State of Idaho
Department of Environmental Quality
Air Quality Division

AIR QUALITY PERMIT
STATEMENT OF BASIS

Permit to Construct No. P-2008.0047

Final

Walters Ready Mix, LLC

Rexburg, Idaho

Facility ID No. 777-00328

Portable Concrete Batch Plant: Vince Hagen 1083-JP

May 30, 2008

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Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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Acronyms, Units, and Chemical Nomenclature

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
cy/hr	cubic yards of concrete per hour
DEQ	Department of Environmental Quality
EL	(screening) emission level
EPA	U.S. Environmental Protection Agency
HAPs	Hazardous Air Pollutants
HP	horsepower
ICE	internal combustion engine
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
kW	kilowatt
lb/hr	pound per hour
LM	locomotive and marine
m	meter(s)
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMHC	nonmethane hydrocarbons
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NR	nonroad
NSPS	New Source Performance Standards
PC	permit condition
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
Rules	Rules for the Control of Air Pollution in Idaho
SIP	State Implementation Plan
SM	Synthetic Minor
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/yr	tons per year
TAPs	toxic air pollutants
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. FACILITY INFORMATION

1.1 Facility Description

The facility is a portable truck mix concrete batch plant consisting of aggregate storage piles or bins, a cement storage silo, weigh batcher, and conveyors. The plant combines sand, gravel, and cement, and transfers the mixture into a truck along with a measured amount of water for in-transit mixing of the concrete. A small natural gas-fired water heater may be used to warm the process water during very cold conditions. Electrical power for the portable facility will be provided by the local electric utility or by a backup diesel generator.

1.2 Permitting History

This PTC is for a modification at an existing permitted facility. The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

December 29, 2003	Initial PTC No. P-030516 issued for a new portable concrete batch plant with a 230 kW backup diesel generator. (S)

2. APPLICATION SCOPE

Replace the existing 230 kW diesel generator with a 2007 Model Year 309 kW diesel generator, reduce maximum hours of operation as needed to avoid triggering dispersion modeling requirements.

2.1 Application Chronology

March 28, 2008	Receipt of PTC application and $1,000 PTC application fee.
April 2, 2008	Application determined to be complete.
April 11, 2008 through April 25, 2008	Opportunity for public comment held. No comments or requests for a public comment period were received.
April 22, 2008	Receipt of supplemental information (engine manufacturer Tier 3 certification).
May 8, 2008	Draft permit and statement of basis issued for peer and regional review.
May 9 and 12, 2008	Minor comments from peer and regional review received and addressed.
May 13, 2008	Draft permit and statement of basis issued for facility review.
May 23, 2008	Receipt of $1,000 PTC processing fee.
May 29, 2008	No comments received from facility as of this date.
June 3, 2008	Facility confirmed that weigh batcher is equipped with a baghouse and that the truck loadout is equipped with a control boot.

3. TECHNICAL ANALYSIS

3.1 Emission Unit and Control Device

Table 3.1 EMISSION UNIT AND CONTROL DEVICE INFORMATION

Emission Unit /ID No.	Description	Control Device/Emission Point
Concrete Batch Plant – Truck Mix:	Manufacturer: Vince Hagen Model: 1083-JP Manufacture Date: 2003 Maximum production capacity: 150 cy/hr	Cement Storage Silo Baghouse: Manufacturer: Vince Hagen Model: 1083-JP Intruss Baghouse PM/PM_{10} Control Efficiency: Minimum 99.0%[a] Stack Parameters[b] Height: 5.9436 m (19.5 ft) Exit Diameter: 0.5267 m (1.73 ft) Exit air flow rate: not given Exit air flow velocity: 14.08 m/sec
Weigh Batcher	Baghouse or equivalent.	Weigh Batcher Baghouse Stack: Height: Not given Exit Diameter: Not given Exit air flow rate: Not given: PM/PM_{10} Control Efficiency: Minimum 99.0%
Materials Transfer: Truck Loading (Fugitives)	Rubber Boot Enclosure or equivalent	Truck Loadout Transfer Point Estimated Control Efficiency: 95%
Materials Transfer (Fugitives)	Water Sprays or equivalent.	Aggregate dump to ground, Sand dump to ground, Aggregate dump to conveyor, Sand dump to conveyor, Aggregate conveyor to elevator storage, and Sand conveyor to elevated storage. Estimated Control Efficiency: 75%
Process Hot Water Heater	Rating: 2.8 MMBtu/hr Fuel: Natural Gas	None
Generator:	Manufacturer: Detroit Diesel Model: Series 60 (12.72) 6063MK35 Manufacture Date: 4/19/2007 Serial Number: SCMAF6001F2 Rated Capacity: 309 kW Fuel Type: Diesel Fuel Sulfur Content: 0.05 wt% Full Load Fuel Consumption: 31.2 gal/hr Actual Consumption Rate: 23.4 gal/hr	None

[a] Capture efficiency presumed for the emission inventory for P-030516, issued December 29, 2003.

[b] Silo baghouse stack parameters were taken from the SCREEN3 modeling input file for P-030516, issued December 29, 2003.

3.2 Emissions Inventory

The uncontrolled emissions from the concrete batch plant and generator were estimated by DEQ, as shown in Table 3.2, which are based on operating the concrete batch plant at 150 cy/hr for 8,760 hours per year (with the silo baghouse considered as process equipment), and running the process water heater and the 309 kW generator each at maximum capacity for 8,760 hours per year. As shown in the table, without limits on the facility operations, the emissions are below major source thresholds.

