Statement of Basis

Permit to Construct P-2014.0012
Project No. 61349

Concrete Batch Operations General Permit

Baldi Bros. Inc 00535
Batch Plant #1 EQ.301
Mt. Home, Idaho

Facility ID No. 777-00535

Final

May 21, 2014
Robert Baldwin
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
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
bhp	brake horsepower
BMP	best management practices
Btu	British thermal units
Btu/lb	British thermal units per pound
CAM	Compliance Assurance Monitoring
CBP	concrete batch plant
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
cy/day	cubic yard per day
cy/hr	cubic yard per hour
cy/yr	cubic yard per year
DEQ	Department of Environmental Quality
EF	Emission Factor
EI	Emission Inventory
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
HAP	hazardous air pollutants
hp	horsepower
hr/yr	hours per year
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standard
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
PC	permit condition
PERF	Portable Equipment Relocation Form
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
scf	standard cubic feet
SO_2	sulfur dioxide
SO_X	sulfur oxides
T/yr	tons per consecutive 12-calendar month period

TAP	toxic air pollutants
VOC	volatile organic compounds
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Baldi Bros. Inc. is a portable central 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 central drum along with a measured amount of water for stationary mixing of the concrete. Electrical power will be supplied to the facility either by the local power grid or an electric generator powered by a 1081 bhp rated engine.

Permitting History

The following information was derived from a review of the information supplied by the permittee and from permit files available to DEQ. All previous Permits to Construct (PTC) listed below are superseded (S) upon issuance of this general permit.

There are no prior permits issued to this facility.

Application Scope

This permit is the initial PTC for a portable Concrete Batch Plant.

Application Chronology

April 7, 2014	A PTC application and combined application and processing fee ($1,500) were received.
April 23, 2014 to May 8, 2014	A 15-day opportunity for a public comment period was held. No requests for a public comment period were received.
May 7, 2014	First draft permit sent to facility for review
May 9, 2014	DEQ sent a completeness letter
May 19, 2014	DEQ received the facility's approval of the draft permit.
May 19, 2014	DEQ sent a second draft permit with a 657 feet setback limit.
May 19, 2014	DEQ received the facility's approval of the second draft permit with the setback limit.
May 21, 2014	Final permit and statement of basis were issued.

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 – Central Mix Manufacturer: CON-E-CO Model: Lo-Pro-SSE Maximum capacity: 400 cy/hr Maximum production: 5600 cy/day and 1,461,600 cy/year	Cement Storage Silo Baghouse No. 1[c]: Manufacturer: C & W Model: CP-900-1278 12 bags 0.66' x 6.5' baghouse Cement Supplement Storage Silo Flyash Baghouse No. 2[a]: Manufacturer: C & W Model: CP-450-678 6 bags 0.66' x 3.25' baghouse Weigh Batcher Baghouse: Manufacturer: CON-E-CO Model: CEC-850 108 bags 0.46' x 5' baghouse Baghouse Manufacturer: WAM 400 Dust Collector Model: CP-900-1278 Bag No. 28, 5.25'' X 2.5' Material Transfer Point Water Sprays or Equivalent Best Management Practices Sprays and other suppressants	Baghouse No. 1 stack Stack height: 20 feet Exit diameter: 8 feet Exit air flow rate: 4.7 acfm Exit Temperature: Ambient Control efficiency: 99% Baghouse No. 2 stack Stack height: 15 feet Exit diameter: 8 feet Exit air flow rate: 4.7 acfm Exit Temperature: Ambient Control efficiency: 99% Weigh Batcher Baghouse: Stack height: 10 feet Exit diameter: 0.5 feet Exit air flow rate: 5.9 acfm Exit Temperature: Ambient Control efficiency: 99% Baghouse Control efficiency: 99% Materials Transfer: Control Efficiency: 75%
1081 bhp rated engine (or equivalent[b]) Maximum Rating: 1081 bhp Construction Date: May 21, 2014 EPA Certification: Tier # 1	none	Stack height: 14 feet Stack diameter unknown inches Exit Velocity: 1949 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: 400 cy per hour concrete production capacity and concrete production limits of 5600 cy per day and 1,461,600 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 concrete batch plant, line power supplied, and a 1,081 bhp diesel-fired internal combustion engine are used. The total emissions associated with the facility are equal to or less than the equipment mentioned above. 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. AP-42 Sections 3.3 and 3.4 (10/96) were used to determine both criteria and TAPs emissions from the diesel-fired engine(s).

