	**9.04E-08**	ND	**1.98E-08**	ND	**1.22E-06**	ND	**2.56E-07**	ND	**2.28E-06**	ND	**3.54E-06**	ND	**7.24E-08**	ND	**30%**
Truck Loadout (no boot or shroud)	1.16E-06	**3.04E-06**	1.04E-07	**2.44E-07**	9.05E-08	**3.42E-08**	4.10E-05	**1.14E-05**	2.06E-05	**6.12E-05**	4.76E-06	**1.19E-05**	1.53E-05	**3.84E-05**	1.13E-07	**2.62E-06**	**21.29%**
Central Mix Batching (NO boot or shroud)	0.00E+00	**0.00E+00**	ND	ND	0.00E+00	**0.00E+00**	0.00E+00	**0.00E+00**	0.00E+00	**0.00E+00**	0.00E+00	**0.00E+00**	0.00E+00	**0.00E+00**	ND	ND	**21.29%**

UNCONTROLLED TAP EMISSIONS **Note: Includes baghouses as process equipment.** **3,000 cy/day, and** **1,095,000 cy/yr**

Emissions Point	Arsenic		Beryllium		Cadmium		Chromium		Manganese		Nickel		Phosphorus		Selenium		Chromium VI		
	lb/hr annual avg.	T/yr[4]	lb/hr annual avg.	T/yr	lb/hr annual avg.	T/yr	lb/hr 24-hr avg.	T/yr[5]	lb/hr 24-hr avg.	T/yr	lb/hr annual avg.	T/yr	lb/hr 24-hr avg.	T/yr	lb/hr 24-hr avg.	T/yr	lb/hr annual avg.		
Cement delivery to silo (with baghouse)	1.30E-07	5.70E-07	1.49E-08	6.53E-08	1.49E-08	6.53E-08	8.90E-07	3.39E-05	3.59E-06	1.57E-05	1.28E-06	5.62E-06	3.62E-04	1.59E-03	ND	ND	1.78E-07		
Cement supplement delivery to Silo (with baghouse)	4.56E-06	2.00E-05	4.12E-07	1.81E-06	9.03E-08	3.96E-07	5.57E-06	2.44E-05	1.17E-06	5.12E-06	1.04E-05	4.56E-05	1.62E-05	7.07E-05	3.30E-07	1.45E-06	1.67E-06		
Truck Loadout (NO baghouse)	1.07E-04	4.69E-04	8.60E-06	3.77E-05	1.21E-06	5.28E-06	4.02E-04	1.76E-03	2.16E-03	9.45E-03	4.19E-04	1.84E-03	1.35E-03	5.93E-03	9.24E-05	4.05E-04	8.56E-05		
Central Mix Batching (NO boot or shroud)	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	Facility Classification: Total Annual HAPs Emissions	
Sources Total	**1.12E-04**	4.90E-04	**9.03E-06**	3.95E-05	**1.31E-06**	5.74E-06	**4.08E-04**	1.82E-03	**2.16E-03**	9.47E-03	**4.31E-04**	1.89E-03	**1.73E-03**	7.59E-03	**9.27E-05**	4.06E-04	**8.74E-05**	**2.17E-02**	**Tons per year**
IDAPA Screening EL (lb/hr)	1.50E-06		2.80E-05		3.70E-06		3.30E-02		3.33E-01		2.70E-05		7.00E-03		1.30E-02		5.60E-07		
EXCEEDS EL?	**Yes**		No		No		No		No		**Yes**		No		No		**Yes**		

CONTROLLED TAP EMISSIONS **Note: Includes baghouses as process equipment.** **500 cy/day, and** **150,000 cy/year**

Emissions Point	Arsenic		Beryllium		Cadmium		Chromium		Manganese		Nickel		Phosphorus		Selenium		Chromium VI		
	lb/hr annual avg.	T/yr[4]	lb/hr annual avg.	T/yr	lb/hr annual avg.	T/yr	lb/hr 24-hr avg.	T/yr[5]	lb/hr 24-hr avg.	T/yr	lb/hr annual avg.	T/yr	lb/hr 24-hr avg.	T/yr	lb/hr 24-hr avg.	T/yr	lb/hr annual avg.		
Cement delivery to silo (with baghouse)[1]	1.78E-08	7.81E-08	2.04E-09	8.95E-09	2.04E-09	8.95E-09	1.48E-07	5.34E-07	5.98E-07	2.15E-06	1.76E-07	7.70E-07	ND	ND	ND	ND	2.44E-08		
Cement supplement delivery to Silo (with baghouse)2	6.25E-07	2.74E-06	5.65E-08	2.47E-07	1.24E-08	5.42E-08	6.24E-06	3.34E-06	1.31E-06	7.01E-07	1.43E-06	6.24E-06	1.81E-05	9.69E-06	5.51E-08	1.98E-07	2.29E-07		
Truck Loadout (with baghouse)	1.47E-07	6.43E-07	1.18E-08	5.16E-08	1.65E-09	7.23E-09	6.70E-07	2.41E-06	3.60E-06	1.29E-05	5.75E-07	2.52E-06	2.26E-06	8.12E-06	1.54E-07	5.54E-07	1.17E-07	**99.00%**	Boot, enclosure, or equivalent or baghouse or boot w/water ring
Central Mix Batching (NO boot or shroud)	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	0.00E+00	99.00%	Bag house control
Sources Total	**7.90E-07**	3.46E-06	**7.03E-08**	3.08E-07	**1.61E-08**	7.04E-08	**7.06E-06**	6.28E-06	**5.50E-06**	1.58E-05	**2.18E-06**	9.53E-06	**2.04E-05**	1.78E-05	**2.09E-07**	7.52E-07	**3.70E-07**	**5.40E-05**	**Tons per year**
IDAPA Screening EL (lb/hr)	1.50E-06		2.80E-05		3.70E-06		3.30E-02		3.33E-01		2.70E-05		7.00E-03		1.30E-02		5.60E-07		
Percent of EL	52.64%		0.25%		0.43%		0.02%		0.0017%		8.06%		0.29%		0.0016%		66.13%		
EXCEEDS EL?	No		No		No		No		No		No		No		No		No		

[1] lb/hr, annual average = EF x pound of cement / Yd[3] of concrete x annual concrete production rate / 2000lb/Ton / 8760 hr/yr; lb/hr, 24-hr = EF x pound of cement / Yd3 of concrete x daily concrete production rate / 2000lb/Ton / 24 hr/day

[2] lb/hr, annual average = EF x pound of cement supplement / Yd[3] of concrete x annual concrete production rate / 2000lb/Ton / 8760 hr/yr; lb/hr, 24-hr average = EF x pound of cement supplement / Yd3 of concrete x daily concrete production rate / 2000lb/Ton

[3] lb/hr, annual average = EF x pound of (cement + cement supplement) / Yd[3] of concrete x annual concrete production rate / 2000lb/Ton / 8760 hr/yr; lb/hr, 24-hr average = EF x pound of (cement + cement supplement) / Yd3 of concrete x daily concrete production

[4] T/yr = lb/hr, annual avg x 8760 hr/yr x (1T/2000 lb)

[5] T/yr = EF x pound of cement, or cement supplement, or cement + cement supplement x annual concrete production rate /2000 lb/ton / 2000 lb/ton

NATURAL GAS COMBUSTION, AP-42 SECTION 1.4 (7/98)

Enter 0 in the hr/day and hr/yr cells if there is no natural gas boiler

1.2 MMBtu/hr / 1,020 MMBtu/MMscf = 1.18E-03 MMscf/hr **Fuel Use:**

Operating Assumptions: **24** hr/day **0.028 MMscf/day**

8,760 hr/yr **10.306 MMscf/year**

Criteria Air Pollutants	Emission Factor	Emissions		CBP + Boiler Emissions	Modeling Threshold		Modeling Required?	Modeling Threshold		Modeling Required?
	lb/MMscf	lb/hr	T/yr	T/yr	2002 Guidance			Case-by-Case		
NO2	100	1.18E-01	5.15E-01	5.15E-01	1	T/yr	No	7	T/yr	No
CO	84	9.88E-02	4.33E-01	4.33E-01	14	lb/hr	No	70	lb/hr	No
PM10	7.6	8.94E-03	3.92E-02	1.21E-01	0.2	lb/hr	No	0.9	lb/hr	No
		8.94E-03	3.92E-02		1	T/yr	No	7	T/yr	No
PM2.5	7.6	8.94E-03	3.92E-02	8.32E-02						
		8.94E-03	3.92E-02							
SOx	0.6	7.06E-04	3.09E-03	3.09E-03	0.2	lb/hr	No	0.9	lb/hr	No
		7.06E-04	3.09E-03		1	T/yr	No	7	T/yr	No
VOC	5.5	6.47E-03	2.83E-02	2.83E-02	40	T/yr	No			
Lead	0.0005	5.88E-07	2.58E-06	4.78E-03	0.6	T/yr	No			
Lead, continued			5.37E-03	lb/quarter	10	lb/mo	No			
		TOTAL	1.02E+00	T/yr	Note: 100 lb/mo Pb in guidance reduced by factor of 10 based on latest Pb NAAQS (reduced in 2008 from 1.5 ug/m3 to 0.15 ug/m3)					

Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)					Exceeds EL/ Modeling Required?
	lb/MMscf	lb/hr	T/yr	EL (lb/hr)	
PAH HAPs					
2-Methylnaphthalene	2.40E-05	**2.82E-08**	**2.82E-08**	9.10E-05	No
3-Methylchloranthrene	1.80E-06	**2.12E-09**	**2.12E-09**	2.50E-06	No
7,12-Dimethylbenz(a)anthrace	1.60E-05	1.88E-08	8.24E-08		
Acenaphthene	1.80E-06	**2.12E-09**	**2.12E-09**	9.10E-05	No
Acenaphthylene	1.80E-06	**2.12E-09**	**2.12E-09**	9.10E-05	No
Anthracene	2.40E-06	**2.82E-09**	**2.82E-09**	9.10E-05	No
Benzo(a)anthracene	1.80E-06	**2.12E-09**	**2.12E-09**	9.10E-05	See POM
Benzo(a)pyrene	1.20E-06	**1.41E-09**	**1.41E-09**	2.00E-06	See POM
Benzo(b)fluoranthene	1.80E-06	**2.12E-09**	**2.12E-09**		See POM
Benzo(g,h,i)perylene	1.20E-06	**1.41E-09**	**1.41E-09**	9.10E-05	No
Benzo(k)fluoranthene	1.80E-06	**2.12E-09**	**2.12E-09**		See POM
Chrysene	1.80E-06	**2.12E-09**	**2.12E-09**		See POM
Dibenzo(a,h)anthracene	1.20E-06	**1.41E-09**	**1.41E-09**		See POM
Dichlorobenzene	1.20E-03	**1.41E-06**	**1.41E-06**	9.10E-05	No
Fluoranthene	3.00E-06	**3.53E-09**	**3.53E-09**	9.10E-05	No
Fluorene	2.80E-06	**3.29E-09**	**3.29E-09**	9.10E-05	No
Indeno(1,2,3-cd)pyrene	1.80E-06	**2.12E-09**	**2.12E-09**		See POM
Naphthalene	6.10E-04	2.62E-04	1.15E-03	3.33	No
Naphthalene	6.10E-04	**7.18E-07**	**7.18E-07**	9.10E-05	No
Phenanathrene	1.70E-05	**2.00E-08**	**2.00E-08**	9.10E-05	No
Pyrene	5.00E-06	**5.88E-09**	**5.88E-09**	9.10E-05	No
Polycyclic Organic Matter (POM)	7-PAH Group	**1.34E-08**	**1.34E-08**	2.00E-06	No
Non-PAH HAPs					
Benzene	2.10E-03	**2.47E-06**	**2.47E-06**	8.00E-04	No
Formaldehyde	7.50E-02	**8.82E-05**	**8.82E-05**	5.10E-04	No
Hexane	1.80E+00	2.12E-03	9.28E-03	12	No
Toluene	3.40E-03	4.00E-06	1.75E-05	25	No
Non-HAP Organic Compounds					
Butane	2.10E+00	2.47E-03	1.08E-02		
Ethane	3.10E+00	3.65E-03	1.60E-02		
Pentane	2.60E+00	3.06E-03	1.34E-02	118	No
Propane	1.60E+00	1.88E-03	8.24E-03		
Metals (HAPs)					
Arsenic	2.00E-04	**2.35E-07**	**2.35E-07**	1.50E-06	No
Barium	4.40E-03	5.18E-06	2.27E-05	0.033	No
Beryllium	1.20E-05	**1.41E-08**	**1.41E-08**	2.80E-05	No
Cadmium	1.10E-03	**1.29E-06**	**1.29E-06**	3.70E-06	No
Chromium	1.40E-03	1.65E-06	7.21E-06	0.033	No
Cobalt	8.40E-05	9.88E-08	4.33E-07	0.0033	No
Copper	8.50E-04	1.00E-06	4.38E-06	0.013	No
Manganese	3.80E-04	4.47E-07	1.96E-06	0.067	No
Mercury	2.60E-04	3.06E-07	1.34E-06	0.003	No
Molybdenum	1.10E-03	1.29E-06	5.67E-06	0.333	No
Nickel	2.10E-03	**2.47E-06**	**2.47E-06**	2.70E-05	No
Selenium	2.40E-05	2.82E-08	1.24E-07	0.013	No
Vanadium	2.30E-03	2.71E-06	1.19E-05	0.003	No
Zinc	2.90E-02	3.41E-05	1.49E-04	0.667	No

NOTE: TAPs lb/hr emissions are 24-hour averages unless shown in bold. Bold emissions are annual averages for carcinogens.