Table 3.2 UNCONTROLLED EMISSIONS FOR FACILITY CLASSIFICATION

Pollutant	Generator		Concrete Batch Plant		Process Water Heater		TOTAL
	Emission Factor	Emissions (T/yr)	Emission Factor (lb/cy) [c]	Emissions (T/yr)	Emission Factor (lb/MMBtu) [d]	Emissions (T/yr)	(T/yr)
PM (total)	0.2 g/kW-hr[a]	0.60	0.0002	0.13	7.6	0.09	0.82
PM_{10} (total)	0.2 g/kW-hr[a]	0.60	0.0001	0.065	7.6	0.09	0.76
CO	3.5 g/kW-hr[a]	10.4			84	1.01	11.4
NOx	4.0 g/kW-hr[a]	11.9			100	1.2	13.1
SO_2	0.29 lb/MMBtu[b]	0.37			0.6	0.007	0.38
VOC	0.36 lb/MMBtu[b]	4.57			5.5	0.066	4.64

[a] Emission factor is from 40 CFR 89.112(a), Table 1, Tier 3 standards for rated power $225 \leq kW \leq 450$. PM emission factor presumed to be the same for PM_{10}. NOx emissions are estimated using the emission factor for NMHC + NOx.

[b] Emission factor is from AP-42, Table 3.3-1 (10/96).

[c] Emission factor is from AP-42, Section 11.12, controlled EFs for loading the cement silo.

[d] Emission factor is from AP-42, Section 1.4 (7/98).

The change in emissions of criteria pollutants associated with this project was calculated by DEQ based on the difference between the previously permitted emissions for the 230 kW generator when operating in an attainment or unclassifiable area for 8,760 hours per year and the estimated emissions from a 309 kW generator certified by the manufacturer to meet Tier 3 emission standards, operating for a maximum of 7,825 hours per year. The change in emissions of criteria pollutants is summarized in Table 3.3. The detailed calculations are included in Appendix B.

Table 3.3 CHANGE IN CRITERIA POLLUTANT EMISSIONS FROM THIS PROJECT

Generator Rating:	230 kW		309 kW			Change in Emissions		DEQ Modeling Thresholds[c]	Modeling Required?
Energy Use (Fuel Input):	2.16 MMBtu/hr		2.90 MMBtu/hr						
Pollutant	P-030516 Attainment Permitted Emissions		Tier 3 Emissions						
	(lb/hr)	(T/yr)	(g/kW-hr)[a]	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)		
PM/PM_{10}	0.68	2.97	0.2	0.14	0.53	-0.54	-2.13	0.2 lb/hr, 1 TPY	No
CO	2.06	9.02	3.5	2.38	9.33	0.32	1.27	14 lb/hr	No
NO_x	9.56	41.87	4.0	2.72	10.66	-6.84	-26.74	1 TPY	No
			AP-42[b]						
			(lb/MMBtu)						
SO_2	0.63	2.77	0.029	0.08	0.33	-0.55	-2.14	0.2 lb/hr, 1 TPY	No
TOC (VOC)	0.76	3.34	0.36	1.04	4.09	0.28	1.11		

[a] Emission factor is from 40 CFR 89.112(a), Table 1, Tier 3 standards for rated power $225 \leq kW \leq 450$. PM emission factor presumed to be the same for PM_{10}. NO_x emissions are estimated using the emission factor for NMHC + NO_x.

[b] Emission factor is from AP-42, Table 3.3-1 (10/96).

[c] State of Idaho, Air Quality Modeling Guideline, ID AQ-011 (Rev.1), December 31, 2002.

The change in the emissions of noncarcinogenic hazardous air pollutants (HAPs) and toxic air pollutants (TAPs) was estimated by DEQ using AP-42 Section 3.3 emission factors, an increase in the hourly

power rating from 230 kW to 309 kW (79 kW), and operating the generator for 24 hours per day and a maximum of 7,825 hours per year.

The annual average hourly emissions increase for carcinogens was estimated based on the annual increase in the MMBtu/hr fuel input:

Emission Factor x (2.90 MMBtu/hr x 7,825 hrs – 2.16 MMBtu/hr x 8760 hrs)/8760

The maximum operating hour limit for the new generator was determined based on limiting the increase in any TAP emission to a value less than the applicable screening emission limit (EL), i.e., the hourly limit was set to ensure that modeling was not required to demonstrate compliance with the applicable standard. The detailed calculations and comparison of emission rates against the applicable ELs are included in Appendix B.

Table 3.4 TAP AND HAP EMISSIONS SUMMARY – CHANGE DUE TO THIS PROJECT

TAPS	HAPS	24-hour Average[a] lb/hr	Annual Average[a] lb/hr
Non-PAH HAPs	**Non-PAH HAPs**		
Acetaldehyde	Acetaldehyde		3.31E-04
Acrolein	Acrolein	6.86E-05	
Benzene	Benzene		4.03E-04
1-3 Butadiene	1-3 Butadiene		1.69E-05
Formaldehyde	Formaldehyde		5.10E-04
Toluene	Toluene	3.03E-04	
Xylene	Xylene	2.11E-04	
PAH HAPs	**PAH HAPs**		
Acenaphthene	Acenaphthene	1.05E-06	
Acenaphthylene	Acenaphthylene	3.75E-06	
Anthracene	Anthracene	1.39E-06	
Benzo(a)anthracene	Benzo(a)anthracene		See POM
Benzo(a)pyrene	Benzo(a)pyrene		See POM
Benzo(b)fluoranthene	Benzo(b)fluoranthene		See POM
Benzo(g,h,I)perylene	Benzo(g,h,I)perylene	3.63E-07	
Benzo(k)fluoranthene	Benzo(k)fluoranthene		See POM
Chrysene	Chrysene		See POM
Dibenzo(a,h)anthracene	Dibenzo(a,h)anthracene		See POM
Fluoranthene	Fluoranthene	3.63E-07	
Fluorene	Fluorene	3.63E-07	
Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene		See POM
Naphthalene	Naphthalene	8.48E-05	
Phenanthrene	Phenanthrene	2.94E-05	
Pyrene	Pyrene	4.78E-06	
PolycyclicOrganicMatter (POM)	PolycyclicOrganicMatter		1.48E-06