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 central mix load-out emissions are controlled by a boot. Capture efficiency of the truck mix load-out 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 1,081 bhp, Tier 1 Certified Engine

Emissions are based on using diesel fuel in a Tier 1, 1081 bhp engine. The maximum fuel use rate was calculated in gal/hr and was based on the total 1081 bhp capacity of the engine. The following equation was used to determine the fuel use rate from the fuel heating value and average brake-specific fuel consumption (BSFC). Note that the fuel heating value applied is based on AP-42 Sections 3.3 and 3.4 values of 19,300 Btu/lb and a density of 7.1 lb/gal. The maximum fuel use rate was converted into MMBtu/hr and multiplied by a given emission factor in lb/MMBtu to obtain and emission rate in lb/hr.

$$\max fuel = \frac{(rating * BSFC)}{(fuelheatingvalue)} = \frac{(1081bhp * 7{,}000Btu/hp-hr)}{(137{,}030Btu/gal)} = 55.22gal/hr$$

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 Central-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 11.12-2 (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 2 transfer points.

Table 2 FACILITY WIDE CRITERIA POLLUTANT EMISSION ESTIMATES

Emissions Unit	$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	Lead	CO2e
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Concrete Batch Plant	0.076	0.50	--	--	--	--	--	--
Large Diesel Fired Engine	0.06	0.06	0.00068	98	1.22	0.14	NA	75
Transfer Points	6.3	20.2	--	--	--	--	--	--
Total	**6.44**	**20.76**	**0.00**	**98.00**	**1.22**	**0.14**	**0.00**	**75.00**

[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%.

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:

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)

Because a separate modeling analysis was not provided to demonstrate compliance with applicable standards in $PM_{2.5}$ and PM_{10} nonattainment areas, this portable facility is not permitted for operation in nonattainment areas.

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 internal combustion engine and 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.

Registration Procedures & Requirements for Portable Equipment (IDAPA 58.01.01.500)

Portable equipment needs to be registered within 90 days after permit issuance and DEQ must be notified at least 10 days prior to relocation. This requirement is assured by Permit Condition 14.

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 assured by Permit Condition 9.

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 assured by Permit Condition 7.

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 assured by Permit Conditions 10 and 11.

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 a synthetic minor facility, because without limits on the potential to emit, the emissions of regulated air pollutants the facility would 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 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.

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

§ 60.4200 Am I subject to this Subpart?

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

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

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

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

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

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

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

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

The 1081 bhp IC engine was constructed, modified or reconstructed on May 21, 2014, which is after July 11, 2005. Therefore the engine is subject to the Subpart.

As the general permit was being developed there were discussions about the differences between 40 CFR 60, Subpart IIII and Non-road Diesel Engine requirements, 40 CFR 1068.30. According to CFR 1068.30, Non-road engine means that, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

Also, according to 40 CFR 1068.30 (2)(iii), an internal combustion engine is not a non-road engine if it:

- Will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source.
- A location is any single site at a building, structure, facility, or installation.
- Any engine (or engines) that replace an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period.

The conclusions were that the requirements for non-road engines and Subpart IIII were very similar with a few exceptions. Those exceptions being the installation of a non-resettable hour meter, the maintenance schedule and the use of colored fuel. But possibly, the biggest issue was the timeframe that stipulated whether or not a unit was stationary or non-road. If an engine stays in one place longer than 12 months it is considered a stationary source and would be subject to Subpart IIII. In order to avoid any potential non-compliance issues and to eliminate the possibility of failure by a non-road engine to comply with 40 CFR 1068.30, it was concluded to require Subpart IIII for all engines regardless of time at a given location. To eliminate permitting complexity, all applicants that choose the general permit have been required to comply with Subpart IIII.

§ 60.4201 What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer?

The Permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.

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

The Permittee is not the manufacturer of the IC engine and the engine is not used for emergency purposes. Therefore, this requirement is not applicable.

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

The Permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.

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

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

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

The Subpart requires that the Permittee comply with Table 1 of IIII if the engine is pre-2007 and has a displacement of less than 10 liters/cylinder. However, this permit requires that the Permittee comply with 40 CFR 89.112 or 40 CFR 139 where applicable. All of those standards are equal to or more stringent than Table 1 of this Subpart. Also, if the engine or engines are non-certified, per the Subpart they have to demonstrate compliance with Table 1 and the hours of operations are reduced. If the engines have a model year of 2007 or greater they too must meet and certify that their IC engine meets all non-road engine standards: 40 CFR 89.112, 40 CFR 89.113, 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, and 40 CFR 1039.115, as applicable. These emission standard requirements are accounted for in the PTC.

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

The Permittee is not using the IC engine for emergency purposes. Therefore, this requirement is not applicable.

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

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

The Permittee must operate the IC engine for the life of the unit in accordance with manufacturer-approved methods. This is included in the PTC.