Case-by-Case Modeling Thresholds may be used ONLY with DEQ Approval

TOTAL CBP + BOILER EMISSIONS (POINT SOURCES, T/YR)	1.19

DIESEL COMBUSTION, AP-42 SECTION 1.3 (9/98)

Enter 0 in the hr/day and hr/yr cells if there is no diesel fired boiler

0 MMBtu/hr / 140 MMBtu/10^3 gal = 0.00E+00 10^3 gal/hr **Fuel Use:**

Operating Assumptions: **0** hr/day **0.00 gal/day**

0 hr/yr **0 gal/year**

0.0015% sulfur

Criteria Air Pollutants	Emission Factor	Emissions		CBP + Boiler Emissions	Modeling Threshold		Modeling Required?	Modeling Threshold		Modeling Required?
	lb/10^3 gal	lb/hr	T/yr	T/yr	2002 Guidance			Case-by-Case		
NO2	20	0.00E+00	0.00E+00	0.00E+00	1	T/yr	No	7	T/yr	No
CO	5	0.00E+00	0.00E+00	0.00E+00	14	lb/hr	No	70	lb/hr	No
PM10 (filterable + condensable)	3.3	0.00E+00	0.00E+00	8.14E-02	0.2	lb/hr	No	0.9	lb/hr	No
		0.00E+00	0.00E+00		1	T/yr	No	7	T/yr	No
PM2.5 (filterable + condensable)	1.8	0.00E+00	0.00E+00	4.40E-02						
		0.00E+00	0.00E+00							
SOx (SO2 + SO3)	0.216	0.00E+00	0.00E+00	0.00E+00	0.2	lb/hr	No	0.9	lb/hr	No
		0.00E+00	0.00E+00		1	T/yr	No	7	T/yr	No
VOC (TOC)	0.556	0.00E+00	0.00E+00	0.00E+00	40	T/yr	No			
Lead EF = 9 lb/10^{12} Btu	9	0.00E+00	0.00E+00	4.78E-03	0.6	T/yr	No			
Lead, continued			0.00E+00	lb/quarter	10	lb/mo	No			
		TOTAL	0.00E+00	T/yr	Note: 100 lb/mo Pb in guidance reduced by factor of 10 based on latest Pb NAAQS (reduced in 2008 from 1.5 ug/m3 to 0.15 ug/m3)					

Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)					Exceeds EL/ Modeling Required?
	lb/10^3 gal	lb/hr	T/yr	EL (lb/hr)	
PAH HAPs					
Acenaphthene	2.11E-05	0.00E+00	0.00E+00	9.10E-05	No
Acenaphthylene	2.57E-07	0.00E+00	0.00E+00	9.10E-05	No
Anthracene	1.22E-06	0.00E+00	0.00E+00	9.10E-05	No
Benzo(a)anthracene	4.01E-06	0.00E+00	0.00E+00	9.10E-05	See POM
Benzo(a)pyrene				2.00E-06	See POM
Benzo(b,k)fluoranthene	1.48E-06	0.00E+00	0.00E+00		See POM
Benzo(g,h,i)perylene	2.26E-06	0.00E+00	0.00E+00	9.10E-05	No
Benzo(k)fluoranthene	0.00E+00	0.00E+00	0.00E+00		See POM
Chrysene	2.38E-06	0.00E+00	0.00E+00		See POM
Dibenzo(a,h)anthracene	1.67E-06	0.00E+00	0.00E+00		See POM
Dichlorobenzene				9.10E-05	No
Fluoranthene	4.84E-06	0.00E+00	0.00E+00	9.10E-05	No
Fluorene	4.47E-06	0.00E+00	0.00E+00	9.10E-05	No
Indeno(1,2,3-cd)pyrene	2.14E-06	0.00E+00	0.00E+00		See POM
Naphthalene	1.13E-03	0.00E+00	0.00E+00	3.33	No
Naphthalene	1.13E-03	0.00E+00	0.00E+00	9.10E-05	No
Phenanathrene	1.05E-05	0.00E+00	0.00E+00	9.10E-05	No
Pyrene	4.25E-06	0.00E+00	0.00E+00	9.10E-05	No
Polycyclic Organic Matter (POM)	7-PAH Group	0.00E+00	0.00E+00	2.00E-06	No
Non-PAH HAPs					
Benzene	2.14E-04	0.00E+00	0.00E+00	8.00E-04	No
Ethyl benzene	6.36E-05	0.00E+00	0.00E+00	2.90E+01	No
Formaldehyde	3.30E-02	0.00E+00	0.00E+00	5.10E-04	No
Hexane	1.80E+00	0.00E+00	0.00E+00	12	No
Toluene	6.20E-03	0.00E+00	0.00E+00	25	No
o-Xylene	1.09E-04			0.007	
Metals (HAPs)	lb/10^{12} Btu				
Arsenic	4.00E+00	0.00E+00	0.00E+00	1.50E-06	No
Barium				0.033	No
Beryllium	3.00E+00	0.00E+00	0.00E+00	2.80E-05	No
Cadmium	3.00E+00	0.00E+00	0.00E+00	3.70E-06	No
Chromium	3.00E+00	0.00E+00	0.00E+00	0.033	No
Cobalt				0.0033	No
Copper	6.00E+00	0.00E+00	0.00E+00	0.013	No
Manganese	6.00E+00	0.00E+00	0.00E+00	0.067	No
Mercury	3.00E+00	0.00E+00	0.00E+00	0.003	No
Molybdenum				0.333	No
Nickel	3.00E+00	0.00E+00	0.00E+00	2.70E-05	No
Selenium	1.50E+01	0.00E+00	0.00E+00	0.013	No
Vanadium				0.003	No
Zinc	4.00E+00	0.00E+00	0.00E+00	0.667	No

NOTE: TAPs lb/hr emissions are 24-hour averages unless shown in bold. Bold emissions are annual averages for carcinogens.

1,1,1-Trichloroethane 2.36E-04 Not a HAP (1,1,2 TCA is a HAP). Not a 585 or 586 TAP.

Case-by-Case Modeling Thresholds may be used ONLY with DEQ Approval

TOTAL CBP + BOILER EMISSIONS (POINT SOURCES, T/YR)	0.13

PROPANE/BUTANE COMBUSTION, AP-42 SECTION 1.5 (9/98)

Enter 0 in the hr/day and hr/yr cells if there is no propane boiler

Operating Assumptions: **0** MMBtu/hr / 91.5 MMBtu/10^3 gal = 0.00E+00 10^3 gal/hr **Fuel Use:**

0 hr/day **0.00 gal/day**

0 hr/yr **0 gal/year**

Criteria Air Pollutants	Emission Factor	Emissions		CBP + Boiler Emissions	Modeling Threshold		Modeling Required?	Modeling Threshold		Modeling Required?
	lb/10^3 gal	lb/hr	T/yr	T/yr	2002 Guidance			Case-by-Case		
NO2	15	0.00E+00	0.00E+00	0.00E+00	1	T/yr	No	7	T/yr	No
CO	8.4	0.00E+00	0.00E+00	0.00E+00	14	lb/hr	No	70	lb/hr	No
PM10 (filterable + condensable)	0.8	0.00E+00	0.00E+00	8.14E-02	0.2	lb/hr	No	0.9	lb/hr	No
		0.00E+00	0.00E+00		1	T/yr	No	7	T/yr	No
PM2.5 (filterable + condensable)	0.8	0.00E+00	0.00E+00	4.40E-02						
		0.00E+00	0.00E+00							
SOx (SO2 + SO3)	1.479	0.00E+00	0.00E+00	0.00E+00	0.2	lb/hr	No	0.9	lb/hr	No
		0.00E+00	0.00E+00		1	T/yr	No	7	T/yr	No
VOC (TOC)	1.1	0.00E+00	0.00E+00	0.00E+00	40	T/yr	No			
Lead EF = 9 lb/10^{12} Btu	0	0.00E+00	0.00E+00	4.78E-03	0.6	T/yr	No			
Lead, continued			0.00E+00	lb/quarter	10	lb/mo	No			
		TOTAL	0.00E+00	T/yr	Note: 100 lb/mo Pb in guidance reduced by factor of 10 based on latest Pb NAAQS (reduced in 2008 from 1.5 ug/m3 to 0.15 ug/m3)					

Case-by-Case Modeling Thresholds may be used ONLY with DEQ Approval

TOTAL CBP + BOILER EMISSIONS (POINT SOURCES, T/YR)	0.13

CURRENT PTC APPLICATION ESTIMATES

Do you have an internal combustion engine? No

Internal Combustion Engine(s) AP-42 Section 3.3 or 3.4 (diesel fueled)			
		Fuel Type(s)	Generator Toggle
Generator Make/Model	Enter Info	#2 Fuel Oil (Diesel)	1
Rating of Large Engine (hp)	0.0	Max Sulfur weight percent (w/o)	0.0015%
Rating of Small Engine #1 (hp)	0.0		
Rating of Small Engine #2 (hp)	0.0		
EF OPTIONS:		Use EFs in lb/MMBtu fuel input	
1 hp = 0.7456999 kW	0.7457	Calculated Max Fuel Use Rate, gal/hr (Large)	0.00
Avg brake-specific fuel consumption (BSFC) = 7000 Btu/hp-hr	7000	Calculated Max Fuel Use Rate, gal/hr (small #1)	0.00
Fuel Heating Value, Btu/gal	137,030	Calculated Max Fuel Use Rate, gal/hr (small #2)	0.00
		Calculated MMBtu/hr (Large)	0.00
		Calculated MMBtu/hr (Small #1)	0.00
		Calculated MMBtu/hr (Small #2)	0.00
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

EPA Certification for Large Engine:	-1
Not EPA-certified: Enter "0" (zero)	
Certified Tier I, Tier 2, Tier 3, or Tier 4: Enter 1, 2, 3, or 4	
Certified "BLUE SKY" engine: Enter 5	

EPA Certification for Small Engine #1:	-1	EPA Certification for Small Engine #2:	-1
Not EPA-certified: Enter "0" (zero)		Not EPA-certified: Enter "0" (zero)	
Certified Tier I, Tier 2, Tier 3, or Tier 4: Enter 1, 2, 3, or 4		Certified Tier I, Tier 2, Tier 3, or Tier 4: Enter 1, 2, 3, or 4	
Certified "BLUE SKY" engine: Enter 5		Certified "BLUE SKY" engine: Enter 5	

Facility: Atlas Sand and Rock, Inc.