[a] 24-hour average only applies to non-carcinogenic TAPs. Annual average only applies to carcinogenic TAPs.

3.3 Ambient Air Quality Impact Analysis

As shown in Table 3.3, the increase in emissions of criteria pollutants is below all DEQ modeling guidance thresholds. The increase in TAPs emissions was below the applicable screening EL for each TAP. Modeling was therefore not required for this project.

The permit conditions for this facility have been revised, however, to incorporate updated DEQ information regarding the ambient impacts of concrete batch plant operations. The modeling analysis used to demonstrate compliance with the NAAQS and Idaho TAPs rules for these "generic" production rates and setback distances is included in Appendix C.

The modeling analysis for a generic facility does not include the impacts from a generator. As shown in Table 3.3, the emissions from the 309 kW generator operating for 24 hours per day and 7,825 hours per year do not exceed DEQ modeling thresholds. DEQ determined that the generic modeling results for PM_{10} provided sufficient margin to allow this proposed project to use DEQ's generic concrete batch plant modeling results to demonstrate compliance with NAAQS and toxic air pollutant (TAP) rules.

Emissions of other criteria pollutants (NO_x, CO, SO_2, and VOCs) from the diesel generator did not exceed DEQ modeling thresholds. Modeling for these emissions was therefore not required.

Table 3.5. RESULTS OF "GENERIC" FULL IMPACT ANALYSES – PM_{10}

Pollutant	Averaging Period	Modeled Design Concentration[a] ($\mu g/m^3$)[b]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact[a] ($\mu g/m^3$)	NAAQS[c] ($\mu g/m^3$)	Percent of NAAQS
ISCST3 Case 1. Production: 1,500 cy/day, 300,000 cy/yr, Fenceline at radius of 40 meters						
PM_{10}[d]	24-hour	63.2	73	136.2	150	90.8% (73.2%)[e]
	Annual	11.2	26	37.2	50	74.4%
ISCST3 Case 2. Production: 2,400 cy/day, 400,000 cy/yr, Fenceline at radius of 60 meters						
PM_{10}[d]	24-hour	79.8	73	152.8	150	102% (82.1%)[e]
	Annual	10.8	26	36.8	50	73.4%
AERMOD Case 3. Production: 3,600 cy/day, 500,000 cy/yr, Fenceline at radius of 100 meters						
PM_{10}[d]	24-hour	53.3	73	126	150	84.2%
	Annual	5.53	26	31.5	50	63.1%

a. Maximum 6th highest value (24-hour standard) for five years of meteorological data.

b. Micrograms per cubic meter

c. National ambient air quality standards

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

e. AERMOD results for Case 3 indicate that using the currently approved AERMOD model would result in significantly lower predicted ambient impact than the ISCST3 analysis (about 20% lower, based on Case No.3 results). The estimated ambient impact for this case had AERMOD been run instead of ISCST3 is shown in brackets. This result was deemed acceptable to demonstrate preconstruction compliance with the 24-hr PM_{10} NAAQS standard.

4. REGULATORY REVIEW

4.1 Attainment Designation (40 CFR 81.313)

The facility is a portable concrete batch plant limited to operating in locations that are designated as attainment or unclassifiable for PM_{10}, $PM_{2.5}$, CO, NO_2, SO_X, and Ozone. Reference 40 CFR 81.313.

4.2 Permit to Construct (IDAPA 58.01.01.201)

The facility's project does not meet the permit to construct exemption criteria contained in Sections 220 through 223 of the Rules. Therefore, a PTC is required.

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

This portable concrete batch plant with a generator is not a major (Title V) facility as defined in IDAPA 58.01.01.008 because it does not emit or have the potential to emit a regulated air pollutant(s) in amounts greater than or equal to major facility thresholds listed in Subsection 008. Refer to Section 3.2 of this statement of basis for a summary of the uncontrolled regulated pollutant emissions for this facility.

4.4 PSD Classification (40 CFR 52.21)

This portable concrete batch plant with a generator is not subject to Prevention of Significant Deterioration (PSD) requirements because the facility is not a designated facility as defined in IDAPA 58.01.01.006, and as initially constructed does not emit or have the potential to emit a regulated pollutant(s) in amounts equal to or greater than 250 tons per year.

4.5 NSPS Applicability (40 CFR 60)

Subpart IIII

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

The preamble to the final rule for this subpart (71 FR 39154, July 11, 2006) states that the final rule applies to stationary CI ICE. Stationary ICE differ from mobile ICE in that a stationary ICE is not a nonroad engine as defined at 40 CFR 1068.30 (excluding paragraph (2)(ii) of that definition), and is not used to propel a motor vehicle or a vehicle used solely for competition.