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

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

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

The Permittee has stated that they will operate the applicable IC engine in accordance with 40 CFR 80.510(b). The fuel sulfur content cannot exceed 15 ppm or 0.0015% by weight. All emissions calculations assume that percentage throughout the PTC.

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

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

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

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

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

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

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

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

The Permittee is installing a 2014 model engine that meets the applicable requirements for that model year.

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

The Permittee is not installing an emergency IC engine. Thus, a non-resettable meter is not required and the engine does not have a diesel particulate filter. These requirements are not applicable to the unit, but the unit must comply with 60.4211.

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

The Permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.

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

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

The Permittee is subject to 60.4204(b), therefore the engine must be installed and configured according to the manufacturer's specifications. This requirement is included in the PTC.

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

A Performance test on the IC engine is not required and therefore this requirement is not applicable to the Permittee and the 1081 bhp IC engine.

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

A Performance test on the IC engine is not required and the engine is less than 30 liters per cylinder. Therefore this requirement is not applicable to the Permittee and the 1081 bhp IC engine.

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

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

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

The applicable IC engine does not meet the criteria set forth in the Subpart requiring notification unless it is uncertified, greater than 175 bhp and was reconstructed or modified on or after July 11, 2005. All engines are less than 3,000 HP and have a displacement less than 10 liters per cylinder.

All engines that are uncertified and constructed reconstructed or modified prior to July 11, 2005 are subject to 40 CFR 63, Subpart ZZZZ. Therefore section (a) of the requirement is not applicable. However, section (c) does apply only if the engine is equipped with a diesel particulate filter.

§ 60.4215 What requirements must I meet for engines used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands?

The applicable IC engine is not being operated in Guam, American Somoa or the Northern Mariana Islands. Therefore this requirement is not applicable.

§ 60.4216 What requirements must I meet for engines used in Alaska?

The applicable IC engine is not being operated in Alaska. Therefore this requirement is not applicable.

§ 60.4217 What emission standards must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels?

The applicable IC engine is not using any special fuels. Therefore this requirement is not applicable.

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.

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 engine(s). The restriction of sulfur content is to maintain consistency between the water heater(s) and engine as there is a restriction of sulfur content in accordance with 40 CFR 60.4207 and 40 CFR 80.510(b). Also, the inclusion of the minimum cetane index and maximum aromatic content is in accordance with 40 CFR 80.510(b).

Fuel Monitoring and Recordkeeping

Permit Condition 4.

The permittee needs to maintain documentation each time fuel is received to demonstrate compliance with the sulfur content limitation.

Fugitive Dust Control

Permit Condition 5.

This condition requires that the permittee perform visible emissions checks on see/no see basis to verify that fugitive emissions are not extending beyond the property boundary. If visible emissions are seen, corrective action must be taken. Reasonable control requirements for fugitive dust are needed at any potential site. Permit conditions requires that the plant must take corrective action where practical to control fugitive dust when operating. This requires compliance with IDAPA 58.01.01.650-651.

Permit Condition 6.

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 9 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 7.
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.

Opacity

Permit Condition 8.

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 9.

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 to IDAPA 58.01.01.130-136. Records of all inspections need to be maintained as well.

Odors

Permit Condition 10.

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

Permit Condition 11.

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

Nonattainment Areas

Permit Condition 12.

The concrete batch plant cannot relocate and operate in any nonattainment area. Operations within a nonattainment area were not included in the modeling compliance analysis. Therefore, it is not permitted with this general CBP permit. See the associated modeling memo.

Co-location

Permit Condition 13.

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.

Reporting Requirements

Permit Condition 14.

When relocating to another site, the permittee must submit a Portable Equipment Relocation Form (PERF) within 10 days of desired moving date in accordance with IDAPA 58.01.01.500. A scaled plot must also be included with the PERF form.

Subpart A General Provisions

Permit Condition 15.

This set of general provisions applies because the engine(s) associated with the CBP is an affected source in accordance with 40 CFR 60, Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Incorporation by Reference

Permit Condition 16.

If there is any discrepancy between this permit and the NSPS standard this condition states that the federal standards shall govern.

Concrete Batch Plant

Description

Permit Condition 17.

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

Permit Condition 18.

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

Operating Requirements

Permit Condition 19.

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 general 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 20.

This condition limits the total amount of hours the facility may operate in any given day. There also may be restrictions to daylight hours. This restriction may be included to help limit the setback distance related to 1-hr NO_2 NAAQS. During daylight hours dispersion may be better and fewer emissions may remain in close proximity to the facility.

Permit Condition 21.

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 22.

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 23.