12/21/2011 17:00 **Permit/Facility ID:** P-2011.0116 **Proj 60896** **069-000569**

User Input Weight % Sulfur = 0.0015% SO2 EF = 1.01 x S

Large Engine

Fuel Type Toggle = 0 0 hp Engine
Fuel Consumption Rate 0.00 gal/hr
Calculated MMBtu/hr 0.0000 MMBtu/hr
Max Daily Operation 0 hr/day
Max Annual Operation 0 hrs/yr

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) Annual or 24-hr Average
PM [b]	0.1	0.000	0.00	
PM-10 (total) [d]	0.000	0.000	0.000	
P.M.-2.5	0.000	0.000	0.000	
CO [b]	0.00	0.000	0.00	
NOx [b]	0.000	0.000	0.00	
SO_2 [b] (total SOx presume	0.001515	0.000	0.000	
VOC [b] (total TOC--> VOC	0.000	0.000	0.000	
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	0.00E+00	0.00E+00	**0.00E+00**
Acrolein[c]	9.25E-05	0.00E+00	0.00E+00	0.00E+00
Benzene[c,e]	9.33E-04	0.00E+00	0.00E+00	**0.00E+00**
1,3-Butadiene[c,e]	3.91E-05	0.00E+00	0.00E+00	**0.00E+00**
Ethylbenzene[e]				
Formaldehyde[c,e]	1.18E-03	0.00E+00	0.00E+00	**0.00E+00**
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[c,e]	4.09E-04	0.00E+00	0.00E+00	0.00E+00
Xylene[c,e]	2.85E-04	0.00E+00	0.00E+00	0.00E+00
PAH, Total		0.00E+00		**0.00E+00**
POM (7-PAH Group)		0.00E+00	0.00E+00	**0.00E+00**

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[c1]	1.42E-06	0.00E+00	0.00E+00	**0.00E+00**
Acenaphthylene[c1]	5.06E-06	0.00E+00	0.00E+00	**0.00E+00**
Anthracene[c1]	1.87E-06	0.00E+00	0.00E+00	**0.00E+00**
Benzo(a)anthracene[c1]	1.68E-06	0.00E+00	0.00E+00	**0.00E+00**
Benzo(a)pyrene[c1,e]	1.88E-07	0.00E+00	0.00E+00	**0.00E+00**
Benzo(b)fluoranthene[c1]	9.91E-08	0.00E+00	0.00E+00	**0.00E+00**
Benzo(e)pyrene				
Benzo(g,h,I)perylene[c1]	4.89E-07	0.00E+00	0.00E+00	**0.00E+00**
Benzo(k)fluoranthene[c1]	1.55E-07	0.00E+00	0.00E+00	**0.00E+00**
Chrysene[c1]	3.53E-07	0.00E+00	0.00E+00	**0.00E+00**
Dibenzo(a,h)anthracene[c1]	5.83E-07	0.00E+00	0.00E+00	**0.00E+00**
Dichlorobenzene				
Fluoranthene[c1]	7.61E-06	0.00E+00	0.00E+00	**0.00E+00**
Fluorene[c1]	2.92E-05	0.00E+00	0.00E+00	**0.00E+00**
Indeno(1,2,3-cd)pyrene[c1]	3.75E-07	0.00E+00	0.00E+00	**0.00E+00**
Naphthalene[c1,e]	8.48E-05	0.00E+00	0.00E+00	**0.00E+00**
Perylene				
Phenanthrene[c1]	2.94E-05	0.00E+00	0.00E+00	**0.00E+00**
Pyrene[c1]	4.78E-06	0.00E+00	0.00E+00	**0.00E+00**
Non-HAP Organic Compounds				
Acetone[e]				
Benzaldehyde				
Butane				
Butyraldehyde				
Crotonaldehyde[e]				
Ethylene				
Heptane				
Hexanal				
Isovaleraldehyde				
2-Methyl-1-pentene				
2-Methyl-2-butene				
3-Methylpentane				
1-Pentene				
n-Pentane				
Valeraldehyde				
Metals				
Antimony[e]				
Arsenic[e]				
Barium[e]				
Beryllium[e]				
Cadmium[e]				
Chromium[e]				
Cobalt[e]				
Copper[e]				
Hexavalent Chromium[e]				
Manganese[e]				
Mercury[e]				
Molybdenum[e]				
Nickel[e]				
Phosphorus[e]				
Silver[e]				
Selenium[e]				
Thallium[e]				
Vanadium[e]				
Zinc[e]				

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

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

Facility: Atlas Sand and Rock, Inc.

P-2011.0116

12/21/2011 17:00 Permit/Facility ID: Proj 60896 065-00056 User Input Weight % Sulfur = 0.0015% SO2 EF = 1.01 x S

Small Engine #1

Fuel Type Toggle = 0 0 hp Engine
Fuel Consumption Rate 0.00 gal/hr
Calculated MMBtu/hr 0.0000 MMBtu/hr
Max Daily Operation 12 hr/day
Max Annual Operation 0 hrs/yr

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) Annual or 24-hr Average
PM[b]	0.1	0.000	0.00	
PM-10 (total)[c]	0.000	0.000	0.000	
P.M.-2.5	0.000	0.000	0.00	
CO[b]	0.00	0.000	0.00	
NOx[b]	0.000	0.000	0.00	
SOx[b] (total SOx presumed SO2)	0.001515	0.000	0.000	
VOC[b] (total TOC-> VOCs)	0.000	0.000	0.000	
Lead				
HCl[d]				
Dioxins[e]				
2,3,7,8-TCDD				
Total TCDD				
1,2,3,7,8-PeCDD				
Total PeCDD				
1,2,3,4,7,8-HxCDD[e]				
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[e]				
Total HpCDD				
Octa CDD[e]				
Total PCDD[e]				
Furans[e]				
2,3,7,8-TCDF				
Total TCDF				
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF[e]				
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[e]				
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF[e]				
Octa CDF[e]				
Total PCDF[e]				
Total PCDD/PCDF[e]				
Non-PAH HAPs				
Acetaldehyde[e]	7.67E-04	0.00E+00	2.00E+00	0.00E+00
Acrolein[e]	9.26E-05	0.00E+00	2.00E+00	0.00E+00
Benzene[e,f]	9.33E-04	0.00E+00	2.00E+00	0.00E+00
1,3-Butadiene[e,f]	3.91E-05	0.00E+00	3.00E+00	0.00E+00
Ethylbenzene[e]				
Formaldehyde[e,f]	1.16E-03	0.00E+00	3.00E+00	0.00E+00
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[e,g]	4.09E-04	0.00E+00	3.00E+00	0.00E+00
Xylene[e,g]	2.85E-04	0.00E+00	3.00E+00	0.00E+00
PAH, Total		0.00E+00		0.00E+00
POM (7-PAH Group)		0.00E+00	0.00E+00	0.00E+00

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[e]	1.42E-06	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene[e]	5.06E-06	0.00E+00	0.00E+00	0.00E+00
Anthracene[e]	1.87E-06	0.00E+00	0.00E+00	0.00E+00
Benzo(a)anthracene[e]	1.68E-06	0.00E+00	0.00E+00	0.00E+00
Benzo(a)pyrene[e,f]	1.88E-07	0.00E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene[e]	9.91E-08	0.00E+00	0.00E+00	0.00E+00
Benzo(e)pyrene				
Benzo(g,h,i)perylene[e]	4.89E-07	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene[e]	1.55E-07	0.00E+00	0.00E+00	0.00E+00
Chrysene[e]	3.53E-07	0.00E+00	0.00E+00	0.00E+00
Dibenzo(a,h)anthracene[e]	8.83E-07	0.00E+00	0.00E+00	0.00E+00
Dichlorobenzene				
Fluoranthene[e]	7.61E-06	0.00E+00	0.00E+00	0.00E+00
Fluorene[e]	2.92E-05	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene[e]	3.75E-07	0.00E+00	0.00E+00	0.00E+00
Naphthalene[e,f]	8.48E-05	0.00E+00	0.00E+00	0.00E+00
Perylene	2.94E-05	0.00E+00	0.00E+00	0.00E+00
Phenanthrene[e]	4.76E-05	0.00E+00	0.00E+00	0.00E+00
Pyrene[e]				
Non-HAP Organic Compounds				
Acetone[e]				
Benzaldehyde				
Butane				
Butanaldehyde				
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]				

Small Engine #2

Fuel Type Toggle = 0 0 hp Engine
Fuel Consumption Rate 0.00 gal/hr
Calculated MMBtu/hr 0.0000 MMBtu/hr
Max Daily Operation 12 hr/day
Max Annual Operation 0 hrs/yr

Pollutant	Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (T/yr)	TAPs Emissions (lb/hr) Annual or 24-hr
PM[b]	0.1	0.000	0.00	
PM-10 (total)[c]	0.000	0.000	0.000	
P.M.-2.5	0.000	0.000	0.00	
CO[b]	0.00	0.000	0.00	
NOx[b]	0.000	0.000	0.00	
SOx[b] (total SOx presumed SO2)	0.001515	0.000	0.000	
VOC[b] (total TOC-> VOCs)	0.000	0.000	0.000	
Lead				
HCl[d]				
Dioxins[e]				
2,3,7,8-TCDD				
Total TCDD				
1,2,3,7,8-PeCDD				
Total PeCDD				
1,2,3,4,7,8-HxCDD[e]				
1,2,3,6,7,8-HxCDD				
1,2,3,7,8,9-HxCDD[e]				
Total HxCDD				
1,2,3,4,6,7,8-Hp-CDD[e]				
Total HpCDD				
Octa CDD[e]				
Total PCDD[e]				
Furans[e]				
2,3,7,8-TCDF				
Total TCDF				
1,2,3,7,8-PeCDF				
2,3,4,7,8-PeCDF				
Total PeCDF[e]				
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[e]				
1,2,3,4,6,7,8-HpCDF				
1,2,3,4,7,8,9-HpCDF				
Total HpCDF[e]				
Octa CDF[e]				
Total PCDF[e]				
Total PCDD/PCDF[e]				
Non-PAH HAPs				
Acetaldehyde[e]	7.67E-04	0.00E+00	0.00E+00	0.00E+00
Acrolein[e]	9.26E-05	0.00E+00	0.00E+00	0.00E+00
Benzene[e,f]	9.33E-04	0.00E+00	0.00E+00	0.00E+00
1,3-Butadiene[e,f]	3.91E-05	0.00E+00	0.00E+00	0.00E+00
Ethylbenzene[e]				
Formaldehyde[e,f]	1.16E-03	0.00E+00	0.00E+00	0.00E+00
Hexane[e]				
Isooctane				
Methyl Ethyl Ketone[e]				
Pentane[e]				
Propionaldehyde[e]				
Quinone[e]				
Methyl chloroform[e]				
Toluene[e,g]	4.09E-04	0.00E+00	0.00E+00	0.00E+00
Xylene[e,g]	2.85E-04	0.00E+00	0.00E+00	0.00E+00
PAH, Total		0.00E+00		0.00E+00
POM (7-PAH Group)		0.00E+00	0.00E+00	0.00E+00

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[e]	4.68E-06	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene[e]	9.23E-06	0.00E+00	0.00E+00	0.00E+00
Anthracene[e]	1.23E-06	0.00E+00	0.00E+00	0.00E+00
Benzo(a)anthracene[e]	6.22E-07	0.00E+00	0.00E+00	0.00E+00
Benzo(a)pyrene[e,f]	2.57E-07	0.00E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene[e]	1.11E-06	0.00E+00	0.00E+00	0.00E+00
Benzo(e)pyrene				
Benzo(g,h,i)perylene[e]	5.56E-07	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene[e]	2.18E-07	0.00E+00	0.00E+00	0.00E+00
Chrysene[e]	1.53E-06	0.00E+00	0.00E+00	0.00E+00
Dibenzo(a,h)anthracene[e]	3.46E-07	0.00E+00	0.00E+00	0.00E+00
Dichlorobenzene				
Fluoranthene[e]	4.03E-06	0.00E+00	0.00E+00	0.00E+00
Fluorene[e]	1.28E-05	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene[e]	4.14E-07	0.00E+00	0.00E+00	0.00E+00
Naphthalene[e,f]	1.30E-04	0.00E+00	0.00E+00	0.00E+00
Perylene	4.09E-08	0.00E+00	0.00E+00	0.00E+00
Phenanthrene[e]	3.71E-06	0.00E+00	0.00E+00	0.00E+00
Pyrene[e]				
Non-HAP Organic Compounds				
Acetone[e]				
Benzaldehyde				
Butane				
Butanaldehyde				
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.