40 CFR 1068..... General Compliance Provisions for Nonroad Programs, Subpart A – Applicability and Miscellaneous Provisions

40 CFR 1068.30 What definitions apply to this part?

Nonroad engine means:

(1) Except as discussed in paragraph (2) of this definition, a nonroad engine is any internal combustion engine:

(i) In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or

(ii) In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

(iii) 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.

(2) An internal combustion engine is not a nonroad engine if:

(i) The engine is used to propel a motor vehicle, an aircraft, or equipment used solely for competition, or is subject to standards promulgated under section 202 of the Act (42 U.S.C. 7521); or

(ii) The engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the Act (42 U.S.C. 7411); or

(iii) The engine otherwise included in paragraph (1)(iii) of this definition remains or 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 replaces 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. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph (2)(iii) does not apply to an engine after the engine is removed from the location.

40 CFR 60.4200 ..... Am I subject to this subpart?

60.4200(a) The provisions of this subpart are applicable to manufacturers, owners and operators of stationary compression ignition (CI) internal combustion engines (ICE)...

During periods when the generator is not being operated as a nonroad engine as described in 1068.30, in accordance with §60.4200(a)(2)(i), the facility is subject to this subpart because the permittee will operate a stationary compression ignition internal combustion engine that will commence construction after July 11, 2005 and was manufactured after April 1, 2006.

During periods when the generator is being operated as a nonroad engine as described in 1068.30, the provisions of Subpart IIII do not apply.

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

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4201 are not applicable.

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

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4202 are not applicable.

40 CFR 60.4203 ..... How long must I meet the emission standards if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4203 are not applicable.

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

60.4204(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.

60.4201(a) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later non-emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 kilowatt (KW) (3,000 horsepower (hp)) and a displacement of less than 10 liters per cylinder to the certification emission standards for new nonroad CI engines in **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, for all pollutants, for the same model year and maximum engine power.

89.112 Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards.

TABLE 4.1 40 CFR 89.112 TABLE 1 EMISSION STANDARDS

Nonroad engines	NMHC+NO_X (g/kW-hr)	CO (g/kW-hr)	PM (g/kW-hr)
40 CFR 89.112 Table 1 Rated power 225 ≤ kW ≤ 450 Tier 3 Emission Standards	4.0	3.5	0.2

89.113 Smoke emission standard

(a) Exhaust opacity from compression-ignition nonroad engines for which this subpart is applicable must not exceed:

(1) 20 percent during the acceleration mode;

(2) 15 percent during the lugging mode; and

(3) 50 percent during the peaks in either the acceleration or lugging modes.

(b) Opacity levels are to be measured and calculated as set forth in 40 CFR part 86, subpart I. Notwithstanding the provisions of 40 CFR part 86, subpart I, two-cylinder nonroad engines may be tested using an exhaust muffler that is representative of exhaust mufflers used with the engines in use.

Regardless of whether the generator is subject to Subpart IIII, the generator manufacturer must certify that this 2007 model year generator meets Tier 3 emission standards. The Detroit Diesel specification sheets submitted as supplemental information to this application include a statement that "the 60 Hz generator set engine is certified by the Environmental Protection Agency (EPA) to conform to Tier 3 nonroad emissions regulations." These emission factors were used by DEQ in developing the emissions inventory for the new generator.

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

The 309 kW generator is not an emergency generator, so this section is not applicable.

40 CFR 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.

40 CFR 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).

80.510(a) Beginning June 1, 2007. Except as otherwise specifically provided in this subpart, all NRLM diesel fuel is subject to the following per-gallon standards:

(1) Sulfur content. 500 parts per million (ppm) maximum.

(2) Cetane index or aromatic content, as follows:

(i) A minimum cetane index of 40; or

(ii) A maximum aromatic content of 35 volume percent.

(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 nonroad diesel fuel.

80.510(b) Beginning June 1, 2010. Except as otherwise specifically provided in this subpart, all NR and LM diesel fuel is subject to the following per-gallon standards:

(1) Sulfur content.

(i) 15 ppm maximum for NR diesel fuel.

(ii) 500 ppm maximum for LM diesel fuel.

(2) Cetane index or aromatic content, as follows:

(i) A minimum cetane index of 40; or

(ii) A maximum aromatic content of 35 volume percent.

40 CFR 60.4208 ..... What is the deadline for importing or installing stationary CI ICE produced in the previous 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.

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

In accordance with 60.4208 and the dates provided, the permittee shall not install or import a stationary generator that does not meet the applicable emission standards of Subpart IIII. As noted in 4208(h), moving this 2007 model year generator to a new location is allowable under this section.

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

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

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine, you must install a non-resettable hour meter prior to startup of the engine. [Not applicable to this generator]

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

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

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4210 are not applicable.

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

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. You must also meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

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.

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

The applicable requirements of part 89 are addressed specifically in Subpart IIII, part 94 is not applicable because it affects only marine diesel engines, and the applicable requirements of part 1068 are addressed specifically in Subpart IIII. This facility is subject to 4211(c). This facility is not subject to 4211(d) because the displacement of the engine is less than 30 liters per cylinder, and the engine is not an emergency generator.

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

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

This facility is not subject to any required performance testing. If EPA or DEQ requests that performance testing be conducted for this generator, the testing must comply with the requirements of Section 4212.

40 CFR 60.4213 ..... What test methods and other procedures must I use if I am an owner or operator of a stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder?