Within 60 days of start up, the permittee needs to develop a procedures document outlining operations and maintenance schedules. This procedure must be submitted to the appropriate regional DEQ office for review. This is to demonstrate that all required control equipment is being operated and maintained properly. Also any change whether it is done by the facility or requested by DEQ must be submitted to DEQ within 15 days of the change.

Permit Condition 24.

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 general permit.

Monitoring & Recordkeeping Requirements

Permit Condition 25.

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

Permit Condition 26

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.

Permit Condition 27

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

Compression Ignition Internal Combustion Engines

Process Description

Permit Condition 28

This condition provides a brief synopsis of the engine(s) used by the facility.

Operating Requirements

Permit Condition 29

This condition states that the facility must install and operate an IC engine that is tier certified and that documentation stating such is maintained onsite.

Permit Condition 30

This condition is included to limit the engine(s) use to those hours requested by the permittee. The engine limitation was added to help reduce the setback distance. Note that the modeling associated with this condition assumes that if there are multiple engines onsite that they are operating simultaneously. But this is a permittee-defined condition so the stringency associated with the condition is dependent on what operating requirements are needed by the facility.

Monitoring & Recordkeeping

Permit Condition 31

Each month the permittee must record the operational time of the engine. The annual usage needs to be summed over a consecutive 12 month period to demonstrate compliance with the annual hourly limit.

NSPS 40 CFR 60, Subpart IIII Requirements

Permit Condition 32

The permittee needs to operate and maintain the diesel engine according to manufacturer procedures. This is required in accordance with 40 CFR 60, Subpart IIII specifically sections 60.4206 and 60.4211(a).

Permit Condition 33

If the engine is equipped with a particulate filter, it must be installed with a backpressure monitor in accordance with 40 CFR 60, Subpart IIII, specifically section 60.4209.

Permit Condition 34

Records of any corrective action must be maintained when the backpressure monitor notifies the operator that a high backpressure limit has been approached. This condition is in accordance with 40 CFR 60.4214(c).

All reports and notifications need to be sent to the appropriate DEQ Regional Office. This condition provides the mailing address.

General Provisions

General Compliance

Permit Condition 35

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 36

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 37

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 38

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 39

The construction and operation notification provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.02.

Permit Condition 40

The construction and operation notification provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.03.

Performance Testing

Permit Condition 41

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 42

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 43

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 44

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

Excess Emissions

Permit Condition 45

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 46

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 47

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 48

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 49

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 50

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

Final Concrete Batch Plant Emissions Inventory

Listed Below are the emissions estimates for the units selected.

Company:	Baldi Bros. Inc.
Facility ID:	777-00838
Permit No.:	P-2014.0013 Proj 61350
Source Type:	Portable Concrete Batch Plant
Manufacturer/Model:	CON-E-CO/454 High Pro

Production

Maximum Hourly Production Rate:	600	cy/hr
Proposed Daily Production Rate:	8400	cy/day
Proposed Maximum Annual Production Rate:	2192400	cy/year

Tons/year

Emissions Units		$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	Lead	THAPs	CO_2e
CBP Type:	Central Mix	0.114	0.75	NA	NA	NA	NA	5.0E-05		NA
Water Heater #1:	No water heater	0.000	0.000	0.00E+00	0.000	0.000	0.000	0.00E+00		0
Water Heater #2:	No water heater	0.000	0.000	0.00E+00	0.000	0.000	0.000	0.00E+00		0
Small Diesel Engine[s] *:		0.00	0.00	0.00E+00	0.00	0.00	0.00	NA		0
Large Diesel Engine *:	1081 bhp, Tier 1 engine	0.05	0.05	6.63E-04	0.98	1.22	0.14	NA		75
	Transfer/Drop Points	9.432	30.29	NA	NA	NA	NA	NA		NA
	Totals	9.60	31.09	6.63E-04	0.98	1.22	0.14	5.69E-05	2.47E-03	75

Pounds/hour

		$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	Lead	THAPs
CBP Type:	Central Mix	0.026	0.17	NA	NA	NA	NA	1.36E-05	
Water Heater #1:	No water heater	0.000	0.000	0.00E+00	0.000	0.000	0.000	0.00E+00	
Water Heater #2:	No water heater	0.000	0.000	0.00E+00	0.000	0.000	0.000	0.00E+00	
Small Diesel Engine[s] *:		0.00	0.00	0.00E+00	0.00	0.00	0.00	NA	
Large Diesel Engine *:	1081 bhp, Tier 1 engine	0.86	0.86	1.15E-02	16.35	20.26	2.31	NA	
	Transfer/Drop Points	3.012	9.67	NA	NA	NA	NA	NA	
	Totals	4.00	10.69	1.15E-02	16.35	20.26	2.31	1.36E-05	7.69E-05