Combined Emissions of Small Engines

Pollutant	Total Emissions (lb/hr)	Total Emissions (T/yr)	Pollutant	Total Emissions (lb/hr)	Total Emissions (T/yr)
PM [1]	0.000	0.00	PAH HAPs		
PM-10 Total [1]	0.000	0.00	2-Methylnaphthalene		
PM-2.5	0.000	0.00	3-Methylchloranthrene[4]		
CO [1]	0.000	0.00	Acenaphthene[4]	0.00E+00	0.00E+00
NOx [1]	0.000	0.00	Acenaphthylene[4]	0.00E+00	0.00E+00
SO_x [1] (total SOx measured SO2)	0.000	0.00	Anthracene[4]	0.00E+00	0.00E+00
VOC [1] (total TOC--> VOCs)	0.000	0.00	Benzo(a)anthracene[4]	0.00E+00	0.00E+00
Lead			Benzo(a)pyrene[4,5]	0.00E+00	0.00E+00
HCl [1]			Benzo(b)fluoranthene[4]	0.00E+00	0.00E+00
Dioxins[2]			Benzo(e)pyrene		
2,3,7,8-TCDD			Benzo(g,h,i)perylene[4]	0.00E+00	0.00E+00
Total TCDD			Benzo(k)fluoranthene[4]	0.00E+00	0.00E+00
1,2,3,7,8-PeCDD			Chrysene[4]	0.00E+00	0.00E+00
Total PeCDD			Dibenzo(a,h)anthracene[4]	0.00E+00	0.00E+00
1,2,3,4,7,8-HxCDD[4]			Dichlorobenzene		
1,2,3,6,7,8-HxCDD			Fluoranthene[4]	0.00E+00	0.00E+00
1,2,3,7,8,9-HxCDD[4]			Fluorene[4]	0.00E+00	0.00E+00
Total HxCDD			Indeno(1,2,3-cd)pyrene[4]	0.00E+00	0.00E+00
1,2,3,4,6,7,8-HpCDD[4]			Naphthalene[4,6]	0.00E+00	0.00E+00
Total HpCDD			Perylene	0.00E+00	0.00E+00
Octa CDD[4]			Phenanthrene[4]	0.00E+00	0.00E+00
Total PCDD[4]			Pyrene[4]	0.00E+00	0.00E+00
Furans[4]			Non-HAP Organic Compounds		
2,3,7,8-TCDF			Acetone[4]		
Total TCDF[4]			Benzaldehyde		
1,2,3,7,8-PeCDF			Butane		
2,3,4,7,8-PeCDF			Butraldehyde		
Total PeCDF[4]			Crotonaldehyde[4]		
1,2,3,4,7,8-HxCDF			Ethylene		
1,2,3,6,7,8-HxCDF			Hexane		
2,3,4,6,7,8-HxCDF			Hexanal		
1,2,3,7,8,9-HxCDF			Isovaleraldehyde		
Total HxCDF[4]			2-Methyl-1-pentene		
1,2,3,4,6,7,8-HpCDF			2-Methyl-2-butene		
1,2,3,4,7,8,9-HpCDF			3-Methylhexane		
Total HpCDF[4]			1-Pentene		
Octa CDF[4]			n-Pentane		
Total PCDF[4]			Valeraldehyde		
Total PCDD/PCDF[4]			Methyl		
Non-PAH HAPs			Antimony[4]		
Acetaldehyde[4]	0.00E+00	0.00E+00	Arsenic[4]		
Acrolein[4]	0.00E+00	0.00E+00	Barium[4]		
Benzene[4,6]	0.00E+00	0.00E+00	Beryllium[4]		
1,3-Butadiene[4,6]	0.00E+00	0.00E+00	Cadmium[4]		
Ethylbenzene[4]			Chromium[4]		
Formaldehyde[4,6]	0.00E+00	0.00E+00	Cobalt[4]		
Hexane[4]			Copper[4]		
Isooctane			Hexavalent Chromium[4]		
Methyl Ethyl Ketone[4]			Manganese[4]		
Pentane[4]			Mercury[4]		
Propionaldehyde[4]			Molybdenum[4]		
Quinone[4]			Nickel[4]		
Methyl chloroform[4]			Phosphorus[4]		
Toluene[4,6]	0.00E+00	0.00E+00	Silver[4]		
Xylene[4,6]	0.00E+00	0.00E+00	Selenium[4]		
			Thallium[4]		
PAH, Total	0.00E+00	0.00E+00	Vanadium[4]		
POM (7-PAH Group)	0.00E+00	0.00E+00	Zinc[4]		

Facility: Atlas Sand and Rock, Inc.

12/21/2011 17:00 Permit/Facility ID: P-2011.0116 Proj 60896 069-000569

Greenhouse Gas Emissions when Combusting Natural Gas

Water Heater #1 Emissions	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e (T/yr)
CO_2	120000	lb/MMscf	AP-42 Table 1.4-2	62.12	1	62.12
Methane	2.3	lb/MMscf	AP-42 Table 1.4-2	1.19E-03	21	2.50E-02
N_2O	2.2	lb/MMscf	AP-42 Table 1.4-2	1.14E-03	310	3.53E-01

* Assumes a heating value of 1,020 Btu/scf and a heater with a rating of 1.2 MMBtu/hr.

Water Heater #2 Emissions	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e (T/yr)
CO_2	0	lb/MMscf	AP-42 Table 1.4-2	0.00	1	0.00
Methane	0	lb/MMscf	AP-42 Table 1.4-2	0.00E+00	21	0.00E+00
N_2O	0	lb/MMscf	AP-42 Table 1.4-2	0.00E+00	310	0.00E+00

* Water Heater #2 does not burn Natural Gas.

Greenhouse Gas Emissions when Combusting #2 Diesel

Water Heater #1 Emissions	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e (T/yr)
CO_2	Molecular conversion from C to CO_2			0.00	1	0.00
Methane	0	$lb/10^3$ gal	AP-42 Table 1.3-3	0.00E+00	21	0.00E+00
N_2O	0	$lb/10^3$ gal	AP-42 Table 1.3-8	0.00E+00	310	0.00E+00

* Water Heater #1 does not burn Diesel.

Water Heater #2 Emissions	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e (T/yr)
CO_2	Mocular conversion from C to CO_2			0.00	1	0.00
Methane	0	$lb/10^3$ gal	AP-42 Table 1.3-3	0.00E+00	21	0.00E+00
N_2O	0	$lb/10^3$ gal	AP-42 Table 1.3-8	0.00E+00	310	0.00E+00

* Water Heater #2 does not burn Diesel.

Greenhouse Gas Emissions when Combusting LPG

Water Heater #1 Emissions	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e (T/yr)
CO_2	0	$lb/10^3$ gal	AP-42 Table 1.5-1	0.00	1	0.00
Methane	0	$lb/10^3$ gal	AP-42 Table 1.5-1	0.00E+00	21	0.00E+00
N_2O	0	$lb/10^3$ gal	AP-42 Table 1.5-1	0.00E+00	310	0.00E+00

* Water Heater #1 does not burn Propane.

Water Heater #2 Emissions	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e (T/yr)
CO_2	0	$lb/10^3$ gal	AP-42 Table 1.5-1	0.00	1	0.00
Methane	0	$lb/10^3$ gal	AP-42 Table 1.5-1	0.00E+00	21	0.00E+00
N_2O	0	$lb/10^3$ gal	AP-42 Table 1.5-1	0.00E+00	310	0.00E+00

* Water Heater #2 does not burn Propane.

Greenhouse Gas Emissions when Combusting Diesel Fuel

Small Engine #1 Emissions ≤ 600 bhp	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e (T/yr)
CO_2	1.15	lb/bhp-hr	AP-42 Table 3.3-1	0.00	1	0.00

* There are no engines at this facility.

Small Engine #2 Emissions ≤ 600 bhp	Emission Factor (EF)	EF Units	EF Source	T/yr	Global Warming Potential	CO_2e (T/yr)
CO_2	1.15	lb/bhp-hr	AP-42 Table 3.3-1	0.00	1	0.00

* There is no second small engine at this facility.

Large Engine #1 Emissions > 600 bhp	Emission Factor (EF)	EF Units	EF Source	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	0.00

* There is no large engine at this facility.

Total Greenhouse Gas Emissions

	CO_2e (T/yr)
CO_2	62.12
Methane	0.03
N_2O	0.35
Total	**62.50**

Facility: Atlas Sand and Rock, Inc.
12/21/2011 17:00 **Permit/Facility ID:** 069-000569 P-2011.0116 Proj 60896

Max Hourly Production	125 cy/hr	82% T/hr is Aggregate =	103 cy/hr
Max Daily Production	500 cy/day	82% T/hr is Aggregate =	410 cy/day
Max Annual Production	150,000 cy/yr	82% T/hr is Aggregate =	123,000 cy/yr

Aggregate is considered both coarse and fine (sand).The 82% is based on 1,865 lb coarse aggregate, 1,428 lb sand, 564 lb cement/supplement and 167 lb water for a total of 4,024 lb concrete

Truck Mix Operations Drop Points, AP-42 11-12 (06/06)

$E = k (0.0032) x(U^a / M^b)+c$ = 5.81E-02 2.32E-02 lb/ton for PM10 3.48E-03 lb/ton for PM2.5

k = particle size multiplier	0.8 for PM	0.32 for PM10	0.048 for PM2.5
a = exponent	1.75 for PM	1.75 for PM10	1.75 for PM2.5
b = exponent	0.3 for PM	0.3 for PM10	0.3 for PM2.5
c = constant	0.013 for PM	0.0052 for PM10	0.00078 for PM2.5
U = mean wind speed =	7 mph		
M = moisture content =	6 %		

Mean wind spped: 7 mph was the average wind speed obtained from an average of 19 Idaho airports throughout the state from 1996-2006. This data is from the Western Regional Climate Center (http://www.wrcc.dri.edu/htmlfiles/westwind.final.html#IDAHO).

Moisture Content: 4.17 % and 1.77% were the average percentages for sand and aggegate respectively. These values are based on EPA tests conducted at Cheney Enterprises Cement plant in Roanoke, VA, 1994. (AP-42 11-12 06/06).

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	mph/ E@10mph
Cat 1:	1.54	0.77	1.72	6.75E-03	0.2907	1.01E-03	0.2907
Cat 2:	3.09	2.32	5.18	1.58E-02	0.6819	2.38E-03	0.6819
Cat 3:	5.14	4.12	9.20	3.43E-02	1.4771	5.15E-03	1.4771
Cat 4:	8.23	6.69	14.95	7.32E-02	3.153	1.10E-02	3.153
Cat 5:	10.80	9.52	21.28	1.31E-01	5.658	1.97E-02	5.658
Cat 6:	14.00	12.40	27.74	2.06E-01	8.861	3.09E-02	8.861

Central Mix Operations Drop Points, AP-42 11-12 (06/06)

$E = k (0.0032) x(U^a / M^b)+c$ = 1.77E-03 1.20E-03 lb/ton for PM10 2.46E-04 lb/ton for PM2.5

k = particle size multiplier	0.19 for PM	0.13 for PM10	0.03 for PM2.5
a = exponent	0.95 for PM	0.45 for PM10	0.45 for PM2.5
b = exponent	0.9 for PM	0.9 for PM10	0.9 for PM2.5
c = constant	0.001 for PM	0.001 for PM10	0.0002 for PM2.5
U = mean wind speed =	7 mph		
M = moisture content =	6 %		

Mean wind spped: 7 mph was the average wind speed obtained from an average of 19 Idaho airports throughout the state from 1996-2006. This data is from the Western Regional Climate Center (http://www.wrcc.dri.edu/htmlfiles/westwind.final.html#IDAHO).

Moisture Content: 4.17 % and 1.77% were the average percentages for sand and aggegate respectively. These values are based on EPA tests conducted at Cheney Enterprises

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	mph/ E@10mph
Cat 1:	1.54	0.77	1.72	1.11E-03	0.9223	2.24E-04	0.9126
Cat 2:	3.09	2.32	5.18	1.87E-03	1.5598	2.40E-04	0.9763
Cat 3:	5.14	4.12	9.20	2.13E-03	1.7760	2.52E-04	1.0245
Cat 4:	8.23	6.69	14.95	2.41E-03	2.006	2.65E-04	1.0761
Cat 5:	10.80	9.52	21.28	2.65E-03	2.208	2.76E-04	1.1213
Cat 6:	14.00	12.40	27.74	2.86E-03	2.381	2.85E-04	1.1603

Conveyor and Scalping Screen Emission Points

Moisture/Control %:
Aggregate for CBP typically stabilizes between 5-6% by weight--> Apply additional **25%** control to lb/hr, etc. for the higher moisture.
Sand aggregate for CBPs is **36%**
Coarse aggregate for CBPs is **46%**

Fine Aggegate (Sand) Transfer to Conveyor

Transfer from truck to conveyor: **103** cy/hr **3** Transfer Points

Pollutant	Emission Factor Table 11.12-5 CONVEYOR TRANSFER PT CONTROLLED (lb/cy)	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)	0.0015	0.050	0.008	3.00E-02	6.84E-03	0.150	0.025	8.99E-02	2.05E-02
PM-10 (total)	7.00E-04	0.023	0.004	1.40E-02	3.19E-03	0.070	0.012	4.19E-02	9.57E-03
PM-2.5 (total)	2.25E-04	0.007	0.030	4.49E-03	1.97E-02	0.022	0.090	1.35E-02	5.90E-02

Coarse Aggegate Transfer to Conveyor

Transfer from truck to conveyor: **103** cy/hr **3** Transfer Points

Pollutant	Emission Factor Table 11.12-5 CONVEYOR TRANSFER PT CONTROLLED (lb/cy)	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)	0.0064	0.276	0.046	1.66E-01	3.78E-02	0.828	0.138	4.97E-01	1.13E-01
PM-10 (total)	3.10E-03	0.134	0.022	8.02E-02	1.83E-02	0.401	0.067	2.41E-01	5.49E-02
PM-2.5 (total)	9.60E-04	0.041	0.166	2.48E-02	1.09E-01	0.124	0.497	7.45E-02	3.26E-01

Final Concrete Batch Plant Emissions Inventory

Listed Below are the emissions estimates for the units selected.