The 309 kW generator has a displacement of less than 30 liters per cylinder, so the requirements of this section are not applicable.

40 CFR 60.4214 ..... What are my notifications, reporting, and recordkeeping requirements if I am and owner or operator of a stationary CI internal combustion engine?

(a) Does not apply. The generator rating is not greater than 2,237 kW (3,000 hp), or have a displacement greater than or equal to 10 liters per cylinder, and is not a pre-2007 model year.

(b) Does not apply. This is not an emergency generator.

(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.

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

These requirements do not apply because this permit is applicable only to operations in Idaho.

40 CFR 60.4216 ..... What requirements must I meet for engines used in Alaska?

These requirements do not apply because this permit is applicable only to operations in Idaho.

40 CFR 60.4217 ..... What requirements must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels?

These requirements do not apply to this facility because diesel fuel will be used in the generator, and the use of special fuels has not been requested.

40 CFR 60.4218 ..... What part of the general provisions apply to me?

The general provisions that apply to this facility **during periods when the generator is not being operated as a nonroad engine** are specified in Table 8 of 40 CFR 60, Subpart IIII. None of the general provision reporting requirements apply to the operations of this generator.

40 CFR 60.4219 ..... What definitions apply to this subpart?

This section contains the definitions and supporting tables for this subpart.

4.6 Nonroad Diesel Program Applicability (40 CFR 80.500, 89, and 1068)

When the generator is being operated as a nonroad engine, as defined in 40 CFR 1068.30, the following elements of the Nonroad Diesel Program regulations apply to this facility:

40 CFR 1068 ..... General Compliance Provisions for Nonroad Programs, Subpart A – Applicability and Miscellaneous Provisions.

40 CFR 1068.1 ..... Does this part apply to me?

(b) This part does not apply to any of the following engine or vehicle categories:

(5) Land-based nonroad diesel engines that we regulate under 40 CFR part 89.

When operated as a nonroad diesel engine, the 309 kW generator is regulated under part 89, so (except for the definition of nonroad engine contained in 1068.30) the requirements of this section are not applicable.

40 CFR 80 ..... Regulation of Fuels and Fuel Additives, Subpart I – Motor Vehicle, Nonroad, Locomotive, and Marine Diesel Fuel.

40 CFR 80.510 ..... What are the standards and marker requirements for NRLM diesel fuel?

--See 80.510(a) and (b) in the NSPS Subpart IIII discussion in Section 4.5 of this statement of basis.

(e) Marking provisions. From June 1, 2010 through May 31, 2012:

(1) Except as provided for in paragraph (i) of this section, prior to distribution from a truck loading terminal, all heating oil and diesel fuel designated as 500 ppm sulfur LM diesel fuel shall contain six milligrams per liter of solvent yellow 124.

(2) All motor vehicle and NR diesel fuel shall be free of marker solvent yellow 124.

(3) Any diesel fuel that contains greater than or equal to 0.10 milligrams per liter of marker solvent yellow 124 shall be deemed to be LM diesel fuel or heating oil, as appropriate, and shall be prohibited from use in any motor vehicle or nonroad diesel engine (except for locomotive or marine diesel engines).

(4) Except as provided for in paragraph (i) of this section, any diesel fuel, other than jet fuel or kerosene that is downstream of a truck loading terminal, that contains less than 0.10 milligrams

per liter of marker solvent yellow 124 shall be considered motor vehicle diesel fuel or NR diesel fuel, as appropriate.

40 CFR 80.610 ..... What at acts are prohibited under the diesel fuel sulfur program?

No person shall—

(e) Improper fuel usage violation.

(3) Introduce, or permit the introduction of, fuel into any nonroad diesel engine (other than locomotive and marine diesel engines) that does not comply with the applicable standards, dye and marking requirements of §80.510(b) and (e) beginning on the following dates:

(iii) This prohibition begins beginning December 1, 2014 in all other areas. [applies to Idaho]

(f) Cause another party to violate. Cause another person to commit an act in violation of paragraphs (a) through (e) of this section.

40 CFR 89 ..... Control of Emissions from New and In-Use Nonroad Compression Ignition Engines, Subpart A – General

40 CFR 89.1 ..... Applicability.

(a) This part applies for all compression-ignition nonroad engines (see definition of "nonroad engine" in §89.2) except those specified in paragraph (b) of this section.

...

(d) This part applies as specified in 40 CFR part 60 subpart IIII, to compression-ignition engines subject to the standards of 40 CFR part 60, subpart IIII.

40 CFR 89.2 ..... Definitions.

Nonroad engine means:

(1) Except as discussed in paragraph (2) of this definition, a nonroad engine is any internal combustion engine:

(i) In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or

(ii) In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

(iii) 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.

(2) An internal combustion engine is not a nonroad engine if:

(i) The engine is used to propel a motor vehicle, an aircraft, or equipment used solely for competition, or is subject to standards promulgated under section 202 of the Act; or

(ii) The engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the Act; or

(iii) The engine otherwise included in paragraph (1)(iii) of this definition remains or 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 replaces 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. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location.

40 CFR 89.112 ..... Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards.

-- This regulatory section is shown in Section 4.5 (NSPS Subpart IIII) of this statement of basis.

40 CFR 89.112 ..... Smoke emission standard.

-- This regulatory section is shown in Section 4.5 (NSPS Subpart IIII) of this statement of basis.

4.7 NESHAP Applicability (40 CFR 61)

This portable concrete batch plant with a generator is not in any of the source categories subject to regulation under 40 CFR 61.