* The Large engine may run : 120 hr/yr
* The Small engine(s) may run : 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	9.56E-06	4.19E-05	Annual	1.50E-06	Yes
Barium		X	0.00E+00	0.30E+00	24-hour	3.30E-02	No
Beryllium	X	X	8.56E-07	3.76E-06	Annual	2.80E-05	No
Cadmium	X	X	2.19E-07	8.59E-07	Annual	3.70E-06	No
Cobalt	X	X	0.00E+00	0.00E+00	24-hour	3.30E-03	No
Copper		X	0.00E+00	0.00E+00	24-hour	1.30E-02	No
Chromium	X	X	1.95E-04	8.10E-04	24-hour	3.30E-02	No
Manganese	X	X	9.25E-06	2.31E-04	24-hour	3.33E-01	No
Mercury	X	X	0.00E+00	0.00E+00	24-hour	3.00E-03	No
Molybdenum		X	0.00E+00	0.00E+00	24-hour	2.70E-05	No
Nickel	X	X	2.67E-06	1.13E-04	Annual	2.70E-05	No
Phosphorus	X	X	3.24E-04	2.04E-04	24-hour	7.00E-03	No
Selenium	X	X	9.25E-07	2.80E-06	24-hour	1.30E-02	No
Vanadium		X	0.00E+00	0.00E+00	24-hour	3.00E-03	No
Zinc		X	0.00E+00	0.00E+00	24-hour	6.67E-01	No
Chromium VI	X	X	3.91E-06	1.71E-05	Annual	5.60E-07	Yes
Non PAH Organic Compunds							
Pentane		X	0.00E+00	0.00E+00	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	7.96E-05	3.48E-04	Annual	3.00E-03	No
Acrolein	X	X	3.50E-03	4.20E-06	24-hour	1.70E-02	No
Benzene	X	X	5.67E-06	4.24E-04	Annual	8.00E-04	No
1,3 - Butadiene	X	X	4.05E-06	1.78E-06	Annual	2.40E-05	No
Ethyl Benzene	X	X	0.00E+00	0.00E+00	24-hour	29	No
Formaldehyde	X	X	1.22E-04	5.36E-04	Annual	5.10E-04	No
Hexane	X	X	0.00E+00	0.00E+00	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	2.67E-02	No
Quinone	X	X	0.00E+00	0.00E+00	24-hour	2.70E-02	No
Toluene	X	X	0.00E+00	1.86E-04	24-hour	25	No
o-Xylene	X	X	0.00E+00	1.29E-04	24-hour	7.00E-03	No
PAH HAPs							
2-Methylnaphthalene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
3-Methylchloranthrene	X	X	0.00E+00	0.00E+00	Annual	2.50E-06	No
7,12-Dimethylbenz(a)anthracene	X		0.00E+00	0.00E+00	NA	NA	NA
Acenaphthene	X	X	1.47E-07	6.45E-07	Annual	9.10E-05	No
Acenaphthylene	X	X	5.25E-07	2.30E-06	Annual	9.10E-05	No
Anthracene	X	X	1.94E-07	8.49E-07	Annual	9.10E-05	No
Benzo(a)anthracene	X	X	1.74E-07	7.63E-07	Annual	9.10E-05	No
Benzo(a)pyrene	X	X	1.95E-08	8.54E-08	Annual	2.00E-06	No
Benzo(b)fluoranthene	X	X	1.03E-08	4.50E-08	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	5.07E-08	2.22E-07	Annual	9.10E-05	No
Benzo(k)fluoranthene	X	X	1.61E-08	7.04E-08	Annual	2.00E-06	No
Chrysene	X	X	3.66E-08	1.60E-07	Annual	2.00E-06	No
Dibenzo(a,h)anthracene	X	X	6.04E-08	2.65E-07	Annual	2.00E-06	No
Dichlorobenzene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Fluoranthene	X	X	7.89E-07	3.46E-06	Annual	9.10E-05	No
Fluorene	X	X	3.03E-06	1.33E-05	Annual	9.10E-05	No
Indeno(1,2,3-cd)pyrene	X	X	3.89E-08	1.70E-07	Annual	2.00E-06	No
Naphthalene	X	X	3.21E-03	3.86E-06	24-hour	3.33	No
Naphthalene	X	X	8.79E-06	3.86E-06	Annual	9.10E-05	No
Perylene	X		0.00E+00	0.00E+00	NA	NA	NA
Phenanthrene	X	X	3.05E-06	1.33E-05	Annual	9.10E-05	No
Pyrene	X	X	4.95E-07	2.17E-06	Annual	9.10E-05	No
Polycyclic Organic Matter (POM)	X	X	3.68E-07	1.68E-06	Annual	2.00E-06	No
Total HAPs Emissions:			7.59E-03	2.47E-03		5.36E-04	

APPENDIX B – PERMIT FEES

All associated permitting fees 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.