Company:	**Atlas Sand and Rock, Inc.**
Facility ID:	**069-000569**
Permit No.:	**P-2011.0116 Proj 60896**
Source Type:	**Concrete Batch Plant**
Manufacturer/Model:	**Wemco/Spomac**

Production

Maximum Hourly Production Rate:	125	cy/hr
Proposed Daily Production Rate:	500	cy/day
Proposed Maximum Annual Production Rate:	150000	cy/year

Tons/year

Emissions Units		$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	Lead	THAPs
CBP Type:	**Truck Mix**	0.044	0.08	NA	NA	NA	NA	1.19E-05	
Water Heater #1:	**1.2 MMBtu/hr Natural Gas Heater**	0.039	0.039	3.09E-03	0.515	0.433	0.028	2.58E-06	
Water Heater #2:	**No second water heater**	NA	NA	NA	NA	NA	NA	NA	
Small Diesel Engine(s) *:	**No Engine**	NA	NA	NA	NA	NA	NA	NA	
Large Diesel Engine *:	**No Large Engine**	NA	NA	NA	NA	NA	NA	NA	
	Transfer/Drop Points	0.088	0.28	NA	NA	NA	NA	NA	
	Totals	**0.17**	**0.40**	**3.09E-03**	**0.52**	**0.43**	**0.03**	**1.44E-05**	**1.06E-02**

Pounds/hour

		$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	Lead	THAPs
CBP Type:	**Truck Mix**	0.010	0.02	NA	NA	NA	NA	3.98E-06	
Water Heater #1:	**1.2 MMBtu/hr Natural Gas Heater**	0.009	0.009	7.06E-04	0.118	0.099	0.006	5.88E-07	
Water Heater #2:	**No second water heater**	NA	NA	NA	NA	NA	NA	NA	
Small Diesel Engine(s) *:	**No Engine**	NA	NA	NA	NA	NA	NA	NA	
Large Diesel Engine*:	**No Large Engine**	NA	NA	NA	NA	NA	NA	NA	
	Transfer/Drop Points	0.587	0.08	NA	NA	NA	NA	NA	
	Totals	**0.61**	**0.11**	**7.06E-04**	**0.12**	**0.10**	**0.01**	**4.57E-06**	**2.52E-03**

* The Large engine may run : **There is no large engine.** hr/yr
* The Small engine(s) may rur **There is no small engine.** hr/yr

HAPS & TAPS Emissions Inventory

Metals	HAP	TAP	lb/hr	T/yr	Averaging Period	EL lb/hr	Exceeded?
Arsenic	X	X	1.02E-06	3.69E-06	Annual	1.50E-06	No
Barium		X	5.18E-06	2.27E-05	24-hour	3.30E-02	No
Beryllium	X	X	8.44E-08	3.22E-07	Annual	2.80E-05	No
Cadmium	X	X	1.31E-06	1.36E-06	Annual	3.70E-06	No
Cobalt	X	X	9.88E-08	4.33E-07	24-hour	3.30E-03	No
Copper		X	1.00E-06	4.38E-06	24-hour	1.30E-02	No
Chromium	X	X	8.70E-06	1.35E-05	24-hour	3.30E-02	No
Manganese	X	X	5.95E-06	1.78E-05	24-hour	3.33E-01	No
Mercury	X	X	3.06E-07	1.34E-06	24-hour	3.00E-03	No
Molybdenum		X	1.29E-06	5.67E-06	24-hour	2.70E-05	No
Nickel	X	X	4.65E-06	1.20E-05	Annual	2.70E-05	No
Phosphorus	X	X	2.04E-05	1.78E-05	24-hour	7.00E-03	No
Selenium	X	X	2.37E-07	8.76E-07	24-hour	1.30E-02	No
Vanadium		X	2.71E-06	1.19E-05	24-hour	3.00E-03	No
Zinc		X	3.41E-05	1.49E-04	24-hour	6.67E-01	No
Chromium VI	X	X	3.70E-07	1.62E-06	Annual	5.60E-07	No
Non PAH Organic Compunds							
Pentane		X	1.88E-03	8.24E-03	24-hour	118	No
Methyl Ethyl Ketone		X	0.00E+00	0.00E+00	24-hour	39.3	No
Non-PAH HAPs							
Acetaldehyde	X	X	0.00E+00	0.00E+00	Annual	3.00E-03	No
Acrolein	X	X	0.00E+00	0.00E+00	24-hour	1.70E-02	No
Benzene	X	X	2.47E-06	2.47E-06	Annual	8.00E-04	No
1,3 - Butadiene	X	X	0.00E+00	0.00E+00	Annual	2.40E-05	No
Ethyl Benzene	X	X	0.00E+00	0.00E+00	24-hour	29	No
Formaldehyde	X	X	8.82E-05	8.82E-05	Annual	5.10E-04	No
Hexane	X	X	2.12E-03	9.28E-03	24-hour	12	No
Isooctane	X		0.00E+00	0.00E+00	NA	NA	NA
Methyl Chloroform	X	X	0.00E+00	0.00E+00	24-hour	127	No
Propionaldehyde	X	X	0.00E+00	0.00E+00	24-hour	2.87E-02	No
Quinone	X	X	0.00E+00	0.00E+00	24-hour	2.70E-02	No
Toluene	X	X	4.00E-06	1.75E-05	24-hour	25	No
o-Xylene	X	X	0.00E+00	0.00E+00	24-hour	7.00E-03	No
PAH HAPs							
2-Methylnaphthalene	X	X	2.82E-08	2.82E-08	Annual	9.10E-05	No
3-Methylchloranthrene	X	X	2.12E-09	2.12E-09	Annual	2.50E-06	No
7,12-Dimethylbenz(a)anthracene	X		1.88E-08	8.24E-08	NA	NA	NA
Acenaphthene	X	X	2.12E-09	2.12E-09	Annual	9.10E-05	No
Acenaphthylene	X	X	2.12E-09	2.12E-09	Annual	9.10E-05	No
Anthracene	X	X	2.82E-09	2.82E-09	Annual	9.10E-05	No
Benzo(a)anthracene	X	X	2.12E-09	2.12E-09	Annual	9.10E-05	No
Benzo(a)pyrene	X	X	1.41E-09	1.41E-09	Annual	2.00E-06	No
Benzo(b)fluoranthene	X	X	2.12E-09	2.12E-09	Annual	2.00E-06	No
Benzo(e)pyrene	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No
Benzo(g,h,i)perylene	X	X	1.41E-09	1.41E-09	Annual	9.10E-05	No
Benzo(k)fluoranthene	X	X	2.12E-09	2.12E-09	Annual	2.00E-06	No
Chrysene	X	X	2.12E-09	2.12E-09	Annual	2.00E-06	No
Dibenzo(a,h)anthracene	X	X	1.41E-09	1.41E-09	Annual	2.00E-06	No
Dichlorobenzene	X	X	1.41E-06	1.41E-06	Annual	9.10E-05	No
Fluoranthene	X	X	3.53E-09	3.53E-09	Annual	9.10E-05	No
Fluorene	X	X	3.29E-09	3.29E-09	Annual	9.10E-05	No
Indeno(1,2,3-cd)pyrene	X	X	2.12E-09	2.12E-09	Annual	2.00E-06	No
Naphthalene	X	X	2.62E-04	1.15E-03	24-hour	3.33	No
Naphthalene	X	X	7.18E-07	7.18E-07	Annual	9.10E-05	No
Perylene	X		0.00E+00	0.00E+00	NA	NA	NA
Phenanathrene	X	X	2.00E-08	2.00E-08	Annual	9.10E-05	No
Pyrene	X	X	5.88E-09	5.88E-09	Annual	9.10E-05	No
Polycyclic Organic Matter (POM)	X	X	1.34E-08	1.34E-08	Annual	2.00E-06	No

Total HAPs Emissions:	**2.52E-03**	**1.06E-02**	**9.28E-03**

Facility: Atlas Sand and Rock, Inc.
12/21/2011 17:00 **Permit** P-2011.0116 Proj 60896 **Facility ID:** 069-000569

Internal Combustion Engine > 600 hp (447 kW)

Fuel Type Toggle =	0	
Fuel Consumption Rate	0.00	gal/hr
Calculated MMBtu/hr	0.00	MMBtu/hr
Max Daily Operation	0	hr/day
Max Annual Operation	0	hrs/yr

Rated Power of Large (hp): 0

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

Small Internal Combustion Engine #1 < 600 hp (447 kW)

Fuel Type Toggle =	0	
Fuel Consumption Rate	0.00	gal/hr
Calculated MMBtu/hr	0.00	MMBtu/hr
Max Daily Operation	12	hr/day
Max Annual Operation	0	hrs/yr

Rated Power of Small #1 (hp): 0

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

Small Internal Combustion Engine #2 < 600 hp (447 kW)

Fuel Type Toggle =	0	
Fuel Consumption Rate	0.00	gal/hr
Calculated MMBtu/hr	0.00	MMBtu/hr
Max Daily Operation	12	hr/day
Max Annual Operation	0	hrs/yr

Rated Power of Small #2 (hp): 0

Not EPA Certified:	No
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

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM=PM10
EMISSION FACTORS USED FOR SMALL ENGINE (lb/MMBtu):	**0.00**	**0.00**		**0.00**	**0.000**
Pollutant:	**NOx**	**VOC (total TOC--> VOCs)**		**CO**	**PM=PM10**
EMISSION FACTORS USED FOR LARGE ENGINE (lb/MMBtu):	**0.00**	**0.00**		**0.00**	**0.000**

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

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	PM10
Emission Factor (lb/MMBtu)	0	0		0.00	0
Emission Factor (g/kW-hr))	0.00	0.00		0.00	0.00

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

Pollutant:	NOx	VOC (total TOC--> VOCs)		CO	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

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

40 CFR 89 and 1039, 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	0.0	*0.36*	2.47	1.88	0.23
kW < 8	2	0	2005	0.00	*0.36*	1.76	1.88	0.19
kW < 8	4	0	2008	0.00	*0.36*	1.76	1.88	0.09
kW < 8	BlueSky	0	n/a	0.00	*0.36*	1.08	1.88	0.11
8 ≤ kW < 19	1	0	2000	0.00	*0.36*	2.23	1.55	0.19
8 ≤ kW < 19	2	0	2005	0.00	*0.36*	1.76	1.55	0.19
8 ≤ kW < 19	4	0	2008	0.00	*0.36*	1.76	1.55	0.09
8 ≤ kW < 19	BlueSky	0	n/a	0.00	*0.36*	1.06	1.55	0.11
19 ≤ kW < 37	1	0	1999	0.00	*0.36*	2.23	1.29	0.19
19 ≤ kW < 37	2	0	2004	0.00	*0.36*	1.76	1.29	0.14
19 ≤ kW < 37	4	0	2008	0.00	*0.36*	1.10	1.29	0.007
19 ≤ kW < 37	BlueSky	0	n/a	0.00	*0.36*	1.06	1.29	0.085
37 < kW < 75	1	0	1998	2.16	*0.36*	0.00	—	—
37 < kW < 75	2	0	2004	0.00	*0.36*	1.76	1.17	0.09
37 < kW < 75	3	0	2008	0.00	*0.36*	1.10	1.17	0.09
37 < kW < 75	4	0	2008	0.00	*0.36*	1.10	1.17	0.007
37 ≤ kW < 75	BlueSky	0	n/a	0.00	*0.36*	1.10	1.17	0.056
75 < kW < 130	1	0	1997	2.16	*0.36*	0.00	—	—
75 < kW < 130	2	0	2003	0.00	*0.36*	1.55	1.17	0.07
75 < kW < 130	3	0	2007	0.00	*0.36*	0.94	1.17	0.07
75 < kW < 130	4	0	2008	0.09	0.04	0.00	1.17	0.005
75 ≤ kW < 130	BlueSky	0	n/a	0.00	*0.36*	0.94	1.17	0.042
130 < kW < 225	1	0	1996	2.16	0.31	0.00	2.68	0.13
130 < kW < 225	2	0	2003	0.00	0.31	1.55	0.82	0.05
130 < kW < 225	3	0	2006	0.00	0.31	0.94	0.82	0.05
130 < kW < 560	4	0	2008	0.09	0.04	0.00	0.82	0.005
130 ≤ kW ≤ 560	BlueSky	0	n/a	0.00	0.31	0.94	0.82	0.028
225 < kW < 450	1	0	1996	2.16	0.31	0.00	2.68	0.13
225 < kW < 450	2	0	2001	0.00	0.31	1.50	0.82	0.05
225 ≤ kW < 450	3	0	2006	0.00	0.31	0.94	0.82	0.05
450 < kW < 560	1	0	1996	2.16	0.31	0.00	2.68	0.13
450 < kW ≤ 560	2	0	2002	*0.00*	0.31	1.50	0.82	0.05
450 ≤ kW ≤ 560	3	0	2006	0.00	0.31	0.94	0.82	0.05
kW > 560	1	0	2000	2.16	0.31	0.00	2.68	0.13
kW > 560	2	0	2006	0.00	0.31	1.50	0.82	0.05
kW > 560	BlueSky	0	n/a	0.00	0.31	0.89	0.82	0.028