4.8 MACT Applicability (40 CFR 63)

This portable concrete batch plant with a generator does not emit 10 tons per year of any HAP or 25 tons per year of all HAPs, and is not in any of the area source categories subject to regulation under 40 CFR 63.

4.9 CAM Applicability (40 CFR 64)

This portable concrete batch plant with a generator does not meet the first criterion to be subject to Compliance Assurance Monitoring; this is not a major (Title V) facility.

4.10 IDAPA PM Standard Applicability (IDAPA 58.01.01.677)

The process water heater provides a direct source of heat to warm process water to be mixed with the concrete, and therefore is not "fuel burning equipment" as defined in IDAPA 58.01.01.006. The grain loading standard for fuel burning equipment with a maximum rated input input less than 10 MMBtu does not apply to this heater.

4.11 Permit Conditions Review

This section describes only those permit conditions (PC) that have been added, revised, modified or deleted as a result of this permitting action. All other permit conditions remain unchanged.

Section 1. Permit to Construct Scope

Revised PCs 1.1 through 1.4. Describe the processes, the emission sources, and the emission controls to be used at this portable truck-mix concrete batch plant with a standby generator. Revised this section to reflect the replacement of the 230 kW diesel generator with a 2007 model year 309 diesel generator. Demonstration of compliance with NAAQS and TAP requirements were based on emissions estimated using this information.

Section 2. Concrete Batch Plant

Combined existing Section 2, "Statewide Requirements" and Section 3, "Attainment or Unclassifiable Area Requirements when not Collocated" into Revised Section 2, "Concrete Batch Plant."

New PC 2.1 provides a general description of the concrete batch plant facility. This PC is not federally enforceable.

New PC 2.2 describes the concrete batch plant equipment. This information was used to estimate facility emissions.

PC 2.3, the opacity limit, contains the same requirement as existing PC 2.1.

New PC 2.4.1 and 2.4.2 impose daily and annual concrete production limits based on the setback available at the plant location. These values were developed based on generic modeling conducted by DEQ. The generic modeling analysis is included in Appendix C to the statement of basis. These new PCs replace existing PC 3.1, which allowed unlimited daily and annual concrete production.

PC 2.5.1 is the same as existing PC 2.3, except that it has been revised to update the requirements for the O&M manual, clarifies that the facility must be operated in compliance with the O&M manual, and incorporates O&M manual operation and monitoring requirements by reference as enforceable permit conditions.

Existing PC 2.10, the requirement to submit the O&M manual to the IFRO, was deleted based on feedback received from the Idaho Falls Regional Office.

New PC 2.6 requires implementing fugitive dust control strategies based on specific observations.

PC 2.7, reasonable control of fugitive emissions, is the same as existing PC 2.2.

Existing PC 2.4 and 2.5 were deleted, which required monitoring the pressure drop across the silo baghouse. DEQ has determined that pressure drop monitoring is not an effective means for demonstrating compliance for these emissions. Pressure drop monitoring has been replaced by monthly inspections of the baghouse (required in the O&M manual), and a daily see/no see check on the baghouse stack.

PC 2.8, operations monitoring, is the existing PC 2.6 revised to include monitoring the annual concrete production as well as the daily and monthly production. Monitoring and recording of the silo baghouse pressure drop has been deleted.

New PC 2.9 was added to require monitoring and recording of the available setback.

New PC 2.10 was added to require a daily see/no see check for visible emissions from any stack associated with the concrete plant.

PC 2.11 is the existing PC 2.7, revised to require a daily check on sources of fugitive emissions, rather than a monthly check. The facility must now also record any instances when fugitive dust control strategies have been triggered.

Deleted existing Section 5, "Nonattainment Area Requirements." Introduction of this concrete batch facility into an area that is in nonattainment for $PM_{2.5}$ or PM_{10} would cause or significantly contribute to a violation of air quality standards.

New PC 2.12 prohibits operations in any PM2.5 or PM10 nonattainment area.

Deleted existing Section 4, "Attainment or Unclassifiable Area Requirements when Collocated." DEQ has determined that collocation of these portable facilities may cause or significantly contribute to a violation of air quality standards.

Added New PC 2.13.1, which prohibits collocation, and new PC 2.13.2, which defines collocation as operating within 200 meters of another facility emissions source.

PC 2.14 is existing PC 2.9, relocation, updated to reflect current standard language and the requirement to show the setback distance on the PERF.

Section 3. Generator

New PC 3.1 provides a general description of the generator use. This PC is not federally enforceable.

New PC 3.2 describes the generator equipment. This information was used to estimate facility emissions.

New PC 3.3 contains the Nonroad Diesel Program Tier 3 emission standards for this 2007 model 309 kW generator. The emissions inventory for this generator was developed using these emission factors.

PC 3.4.1 is existing PC 2.1, the IDAPA 20% opacity limit for emissions from any stack or vent.

New PC 3.4.2 is the Nonroad Diesel Program and NSPS Subpart IIII opacity limit applicable to this generator.

PC 3.5 replaces existing PC 3.3, which allowed unlimited daily and annual hours of operation for the old generator. Daily generator operations are still unlimited. Annual operating hours have been limited to 7,285 hours in any consecutive 12-calendar month period so that compliance with TAPs standards could be demonstrated without conducting modeling for this project.

New PC 3.6 describes applicable requirements under the Nonroad Diesel Program for periods when this generator is operated as a nonroad engine.