Per Section 224 of the Rules, all PTC applications are subject to an application fee of $1000.
Per Section 225 of the Rules, General PTC permits are subject to a processing fee of $500. The definition of General permit per 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.)"

APPENDIX C – AMBIENT AIR QUALITY ANALYSIS

MEMORANDUM

DATE: May 20, 2014

TO: Robert Baldwin, Air Program

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

PROJECT: PTC Applications for a Concrete Batch Plant using DEQ's General Modeling Developed for such Plants

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

1.0 Summary

A Permit to Construct (PTC) application has been received for a portable concrete batch plant (CBP) to be operated in Idaho. Non-site-specific air quality impact analyses involving atmospheric dispersion modeling of emissions associated with CBPs meeting specific criteria were performed by DEQ to demonstrate that such facilities 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]). The permit applicant submitted applicable information and data for DEQ to evaluate whether the proposed facility met the criteria for using DEQ's non-site-specific CBP ambient impact analyses.

A technical review of the submitted information was conducted by DEQ. DEQ staff performed non-site-specific detailed air quality impact analyses to assure compliance with air quality standards for CBPs meeting specified criteria for various production levels and operational configurations. Results from DEQ's analyses were used to establish minimum setback distances between emissions points and the property boundary of the site. 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 that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all locations outside of the required setback distance (closest distance from pollutant emission points to the property boundary). 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 analyses, in combination with DEQ's analyses, demonstrated to the satisfaction of the Department that operation of the proposed facility or modification 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 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY DATA, ASSUMPTIONS, AND CONCLUSIONS OF THE MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
Maximum throughput does not exceed 5,600 cubic yards per day and	Short-term and annual modeling was performed

1,461,000 cubic yards per year.	assuming these rates.
Emissions units must maintain a 657 foot setback distance from the nearest property boundary.	This setback distance is necessary to assure compliance with applicable air quality standards at all ambient air locations.
Allowable emissions summed from generators used at the site are equivalent or less than the values modeled.	Different types and size of engines can be operated provided emissions are limited accordingly.
Fugitive emissions from material handling and vehicle traffic are controlled to a high degree.	Emissions from vehicle traffic were assumed to be negligible.
Emissions rates for applicable averaging periods are not greater than those used in the representative modeling analyses, as listed in this memorandum.	Compliance with NAAQS and TAPs standards has only been demonstrated for those emissions rates listed in these analyses that correspond to specific operational configurations and setback distances.
Co-contributing emissions sources such as other CBPs, HMAs, or rock crushing plants may not be operated at the site.	Emissions are considered co-contributing if they occur within 1,000 feet (305 meters) of each other.
Stack heights for the baghouses, boiler, and generators are as listed in this memorandum or higher.	Actual stack heights may be greater than those listed in this memo.
Stack parameters of exhaust temperature and flow rate should not be less than about 75 percent of values listed in this memorandum.	Higher temperatures and flow rates increase plume rise, allowing the plume to disperse to a larger degree before impacting ground level.
The CBP may not locate in any non-attainment areas.	All analyses performed assumed the facility will be located in areas attaining air quality standards for those pollutants emitted from the CBP.
Compliance with $PM_{2.5}$ has only been demonstrated by using PM_{10} analyses as a surrogate, as was directed by an EPA memorandum.	Once DEQ incorporates $PM_{2.5}$ into permitting (specifically including a $PM_{2.5}$ emissions inventory), this memorandum cannot be used in support of issuing permits.

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 will be a portable facility. The CBP will only locate in areas 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 new facility exceed the significant impact levels (SILs) of Idaho Air Rules Section 006.102 (referred to as significant contribution in Idaho Ai r Rules), then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions, and emissions from any nearby co-contributing sources, to 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. Table 2 also lists SILs and specifies the modeled value that must be used for comparison to the NAAQS.