40 CFR 89 and 1039, EPA CERTIFIED GENERATOR EMISSION FACTORS FOR LARGE ENGINE (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	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	1	0	1998	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	2	0	2004	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	3	0	2008	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	4	0	2008	0.00	0.00	0.00	0.00	0.00
37 ≤ kW < 75	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	1	0	1997	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	2	0	2003	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	3	0	2007	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	4	0	2008	0.00	0.00	0.00	0.00	0.00
75 ≤ kW < 130	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	1	0	1996	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	2	0	2003	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 225	3	0	2006	0.00	0.00	0.00	0.00	0.00
130 ≤ kW < 560	4	0	2008	0.00	0.00	0.00	0.00	0.00
130 ≤ kW ≤ 560	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00
225 ≤ kW < 450	1	0	1996	0.00	0.00	0.00	0.00	0.00
225 ≤ kW < 450	2	0	2001	0.00	0.00	0.00	0.00	0.00
225 ≤ kW < 450	3	0	2006	0.00	0.00	0.00	0.00	0.00
450 ≤ kW ≤ 560	1	0	1996	0.00	0.00	0.00	0.00	0.00
450 ≤ kW ≤ 560	2	0	2002	0.00	0.00	0.00	0.00	0.00
450 ≤ kW ≤ 560	3	0	2006	0.00	0.00	0.00	0.00	0.00
kW > 560	1	0	2000	0.00	0.00	0.00	0.00	0.00
kW > 560	2	0	2006	0.00	0.00	0.00	0.00	0.00
kW > 560	BlueSky	0	n/a	0.00	0.00	0.00	0.00	0.00

APPENDIX B – PERMIT FEES

All associated permitting fees for a general permit were paid when the application was submitted. The total cost of the Concrete Batch General Permit is $1,500. That includes a $1,000 application fee and $500 processing fee.

In accordance with Section 224 of the Rules, all PTC applications are subject to an application fee of $1000.

In accordance with Section 225 of the Rules, General PTC permits are subject to a processing fee of $500. The definition of General permit according to the Rules: "no facility-specific requirements (defined as a source category specific permit for which the Department has developed standard emission limitations, operating requirements, monitoring and recordkeeping requirements, and that require minimal engineering analysis. General permit facilities may include portable concrete batch plants, portable hot-mix asphalt plants and portable rock crushing plants.)"

Because it was determined that the minimum setback requirement for a general permit were not met, this permit was processed as a standard PTC with associated permit processing fees as shown in this appendix.

PTC Fee Calculation

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

Company: Duthie Pit Concrete Plant
Address: 4341 Snake River Ave.
City: Lewiston
State: Idaho
Zip Code: 83501
Facility Contact: Vern Scoggin
Title: Facility contact
AIRS No.: 069-00059

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

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	0.5	0	0.5
SO_2	0.0	0	0.0
CO	0.4	0	0.4
PM10	0.6	0	0.6
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
Total:	0.0	0	**1.6**
Fee Due	**$ 2,500.00**		

Comments:

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on December 14, 2011:

5. **Facility Comment:** We have reviewed the draft permit and request that the permittee be shown as Atlas Sand and Rock, Inc..

6. **DEQ Response:** Done.

APPENDIX D – AMBIENT AIR QUALITY ANALYSIS

MEMORANDUM

DATE: December 5, 2011

TO: Carole Zundel, Air Program

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

PROJECT: P-2011.0116 PROJ 60896 PTC Application for the Atlas Sand and Rock, Inc., Duthie Pit Concrete Plant

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

1.0 Summary

Atlas Sand and Rock, Inc. (Atlas) submitted a Permit to Construct (PTC) application for their Duthie Pit Concrete Batch Plant (CBP) to be operated in Lewiston, Idaho. Site-specific air quality impact analyses involving atmospheric dispersion modeling of emissions associated with the CBP were performed by DEQ to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 and 203.03 [Idaho Air Rules Section 203.02 and 203.03]). Atlas submitted applicable information and data enabling DEQ to perform site-specific ambient air impact analyses.

DEQ performed site-specific air quality impact analyses to assure compliance with air quality standards for the Atlas CBP. The submitted information, in combination with DEQ's air quality analyses 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the facility as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from emissions associated with the facility as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) at ambient air locations the Atlas CBP has an impact greater than SILs; 5) showed that TAP emissions increases associated with applicable past projects did not result in increased ambient air impacts exceeding allowable TAP increments.

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

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

Table 1. KEY CONDITIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Maximum concrete throughput does not exceed 500 yd^3/day and 150,000 yd^3/year.	Short-term and annual modeling was performed assuming these rates.
Co-contributing emissions sources such as HMA plants, other CBPs, or rock crushing plants will not locate on the plant property and within 1,000 feet of emissions points of the CBP, except as noted for a rock crushing plant and the POE HMA plant. NAAQS compliance is assured for the CBP with a co-contributing rock crushing plant, provided annual actual throughput of the rock crushing plant is less than 500,000 ton/year.	Emissions are considered co-contributing if they occur within 1,000 feet (305 meters) of each other. Atlas is not responsible for controlling other facilities from moving in nearby, provided they are not on the same property. Neighboring facilities would be required to account for the CBP impacts for their permitting analyses.
Impacts of the POE HMA plant were accounted for in the cumulative impact analyses of the CBP. The CBP did not significantly contribute to any modeled NAAQS violation when the HMA was included in the analyses.	The POE HMA was modeled using operational limits/descriptions as described in the February 7, 1997, PTC and permitting memorandum.
Diesel engines powering generators to provide electricity for the CBP or HMA will not be operated at the site.	The analyses did not account for any emissions from a generator.
Fugitive emissions from aggregate/sand handling and vehicle traffic are controlled to a moderate degree.	Control of aggregate/sand transfers and handling are controlled by over 75% from base conditions of 1.77% moisture content for aggregate and 4.17% moisture content for sand.
Emissions rates for applicable averaging periods are not greater than those used in the modeling analyses, as listed in this memorandum.	Compliance with NAAQS has not been demonstrated for larger emissions rates.
Stack heights for point sources (baghouses and boilers) are as listed in this memorandum or higher.	NAAQS compliance is still assured if actual stack heights are greater than those listed in this memo.
NAAQS compliance is assured provided stack parameters of exhaust temperature and flow rate are not less than about 75 percent of values listed in this memorandum.	Higher temperatures and flow rates increase plume rise, allowing the plume to disperse to a larger degree before impacting ground level.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

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

2.1.1 Area Classification

The CBP is an existing, unpermitted stationary facility. The CBP is located in Lewiston, Idaho, which is designated as attainment or unclassifiable for all criteria pollutants.

2.1.2 Significant and Cumulative NAAQS Impact Analyses

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

those specific receptors where impacts from the permitted facility exceed SILs.Table 2 also lists SILs and specifies the modeled value that must be used for comparison to the NAAQS.

New NO_2 and SO_2 short-term standards have recently been promulgated by EPA. The standards became applicable for permitting purposes in Idaho when they were incorporated by reference *sine die* into Idaho Air Rules (Spring 2011). Emissions of NO_2 and SO_2 were below DEQ modeling thresholds so a modeling analysis was not performed for these pollutants.

DEQ used site-specific full impact analyses to demonstrate compliance with Idaho Air Rules Section 203.02 for receptors where the CBP had an impact exceeding SILs

Table 2. APPLICABLE REGULATORY LIMITS

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

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

2.1.3 Toxic Air Pollutant Analyses

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

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

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

> *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

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

2.2 Background Concentrations

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

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	24-hour	73
$PM_{2.5}$[c]	24-hour	21.3
	Annual	10.1

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

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

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

Background $PM_{2.5}$ concentrations were based on monitoring performed in Idaho for small town or rural areas. Certain areas with elevated concentrations because of unique situations were excluded from this assessment. Unique situations include periodic impacts from forest fires and areas where the meteorology combines with the topography to frequently cause stagnant air conditions. The monitoring 24-hour design value was used for each location where monitoring data were considered. The design value is the 98th percentile of the 24-hour monitored values. Where more than one year of monitoring data was available, the average of the 98th percentile value was used for up to three of the most recent years.

The final 24-hour background value used was the mean value from all locations assessed. The same general method was used for the annual $PM_{2.5}$ background, except the design value is the maximum annual average monitored value and the background was taken as the mean of all locations plus two times the standard deviation. A value of two times the standard deviation was not added to the 24-hour mean value. DEQ determined use of the mean value was adequately conservative because: 1) the maximum modeled value at each receptor was used as the design value rather than the 5-year average of the 8th highest for each year; 2) the low probability that conditions causing the high background levels on a given day will coincide with days associated with the high modeled concentrations.

Background concentrations for CO, NO_2, and SO_2 were not needed because emissions were below thresholds requiring specific modeling analyses.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

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

3.1.1 Overview of Analyses

The project is a stationary CBP without diesel-fired generators.

DEQ performed site-specific modeling to evaluate compliance with $PM_{2.5}$ and PM_{10} NAAQS. Emissions of other criteria pollutants from the Atlas CBP were below DEQ-established thresholds for modeling applicability. DEQ's site-specific analyses were determined to be reasonably representative of the proposed CBP and the co-contributing POE HMA plant, and the results demonstrated that emissions from the CBP will not cause or significantly contribute to a violation of the $PM_{2.5}$ and PM_{10} NAAQS.

Modeled impacts of the Atlas CBP exceeded SILs for 24-hour $PM_{2.5}$ and PM_{10}, thereby requiring a full impact analysis. A portable rock crushing plant and the POE HMA plant were identified as on-site co-contributing sources. The locations of equipment associated with the POE HMA plant were determined through aerial photographs, and emissions were based on allowable throughput and emissions limits as specified in the POE HMA plant permit and associated permitting memorandum. Emissions and potential on-site locations of a rock crushing plant are highly variable and impacts from such are very difficult to estimate. To account for impacts from a co-contributing rock crusher on receptors significantly impacted by the Atlas CBP, the CBP was modeled using two times the allowable emissions of the CBP. DEQ modeling staff contend that doubling emissions from the CBP will likely more than account for co-contributing impacts of a rock crushing permit with annual throughput of less than 500,000 ton/year.

Table 4 provides a brief description of parameters used in the DEQ modeling analyses.

Table 4. MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description[a]**
General Facility Location	Lewiston	The CBP is not a portable facillity
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 11103.
Meteorological Data	Lewiston	Lewiston surface data and Spokane upper air data. See Section 3.1.4.
Terrain	Considered	Receptor, building, and emissions source elevations were determined using National Elevation Dataset (NED) files.
Building Downwash	Considered	Downwash was accounted for the structures associated with the CBP.
Receptor Grid	Grid 1	5-meter spacing out to 25 meters in the area near the CBP
	Grid 2	25-meter spacing out to 100 meters
	Grid 3	50-meter spacing out to 500 meters
	Grid 4	100-meter spacing out to 1,000 meters

3.1.2 Modeling protocol and Methodology

A modeling protocol was not submitted to DEQ prior to the application because DEQ staff performed site-specific air quality impact analyses rather than the applicant. DEQ obtained information on facility layout, equipment, and the property boundary to perform site-specific impact analyses. Modeling was generally conducted using data and methods described in the *State of Idaho Air Quality Modeling Guideline*.