New PC 3.7 describes applicable requirements from NSPS Subpart IIII for periods when this generator is not operated as a nonroad engine, i.e., is a "stationary" source.

New PC 3.8 requires monitoring and recordkeeping of fuel oil sulfur content, cetane index or aromatic content to demonstrate compliance with Nonroad Diesel Program and NSPS Subpart IIII requirements.

PC 3.9 is existing PC 2.8, revised to require annual monitoring of generator hours as well as daily and monthly monitoring. The requirement to keep the most recent two years of records on site was deleted. General Provision 7 requires maintaining these records for five years.

New PC 3.10 requires monitoring and recording corrective actions taken if the backpressure monitor (if present) has alarmed.

Existing Section 4, Attainment or Unclassifiable Area Requirements when Collocated, and **Section 5**, Nonattainment Area Requirements, were deleted. In the five years since the initial permit was issued for this facility, DEQ has developed additional information regarding concrete batch plants. The permit conditions for this facility have been updated to include this additional information, and to reflect the setback distances necessary to demonstrate compliance with the NAAQS and Idaho toxic air pollutant standards. The modeling results for the "generic" plant also demonstrated that a concrete batch plant would cause or significantly contribute to a violation of the NAAQS if the facility is relocated into a PM_{10} nonattainment area (i.e., the PM_{10} contribution would exceed 5 $\mu g/m^3$ in a 24-hour period and would exceed 1 $\mu g/m^3$ when averaged over annual operations). Operating this facility in a nonattainment is therefore not allowable without additional analysis.

Section 4. General Provisions

This section has been updated to incorporate the current PTC General Provisions.

5. PERMIT FEES

Table 5.1 lists the processing fee associated with this permitting action. The facility is subject to a processing fee of $1,000 because the increase in its permitted emissions is less than one ton per year. Refer to the chronology for fee receipt dates.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X		-26.74	-26.74
SO_2		-2.14	-2.14
CO	1.27		1.27
PM_{10}		-2.13	-2.13
VOC	1.11		1.11
HAPS	7.7E-03		7.7E-03
Total:	**2.39**	**-31.01**	**-28.6**
Fee Due	**$ 1,000.00**		

6. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided from April 11, 2008 through April 25, 2008 in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and no requests for a public comment period on DEQ's proposed action.

APPENDIX A – AIRS INFORMATION

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Permittee/Facility Name:	**Walters Ready Mix, LLC**
Facility Location:	**Portable**
AIRS Number:	**777-00328**

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U
NO_x	B		B					U
CO	B		B					U
PM_{10}	B		B					U
PT (Particulate)	B		B					U
VOC	B							U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					
			IIII					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, **or** each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B – Emissions Inventory

Facility: Walters Ready Mix Permit/Facility ID: P-2008.0047 777-00328 5/8/2008 10:13

DEQ WORKSHEET: Electrical Generator < 600 hp (447 kW) AP-42 Section 3.3 (diesel fueled): Increase in Generator Rating from 230 kW to 309 kW (+79 kW), 2007 model year

1 hp = 0.7457 kW Avg BSFC = 7000 Btu/hp-hr
1 lb = 453.5924 g 1 kW = 3415.179 Btu/hr
Nonroad Diesel 0.50% S pre-2007 0.05% Sulfur after June 2007[f]

Electrical Generator < 600 hp (447 kW) AP-42 Section 3.3 (diesel fueled)			
		Fuel Type(s)	Fuel Toggle
Generator Make/Model	Make/Model	#2 Fuel Oil (Diesel)	1
	xxx kW	Gasoline	0
EF OPTIONS: Use EFs in lb/hp-hr	0	Use EFs in lb/MMBtu fuel input	1
1) Input Rated Capacity, kW	79	Calculated Max Fuel Use Rate, gal/hr	5.41
Spreadsheet conversion from kW to hp	106	Fuel Heating Value, Btu/gal	137,030
OR 2) Input Rated Capacity, hp		Calculated Fuel Input MMBtu/hr	0.74
Max Operational Hours/Day	0	Max Operational Hours/Day	24
Max Operational Hours per Year (Proposed Limit)	0	Max Operational Hours/Year	7,825

CHANGE IN CRITERIA POLLUTANT EMISSIONS

Power Rating:	230	kW	309	kW	
Calculated Fuel Input:	2.16	MMBtu/hr	2.90	MMBtu/hr	

Pollutant	P-030516 Attainment Permitted		NSPS Subpart IIII	Emissions	
	(lb/hr)	(T/yr)	g/kW-hr	(lb/hr)	(T/yr)
PM/PM10[d]	0.68	2.97	0.2	0.14	0.53
CO	2.06	9.02	3.5	2.38	9.33
NOx[d]	9.56	41.87	4.0	2.72	10.66
			AP-42		
			(lb/MMBtu)		
SO2[f]	0.63	2.77	0.029	0.08	0.33
TOC	0.76	3.34	0.36	1.04	4.09