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]	Annual[f]	1.0	50[g]	Maximum 1st highest[h]
	24-hour	5.0	150[i]	Maximum 6th highest[j]
$PM_{2.5}$[k]	Annual[l]	Not established	15[g]	Use PM_{10} as surrogate

	24-hour[m]	Not established	35[g]	Use PM_{10} as surrogate
Carbon monoxide (CO)	8-hour	500	10,000[n]	Maximum 2nd highest[h]
	1-hour	2,000	40,000[n]	Maximum 2nd highest[h]
Sulfur Dioxide (SO_2)	Annual	1.0	80[g]	Maximum 1st highest[h]
	24-hour	5	365[n]	Maximum 2nd highest[h]
	3-hour	25	1,300[n]	Maximum 2nd highest[h]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[g]	Maximum 1st highest[h]
	1-hour[o]	Not established	189[g]	Mean of maximum 8th highest[p]
Lead (Pb)	Quarterly	NA	1.5[g]	Maximum 1st highest[h]
	3-month	NA	0.15[q]	Maximum 1st highest[h]

a. Idaho Air Rules Section 006.102.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.03.b.
d. The maximum 1st highest modeled value is always used for the significant impact analysis.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers.
f. The annual PM_{10} standard was revoked in 2006. The standard is still listed because compliance with the annual $PM_{2.5}$ standard is demonstrated by a PM_{10} analysis that demonstrates compliance with the revoked PM_{10} standard.
g. Never expected to be exceeded in any calendar year.
h. Concentration at any modeled receptor.
i. Never expected to be exceeded more than once in any calendar year.
j. Concentration at any modeled receptor when using five years of meteorological data.
k. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
l. 3-year average of the annual concentration.
m. 3-year average of the upper 98th percentile of 24-hour concentrations.
n. Not to be exceeded more than once per year.
o. 3-year average of the upper 98th percentile of the distribution of maximum daily 1-hour concentrations.
p. 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.
q. 3-month rolling average.

New source review requirements for assuring compliance with $PM_{2.5}$ standards have not yet been completed and promulgated into regulation. EPA has asserted through a policy memorandum that compliance with $PM_{2.5}$ standards will be assured through an air quality analysis for the corresponding PM_{10} standard. Although the PM_{10} annual standard was revoked in 2006, compliance with the revoked PM_{10} annual standard must be demonstrated as a surrogate to the annual $PM_{2.5}$ standard. Once $PM_{2.5}$ is directly incorporated into permitting procedures, this memorandum will no longer be considered as a satisfactory demonstration of $PM_{2.5}$ NAAQS compliance.

New NO_2 and SO_2 short-term standards have recently been promulgated by EPA. The standards will not be applicable for permitting purposes in Idaho until they are incorporated by reference into Idaho Air Rules.

DEQ used non-site-specific full impact analyses to demonstrate compliance with Idaho Air Rules Section 203.02. Established setback distances are minimal distances needed to assure compliance with standards, considering the impact of the CBP and a conservative background value.

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 toxic air pollutants 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 total project-wide emissions increases 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.

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.

Background concentrations were revised for all areas of Idaho by DEQ in March 2003[3]. 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 non-site-specific analyses were based on DEQ default values for rural/agricultural areas.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	24-hour	73
	Annual	26
Carbon monoxide (CO)	1-hour	3,600
	8-hour	2,300
Sulfur dioxide (SO_2)	3-hour	34
	24-hour	26
	Annual	8
Nitrogen dioxide (NO_2)	Annual	17
Lead (Pb)	Quarterly	0.03

a. Micrograms per cubic meter

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

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

DEQ performed general non-site-specific analyses that were determined to be reasonably representative of all CBPs meeting DEQ-specified criteria, and the results demonstrated compliance with applicable air quality standards to DEQ's satisfaction.

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

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	Portable	Can only locate in attainment or unclassifiable areas
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 09292
Meteorological data	Multiple Data Sets	See Section 3.1.4
Terrain	Flat	The analyses assumed flat terrain for the immediate area
Building downwash	Considered	A building of 10 m X 10 m X 10 m high was assumed for downwash consideration.
Receptor Grid	Grid 1	5-meter spacing along the property boundary out 100 meters
	Grid 2	10-meter spacing out to 200 meters

3.1.2 Modeling protocol and Methodology

A modeling protocol was not submitted to DEQ prior to the application because DEQ staff performed non-site-specific air quality impact analyses. Non-site-specific modeling was generally conducted using data and methods described in the *State of Idaho Air Quality Modeling Guideline.*

Because of the portable nature of the CBP, DEQ performed non-site-specific modeling to establish setback distances between emissions source locations and the property boundary for a series of CBP production rates.

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. EPA provided a 1-year transition period during which either ISCST3 or AERMOD could be used at the discretion of the permitting agency. AERMOD must be used for all air impact analyses, performed in support of air quality permitting, conducted after November 2006.

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 offers the following improvements over ISCST3:

- Improved dispersion in the convective boundary layer and the stable boundary layer
- Improved plume rise and buoyancy calculations
- Improved treatment of terrain affects on dispersion
- New vertical profiles of wind, turbulence, and temperature

AERMOD was used for the DEQ analyses.