3.1.3 Model Selection

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

AERMOD was used for the DEQ analyses to evaluate impacts of the CBP and co-contributing sources.

3.1.4 Meteorological Data

DEQ used Lewiston surface meteorological data with Spokane upper air data for the analyses. DEQ determined these data were reasonably representative for the proposed site.

3.1.6 Terrain Effects

DEQ staff downloaded National Elevation Dataset (NED) data, based on the WGS84 datum, for the modeled domain and used these data to calculate elevations of buildings, sources, and receptors.

3.1.7 Facility Layout

Atlas provided DEQ with detailed information on the property boundary of the Duthie Pit, building locations and dimensions, and emissions source locations for the CBP. DEQ determined locations of emissions points associated with the POE HMA through aerial photographs of the site.

3.1.8 Building Downwash

Potential downwash effects were accounted for in the model by using building parameters as described by Atlas.

Downwash effects from other structures at the site associated with the HMA plant were not accounted for because of the following

- Determining a building configuration is extremely difficult given the portable nature of the HMA plant.
- Much of the equipment is porous with regard to wind, thereby minimizing downwash effects.

3.1.9 Ambient Air Boundary

Atlas provided DEQ with UTM coordinates defining the property boundary of the Duthie Pit. All areas external to the pit were considered as ambient air and receptors were place accordingly.

3.1.10 Receptor Network and Generation of Setback Distances

A receptor grid with 5-meter spacing extending out 20 meters was used in the area near the CBP. The maximum modeled impact of the CBP occurred within this area, and DEQ contends that the receptor grid was adequate to reasonably resolve maximum modeled concentrations.

3.2 Emission Rates

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

3.2.1 Criteria Pollutant Emissions Rates

Table 5 lists criteria pollutant emissions rates used in the DEQ site-specific modeling analyses for the Atlas CBP production rate, operational configuration, and for all applicable averaging periods. Attachment 1 provides additional details of DEQ emissions calculations used in the modeling analyses. Emissions rates for 24-hour $PM_{2.5}$ and PM_{10} for the CBP were modeled at twice the actual value in the cumulative impact analyses to conservatively account for a potentially co-contributing rock crushing plant operating at the site.

Fugitive particulate emissions from handling of aggregate materials for the CBP plant were designated as emissions point AGG&SND and AGGTOSTO in the model to account for transfers at near ground-level and transfers to elevated storage, respectively. Two ground-level transfers were included for the source: 1) transfer of aggregate and sand from truck unloading to a storage pile; 2) transfer of aggregate and sand from the storage pile to a hopper. One transfer was included for aggregate and sand transfer to elevated storage. Emissions rates are a function of wind speed and were varied in the model according to wind speed. Attachment 1 provides details on emissions calculations for wind speed categories.

Table 5. EMISSIONS USED IN DEQ ANALYSES			
Emissions Point in Model	**Pollutant**	**Averaging Period**	**Emissions Rate (lb/hr)**
			125 cy/hr[a] **500 cy/day** **150,000 cy/yr**
NGBOILER – natural gas or propane boiler ≤ 1.2 MMbtu/hr	PM_{10}/ $PM_{2.5}$	24-hour	0.008941
		Annual	0.008941
SILO – cement storage silo	$PM_{2.5}$	24-hour	6.250E-4
		Annual	5.137E-4
	PM_{10}	24-hour	0.001739
SUPSILO – cement supplement storage silo	$PM_{2.5}$	24-hour	9.375E-4
		Annual	7.705E-4
	PM_{10}	24-hour	0.003725
WEIGHOP – aggregate weigh hopper loading. - controlled 75% by enclosure	$PM_{2.5}$	24-hour	0.006172
		annual	0.005073
	PM_{10}	24-hour	0.02058
TRUCKLOD – truck loadout. - controlled by boot and water spray	$PM_{2.5}$	24-hour	0.002938
		Annual	0.002414
	PM_{10}	24-hour	0.01633
AGG&SAND[b] – aggregate/sand handling at ground level	$PM_{2.5}$	24-hour	0.005924
		Annual	0.004869
	PM_{10}	24-hour	0.03913
AGGTOSTO[b] – aggregate/sand to elevated storage	$PM_{2.5}$	24-hour	0.002962
		Annual	0.002434
	PM_{10}	24-hour	0.01957

a. Cubic yards of concrete per hour, day, or year.

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

Emissions associated with operation of the POE HMA plant were estimated from the February 7, 1997 PTC and associated permitting memorandum. The issued permit allows processing 1,839,600 ton/year HMA and an allowable operational rate of 6,700 hours/year, equating to an average of 274.6 ton/hour. Daily emissions were based on 24 hour/day operation at 274.6 ton/hour, giving a daily rate of 6,590 ton/day. $PM_{2.5}$ emissions were not estimated for the original permit application. DEQ calculated $PM_{2.5}$ emissions and revised PM_{10} emissions by using a DEQ HMA emissions calculation spreadsheet. Modeled emissions rates for the POE HMA plant are provided in Table 6.

3.2.2 TAP Emissions Rates

Operation of the proposed CBP will result in an increase in allowable emissions of TAPs. The TAP emissions inventory generated by the permit writer indicated that emissions of all TAPs were below applicable ELs.

Table 6. POE HMA PLANT EMISSIONS USED IN DEQ ANALYSES			
Emissions Point in Model	**Pollutant**	**Averaging Period**	**Emissions Rate (lb/hr)**
POEDRYER – drum dryer[a]	$PM_{2.5}$	24-hour	8.813
		Annual	2.164
	PM_{10}	24-hour	9.09
POESILO – asphalt silo filling[b]	PM_{10}/ $PM_{2.5}$	24-hour	0.1758
		Annual	0.04316
POELOAD – asphalt loadout[b]	PM_{10}/ $PM_{2.5}$	24-hour	0.1566
		annual	0.03845
POEAGCONV – fugitive emissions from aggregate handling[c]	$PM_{2.5}$	24-hour	0.07669
		Annual	0.01884
	PM_{10}	24-hour	0.5065
POESCREEN[b] – scalping screen[b], 90% control	$PM_{2.5}$	24-hour	0.003744
		Annual	0.0009194
	PM_{10}	24-hour	0.2506
POEGEN – 850 kW diesel generator.	$PM_{2.5}$	24-hour	0.5254
		Annual	0.1290
	PM_{10}	24-hour	1.229

a. PM_{10} emissions limit in permit is 11.64 lb/hr and 95.2 ton/yr. The DEQ spreadsheet gives a 24-hour averaged emissions rate of 6.32 lb/hr based on 6590 ton/day production. $PM_{2.5}$ emissions were calculated by multiplying the PM_{10} allowable emissions by the $PM_{2.5}/PM_{10}$ ratio indicated by emissions in the DEQ spreadsheet.

b. Emissions calculated by DEQ spreadsheet using 6590 ton/day and 1,839,600 ton/yr production. Emissions varied in model by windspeed for each hour.

c. Aggregate handling by frontend loader and 3 conveyor transfers (controlled 90%).

3.3 *Emission Release Parameters and Plant Criteria*

Table 7 lists the characteristics ofthe Atlas CBP used in DEQ's site-specific air impact analyses.

Table 8 provides emissions release parametersfor the analyses including stack height, stack diameter, exhaust temperature, and exhaust velocity. Additional details are provided in Attachment 1.

Table 7. IMPORTANT CHARACTERISTIC OF CBP USED IN DEQ ANALYSES	
Parameter	**Value or Description**
Concrete Throughput Rates	125 cy/hr, 500 cy/day, 150,000 cy/yr
Co-Contributing Sources	The emissions points of the CBP are not located within 1,000 feet of other permittable emissions sources, except for the POE HMA plant located in the pit south of the CBP. A rock crushing plant could be operated at the site provided annual throughput is less than 500,000 ton/yr.
Cement and Supplement Storage Silo	Emissions captured and controlled by a baghouse Stack height ≥19.8 m (65 ft) for the cement silo and ≥18.3 m (60 ft) for the supplement silo, stack diameter ≈ 0.3 m.
Aggregate Weigh Hopper Loading Stack Parameters	Emissions are not captured and controlled by a baghouse. It was assumed general fugitive dust control measures will control emissions by 75%.
Hot Water Boiler	Natural gas or propane fired and ≤1.2 MMBtu/hr heat imput.
Electrical Power	Line power
Frontend Loader Transfers at Ground Level	≤2 transfers for any given quantity of material processed. Typically involves: 1) aggregate and sand to storage pile; 2) aggregate and sand from pile to hopper. Assume a moderate level of emissions control.
Aggregate/Sand Transfers to Elevated Storage	≤1 transfers for any given quantity of material processed. Assume a moderate level of emissions control.

Table 8. EMISSIONS RELEASE PARAMETERS					
Release Point /Location	**Source Type**	**Stack Height (m)[a]**	**Modeled Diameter (m)**	**Stack Gas Temp. (K)[b]**	**Stack Gas Flow Velocity (m/sec)[c]**
NGBOILER	Point	3.4	0.2	450	7.5
SILO	Point	19.8	0.3	Ambient	0.001[d]
SUPSILO	Point	18.3	0.3	Ambient	0.001[d]
TRKLOAD	Point	5.0	0.001	Ambient	0.001[d]
POEDRYER	Point	6.096	0.91	450	15.3
POESILO	Point	9.0	3	346	0.1
POELOAD	Point	5.0	3	346	0.1
POEGEN	Point	4.1	0.33	770	44.6
Volume Sources					
Release Point /Location	**Source Type**	**Release Height (m)**	**Initial Horizontal Dispersion Coefficient σ_{y0} (m)**	**Initial Vertical Dispersion Coefficient σ_{z0} (m)**	
AGG&SAND	Volume	2.0	2.33	0.70	
AGGTOSTO	Volume	5.0	1.40	1.91	
WEIGHOP	Volume	4.4	3.84	4.11	
POEAGCONV	Volume	2.5	4.65	1.16	
POESCREEN	Volume	2.5	0.93	2.33	

a. Meters
b. Kelvin
c. Meters per second
d. Set at 0.001 to minimize plume vertical momentum because of a raincapped or horizontal release.

3.4 Results for Cumulative NAAQS Impact Analyses

The Atlas CBP has a modeled significant impact on 24-hour $PM_{2.5}$ and PM_{10} at receptors immediately west of the plant and at some receptors east of the plant. DEQ then modeled potentially co-contributing sources (the POE HMA plant), accounted for impacts from an on-site rock crushing plant, and added a background concentration to evaluate whether the CBP significantly contributed to a violation of the 24-hour $PM_{2.5}$ and PM_{10} NAAQS at those receptors where the CMP had a significant impact. Results demonstrated that the Atlas CBP will not cause or significantly contribute to any NAAQS violations. The analyses did not evaluate whether the POE HMA plant will cause or significantly contribute to NAAQS violations at any receptors where the Atlas CBP does not have a significant impact.

Table 9 provides modeling results for the impact analyses.

Table 9. MODELED IMPACTS				
Pollutant	**Averaging Period**	**Maximum Impact from CBP ($\mu g/m^3$)**	**Maximum Cumulative Impact[a] ($\mu g/m^3$)**	**NAAQS ($\mu g/m^3$)**
$PM_{2.5}$	24-hour	6.3	27.9[b] 33.72[c]	35
	Annual	1.15	12.5[b,c]	15
PM_{10}	24-hour	13.3	96.5[b] 104.8[c]	150

a. Includes CBP, HMA plant, rock crushing plant, and a background concentration.
b. Cumulative impact only on receptors where the CBP has an impact exceeding the SIL.
c. Cumulative impact on all receptors.

3.5 Locating with Other Facilities/Equipment

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

CBPs commonly co-locate with rock crushing plants. Since 24-hour PM_{10} and $PM_{2.5}$ impacts are the governing criteria for the CBP, simultaneously operation on an annual basis is not a large concern. DEQ modeling staff determined NAAQS compliance is still assured when a rock crushing plant co-locates with the CBP, provided the CBP does not simultaneously operate with the rock crushing plant and the annual actual throughput of the rock crushing plant is not greater than 500,000 tons.