3.1.4 Meteorological Data

Because of the portable nature of CBPs, DEQ used seven different meteorological data sets from various locations in Idaho to assure compliance with applicable standards for the non-site-specific analyses. Table 5 lists the meteorological data sets used in the air impact analyses.

Table 5. METEOROLOGICAL DATA SETS USED IN MODELING ANALYSES		
Surface Data	**Upper Air Data**	**Years**
Boise	Boise	2001-2005
Aberdeen	Boise	2001-2005
Idaho Falls	Boise	2000-2004

Minidoka	Boise	2000-2004
Soda Springs	Boise	2004-2008
Lewiston	Spokane, Wa	1992-1995, 1997
Sandpoint	Spokane, Wa	2002-2006

Use of representative meteorological data is of greater concern when using AERMOD than when using ISCST3. This is because AERMOD uses site-specific surface characteristics to more accurately account for turbulence. To account for this uncertainty, the following measures were taken:

- Use the maximum of 2nd high modeled concentration to evaluate compliance with the 24-hour PM_{10} standard, rather than the maximum of 6th high modeled concentration typically used when modeling a five-year meteorological data set to demonstrate that the standard will not be exceeded more than once per year on average over a three year period.

- Use the maximum of 1st high modeled concentration to evaluate compliance with all pollutants and averaging times, except for 24-hour PM_{10}.

3.1.5 Terrain Effects

Terrain effects on dispersion were not considered in the non-site-specific analyses. Flat terrain was an appropriate assumption because most emissions sources associated with CBPs are near ground-level and the immediate surrounding area is typically flat for dispersion modeling purposes. Emissions sources near ground-level typically have maximum pollutant impacts near the source, minimizing the potential affect of surrounding terrain to influence the magnitude of maximum modeled impacts.

3.1.6 Facility Layout

DEQ's analyses used a conservative generic facility layout. This was done because the specific layout will vary depending upon product needs and specific characteristics of the site. To provide conservative results, DEQ used a tight grouping of emissions sources. Sources were positioned within 2.5 meters of the center of the facility.

3.1.7 Building Downwash

DEQ's analyses accounted for building downwash in a fairly general manner because of the following:

- Determining a building configuration is extremely difficult given the portable nature of the facility.
- Many CBP have at least semi-permanent structures associated with them, even though the permit will be for portable source.
- Much of the equipment is porous with regard to wind, thereby minimizing downwash effects.

Downwash was accounted for by placing a 10 meter by 10 meter by 10 meter high building among the sources.

3.1.8 Ambient Air Boundary

DEQ's non-site-specific analyses, using a generic facility layout, were used to generate minimum setback distances between emissions units and the property boundary. The issued permit will require this distance be maintained at all locations.

3.1.9 Receptor Network and Generation of Setback Distances

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:

1) Trigger values for the modeling analyses were determined. 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:

PM_{10}	24-hour	77 $\mu g/m^3$
	annual	24 $\mu g/m^3$
SO_2	3-hour	1266 $\mu g/m^3$
	24-hour	339 $\mu g/m^3$
	annual	72 $\mu g/m^3$
CO	1-hour	36400 $\mu g/m^3$
	8-hour	7700 $\mu g/m^3$
NO_2	annual	83 $\mu g/m^3$

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 calculated. This was the furthest distance between an emissions point and the controlling receptor.

3.2 Emission Rates

Emissions rates of criteria pollutants and TAPs were calculated for several CBP production rates and operational configurations for various applicable averaging periods.

3.2.1 Criteria Pollutant Emissions Rates

Table 6 lists criteria pollutant emissions rates used in the DEQ non-site-specific modeling analyses for various CBP production rates, operational configurations, and for all averaging periods. Attachment 1 provides additional details of DEQ emissions calculations.

3.2.2 TAP Emissions Rates

Table 7 lists TAP emissions rates for setback-controlling TAPs.

3.3 Emission Release Parameters and Plant Criteria

Table 8 lists the characteristics of CBPs used in DEQ's non-site-specific CBP air impact analyses. Different scenarios were used to generate different setback distances depending upon throughput rates and operational configurations.

Table 9 provides emissions release parameters for the analyses including stack height, stack diameter, exhaust temperature, and exhaust velocity. Additional details are provided in Attachment 1.

DEQ modeling staff will make the determination of whether any release parameters slightly outside of those listed in Table 8 and 9 are still adequate for using DEQ's non-site-specific air impact analyses for the application in question.

3.4 Results for Cumulative NAAQS Impact Analyses and TAPs Analyses

DEQ determined required setback distances from the non-site-specific modeling results for each CBP production level scenario, criteria pollutant, and averaging period. Table 10 lists setback distances for each production level scenario and averaging period.

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 air quality standard.