4.0 Conclusions

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

ATTACHMENT 1

EMISSIONS CALCULATIONS AND MODELING PARAMETERS FOR

DEQ'S AIR IMPACT ANALYSES

CBP Modeled Emissions Rates

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

Aggregate and Sand Handling Emissions

Emissions from aggregate and sand handling were calculated for the following transfers: 1) ground level transfers including transfers to a storage pile and transfers to the CBP hopper; 2) transfers to elevated storage.

PM_{10} and $PM_{2.5}$ emissions associated with the handling of aggregate materials were calculated using emissions factors from AP42 Section 13.2.4.

Emissions were calculated using the following emissions equation:

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

Where:

k	=	0.35 for PM_{10} and 0.053 for $PM_{2.5}$
M	=	1.77% for aggregate and 4.17% for sand
U	=	wind speed (mph)

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

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

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

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

Base $PM_{2.5}$ factor for aggregate – use 10 mph wind:

$$0.053(0.0032)\frac{(10/5)^{1.3}}{(1.77/2)^{1.4}} = 4.955\,E-4 \quad \text{lb/ton}$$

Base $PM_{2.5}$ factor for sand – use 10 mph wind:

$$0.053(0.0032)\frac{(10/5)^{1.3}}{(4.17/2)^{1.4}} = 1.493\,E-4 \quad \text{lb/ton}$$

PM_{10} emissions were calculated in the same manner but are not presented here.

Adjustment factors to put in the model:

Cat 1: $(1.72/5)^{1.3}$ (2.012 E-4) = 5.026 E-5 lb/ton
Factor = 5.026 E-5 / 4.955 E-4 = 0.1014

Cat 2: $(5.18/5)^{1.3}$ (2.012 E-4) = 2.107 E-4 lb/ton
Factor = 2.107 E-4 / 4.955 E-4 = 0.4253

Cat 3: $(9.20/5)^{1.3}$ (2.012 E-4) = 4.446 E-4 lb/ton
Factor = 4.446 E-4 / 4.955 E-4 = 0.8974

Cat 4: $(14.95/5)^{1.3}$ (2.012 E-4) = 8.358 E-4 lb/ton
Factor = 8.358 E-4 / 4.955 E-4 = 1.687

Cat 5: $(21.28/5)^{1.3}$ (2.012 E-4) = 1.323 E-3 lb/ton
Factor = 1.323 E-3 / 4.955 E-4 = 2.669

Cat 6: $(27.74/5)^{1.3}$ (2.012 E-4) = 1.867 E-3 lb/ton
Factor = 1.867 E-3 / 4.955 E-4 = 3.768

1 yd^3 of concrete ≈ 4024 lbs, consisting of:
1865 lbs aggregate
1428 lbs sand
491 lbs cement
73 lbs supplement
20 gal of water

Fraction of aggregate = 1865 lb / 4024 lb = 0.4635

Base $PM_{2.5}$ factor for aggregate in terms of lb/yd^3

$$\frac{4.955\text{ E-4 lb } PM_{2.5}}{\text{ton}} \left| \frac{0.4635\text{ ton agg}}{\text{ton concrete}} \right| \frac{\text{ton}}{2000\text{ lb}} \left| \frac{4024\text{ lb conc.}}{yd^3} \right. = \frac{4.621\text{ E-4 lb } PM_{2.5}}{yd^3}$$

Assume moderate fugitive dust controls reduce emissions by an additional 75%.
Base controlled $PM_{2.5}$ factor in terms of lb/yd^3

$$\frac{4.621\text{ E-4 lb } PM_{2.5}}{yd^3} \left| \frac{(1\text{-}0.75)}{} \right. = \frac{1.155\text{ E-4 lb } PM_{2.5}}{yd^3}$$

Using the same process for sand handling, the $PM_{2.5}$ controlled emissions factor is 2.665 E-5 lb $PM_{2.5}$/yd^3

There are two ground level transfers of aggregate and sand: 1) transfer to a storage pile; 2) transfer from a pile to the hopper.

For the operational scenario for 500 cy/day concrete and 150,000 cy/year concrete, $PM_{2.5}$ emissions from aggregate and sand transfers at ground level are as follows:

Daily $PM_{2.5}$:

$$\frac{1.155\text{ E-4 lb} + 2.665\text{ E-5 lb}}{yd^3\text{ - transfer}} \left| \frac{2\text{ transfers}}{} \right| \frac{500\ yd^3}{\text{day}} \left| \frac{\text{day}}{24\text{ hour}} \right. = \frac{0.005923\text{ lb } PM_{2.5}}{\text{hr}}$$

Annual $PM_{2.5}$:

1.155 E-4 lb + 2.665 E-5 lb / yd^3 - transfer	2 transfers	150,000 yd^3 / year	year / 8760 hour	=	0.004869 lb $PM_{2.5}$ / hr

These sources were modeled as a single volume source with a 10-meter square area, 3.0 meters thick, with a release height of 2.0 meters. The initial dispersion coefficients were calculated as follows:

σ_{yo} = 10 m / 4.3 = 2.33 m

σ_{zo} = 3 m / 4.3 = 0.7 m

There is one elevated transfer of aggregate and sand: 1) transfer to elevated storage bin.

For the operational scenario for 500 cy/day concrete and 150,000 cy/year concrete, emissions from aggregate and sand transfers to elevated storage are as follows:

Daily $PM_{2.5}$:

1.155 E-4 lb + 2.665 E-3 lb / yd^3 - transfer	1 transfers	500 yd^3 / day	day / 24 hour	=	0.002961 lb $PM_{2.5}$ / hr

Annual $PM_{2.5}$:

1.155 E-4 lb + 2.665 E-5 lb / yd^3 - transfer	1 transfers	150,000 yd^3 / year	year / 8760 hour	=	0.002434 lb $PM_{2.5}$ / hr

These sources were modeled as a single volume source on or adjacent to a 6-meter square building, 4.1 meters high (corresponding approximately to two trailer-mounted offices, with a release height of 5.0 meters. The initial dispersion coefficients were calculated as follows:

σ_{yo} = 6 m / 4.3 = 1.40 m

σ_{zo} = 4.1 m / 2.15 = 1.91 m

Truck Loading

Base PM_{10} factor: 0.278 lb PM_{10} / ton - uncontrolled
Base $PM_{2.5}$ factor: 0.050 lb $PM_{2.5}$ / ton - uncontrolled
DEQ permitting staff assume 99% control by a well designed boot with water spray

Fraction of cement and supplement = (491 lb + 73 lb) / 4024 lb = 0.1402

Base uncontrolled $PM_{2.5}$ factor in terms of lb/yd^3

0.050 lb $PM_{2.5}$ / ton	0.1402 ton cem/sup / ton concrete	ton / 2000 lb	4024 lb conc. / yd^3	=	1.410 E-2 lb $PM_{2.5}$ / yd^3

Base controlled $PM_{2.5}$ factor in terms of lb/yd^3

1.410 E-2 lb $PM_{2.5}$ / yd^3	(1-0.99)	=	1.410 E-4 lb $PM_{2.5}$ for boot system / yd^3

Daily $PM_{2.5}$ Emissions

$$\frac{1.410\text{ E-4 lb } PM_{2.5}}{yd^3} \left| \frac{500\ yd^3}{day} \right| \frac{day}{24\text{ hour}} = \frac{0.002938\text{ lb } PM_{2.5}}{hr}$$

Annual $PM_{2.5}$ Emissions

$$\frac{1.410\text{ E-4 lb } PM_{2.5}}{yd^3} \left| \frac{150{,}000\ yd^3}{yr} \right| \frac{yr}{8760\text{ hr}} = \frac{0.002414\text{ lb } PM_{2.5}}{hr}$$

Weigh Hopper Loading

Base PM_{10} factor: 0.0024 lb PM_{10} / ton uncontrolled
$PM_{2.5}$ base factor of 1.185 E-3 lb/yd^3 uncontrolled based on $PM_{2.5}/PM_{10}$ ratio of k factors in material handling equation.
Assume an enclosure reduces emissions by 75% and vent to atmosphere through stack

Base controlled $PM_{2.5}$ factor in terms of lb/yd^3

$$\frac{1.185\text{ E-3 lb } PM_{2.5}}{yd^3} \left| (1\text{-}0.75) \right. = \frac{2.963\text{ E-4 lb } PM_{2.5}}{yd^3}$$

Daily $PM_{2.5}$ Emissions

$$\frac{2.963\text{ E-4 lb } PM_{2.5}}{yd^3} \left| \frac{500\ yd^3}{day} \right| \frac{day}{24\text{-hour}} = \frac{6.172\text{ E-3 lb } PM_{2.5}}{hr}$$

Annual $PM_{2.5}$ Emissions

$$\frac{2.963\text{ E-4 lb } PM_{2.5}}{yd^3} \left| \frac{150{,}000\ yd^3}{yr} \right| \frac{yr}{8760\text{ hr}} = \frac{5.074\text{ E-3 lb } PM_{2.5}}{hr}$$

Loading of Cement Silo

Base PM_{10} factor of 0.00034 lb/ton for operations controlled by a fabric filter.

A $PM_{2.5}$ factor of 3.0 E-5 lb/yd^3 was calculated based on the assumption that 15% of PM emissions are $PM_{2.5}$.

Daily $PM_{2.5}$ Emissions

$$\frac{3.0\text{ E-5 lb } PM_{2.5}}{yd^3} \left| \frac{500\ yd^3}{day} \right| \frac{day}{24\text{-hour}} = \frac{6.250\text{ E-4 lb } PM_{2.5}}{hr}$$

Annual $PM_{2.5}$ Emissions

$$\frac{3.0\text{ E-5 lb } PM_{2.5}}{yd^3} \left| \frac{150{,}000\ yd^3}{yr} \right| \frac{yr}{8760\text{ hr}} = \frac{5.137\text{ E-4 lb } PM_{2.5}}{hr}$$

Loading of Cement Supplement Silo

Base PM_{10} factor of 0.0049 lb/ton for operations controlled by a fabric filter.

A $PM_{2.5}$ factor of 4.5 E-5 lb/yd^3 was calculated based on the assumption that 15% of PM emissions are $PM_{2.5}$.

Daily $PM_{2.5}$ Emissions

$$\frac{4.5\text{ E-5 lb } PM_{2.5}}{yd^3} \left| \frac{500\ yd^3}{day} \right| \frac{day}{24\text{-hour}} = \frac{9.375\text{ E-4 lb } PM_{2.5}}{hr}$$

Annual $PM_{2.5}$ Emissions

$$\frac{4.5\text{ E-5 lb } PM_{2.5}}{yd^3} \left| \frac{150{,}000\ yd^3}{yr} \right| \frac{yr}{8760\ hr} = \frac{7.705\text{ E-4 lb } PM_{2.5}}{hr}$$

Natural Gas Boiler

Hot water boiler fueled by natural gas: 1.2 MMbtu/hr. Emissions calculated from DEQ CBP spreadsheet.

CBP Modeling Parameters

Cement and Supplement Silo Filling Baghouse Stacks

Release height = 19.8 meters cement silo, 18.3 meters supplement silo; effective diameter of release area = 0.3 meters; typical stack gas temperature = ambient; typical flow velocity = 0.001 meters/second (set to minimize plume momentum for horizontal or capped release).

Weigh Hopper Loading

Modeled as a volume source released at 4.4 meters adjacent to a building 16.5 meters wide, 8.84 meters high.

Initial dispersion coefficients:

σ_{y0} = 16.5 m / 4.3 = 3.84 m

σ_{z0} = 8.84 m / 2.15 = 4.11 m

Truck Loadout

Release height = 5.0 meters; effective diameter of release area = 0.001 meters (for horizontal release); stack gas temperature = ambient; flow velocity = 0.001 meters/second (set to minimize plume momentum for horizontal or capped release).

Aggregate/Sand Transfers at Ground Level

Release emissions in model from a 10 m X 10 m area 3 m high, released at 2.0 m

Initial dispersion coefficients:

σ_{y0} = 10 m / 4.3 = 2.33 m

σ_{z0} = 3 m / 4.3 = 0.70 m

Aggregate/Sand Transfers to Elevated Storage

Modeled as a volume source released at 5.0 meters adjacent to a building 6 meters X 6 meters, 4.1 meters high.

Initial dispersion coefficients:

σ_{y0} = 6 m / 4.3 = 1.40 m

σ_{z0} = 4.1 m / 2.15 = 1.91 m

Hot Water Boiler

Release height = 3.4 meters; effective diameter of release area = 0.2 meters; typical stack gas temperature = 450; typical flow velocity = 7.5 meters/second.