Pollutant	Emission Factor[a] (lb/MMBtu)	Change in Emissions (lb/hr)	Change in Emissions (T/yr)	DEQ Modeling Threshold	Modeling Required?
PM (total)[b]		-0.54	-2.13		
PM-10 (total)[b]		-0.54	-2.13	0.2 lb/hr, 1 TPY	No
P.M.-2.5					
CO[b]		0.32	1.27	14 lb/hr	No
NOx[b]		-6.84	-26.74	1 TPY	No
SO_2[b] (total SOx presumed SO2)		-0.55	-2.14	0.2 lb/hr, 1 TPY	No
VOC[b] (total TOC--> VOCs)		0.28	1.11		
Lead				100 lb/mo, 0.6 TPY	n/a
HCl[e]					
Dioxins[c]					
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[c]					
2,3,7,8-TCDF					
Total TCDF[c]					
1,2,3,7,8-PeCDF					
2,3,4,7,8-PeCDF					
Total PeCDF[c]	ANNUAL LB/HR = Emission Factor (lb/MMBtu) x				
1,2,3,4,7,8-HxCDF	(2.90 MMBtu/hr x 7825 hr - 2.16 MMBtu/hr x 8760 hr) x				
1,2,3,6,7,8-HxCDF	(1/8760 hours)				
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]				TAPS Screening Emission Limit (lb/hr)	Increase in TAPS Exceeds EL?
Non-PAH HAPs					
Acetaldehyde[c]	7.67E-04	3.31E-04	1.45E-03	3.00E-03	No
Acrolein[c]	9.25E-05	6.86E-05	2.68E-04	0.017	No
Benzene[c,e]	9.33E-04	4.03E-04	1.77E-03	8.00E-04	No
1,3-Butadiene[c,e]	3.91E-05	1.69E-05	7.40E-05		
Ethylbenzene[e]				29	
Formaldehyde[c,e]	1.18E-03	5.10E-04	2.23E-03	5.10E-04	No
Hexane[e]				12	
Isooctane					
Methyl Ethyl Ketone[e]				39.3	
Pentane[e]				118	
Propionaldehyde[e]				0.0287	
Quinone[e]				0.027	
Methyl chloroform[e]				127	
Toluene[c,e]	4.09E-04	3.03E-04	1.19E-03	25	No
Xylene[c,e]	2.85E-04	2.11E-04	8.27E-04	29	No
TOTAL PAH HAPs (lb/hr) =		**1.66E-03**			
TOTAL Federal HAPs (lb/hr)=		**1.97E-03**			
TOTAL Federal HAPs (T/yr)=		**7.70E-03**			

Pollutant	Emission Factor[a] (lb/MMBtu)	Change in Emissions (lb/hr)	Change in Emissions (T/yr)	TAPS Screening Emission Limit (lb/hr)	Increase in TAPS Exceeds EL?
PAH HAPs					
2-Methylnaphthalene					
3-Methylchloranthrene[e]				2.50E-06	No
Acenaphthene[c]	1.42E-06	1.05E-06	4.12E-06		
Acenaphthylene[c]	5.06E-06	3.75E-06	1.47E-05		
Anthracene[c]	1.87E-06	1.39E-06	5.43E-06		
Benzo(a)anthracene[c]	1.68E-06	7.26E-07	3.18E-06		See POM
Benzo(a)pyrene[c,e]	1.88E-07	8.12E-08	3.56E-07	2.00E-06	See POM
Benzo(b)fluoranthene[c]	9.91E-08	4.28E-08	1.88E-07		See POM
Benzo(e)pyrene					
Benzo(g,h,i)perylene[c]	4.89E-07	3.63E-07	1.42E-06		
Benzo(k)fluoranthene[c]	1.55E-07	6.70E-08	2.93E-07		See POM
Chrysene[c]	3.53E-07	1.52E-07	6.68E-07		See POM
Dibenzo(a,h)anthracene[c]	5.83E-07	2.52E-07	1.10E-06		See POM
Dichlorobenzene					
Fluoranthene[c]	7.61E-06	5.64E-06	2.21E-05		
Fluorene[c]	2.92E-05	2.17E-05	8.47E-05		
Indeno(1,2,3-cd)pyrene[c]	3.75E-07	1.62E-07	7.10E-07		See POM
Naphthalene[c,e]	8.48E-05	6.29E-05	2.46E-04	3.33	No
Perylene					
Phenanthrene[c]	2.94E-05	2.18E-05	8.53E-05		
Pyrene[c]	4.78E-06	3.54E-06	1.39E-05		
PolycyclicOrganicMatter[d,e]		1.48E-06	6.50E-06	2.00E-06	No
Non-HAP Organic Compounds					
Acetone[e]					
Benzaldehyde					
Butane					
Butyraldehyde					
Crotonaldehyde[e]					
Ethylene					
Heptane					
Hexanal					
Isovaleraldehyde					
2-Methyl-1-pentene					
2-Methyl-2-butene					
3-Methylpentane					
1-Pentene					
n-Pentane					
Valeraldehyde					
Metals					
Antimony[e]					
Arsenic[e]					
Barium[e]					
Beryllium[e]					
Cadmium[e]					
Chromium[e]					
Cobalt[e]					
Copper[e]					
Hexavalent Chromium[e]					
Manganese[e]					
Mercury[e]					
Molybdenum[e]					
Nickel[e]					
Phosphorus[e]					
Silver[e]					
Selenium[e]					
Thallium[e]					
Vanadium[e]					
Zinc[e]					

a) Emission factors are from AP-42
b) AP-42, Table 3.3-1, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines, 10/96
c) AP-42, Table 3.3-2, Speciated Organic Compoun Emission Factors for Uncontrolled Diesel Engine, Emission Factor Rating E, 10/96
d) NSPS Subpart IIII PM emission factor presumed to be the same for PM10. NOx emissions are estimated using the Subpart IIII emission factor for NMHC + NOx
e) IDAPA Toxic Air Pollutant
f) AP-42 emission factor presumed to represent #2 diesel at 0.5% sulfur content. Federal rules require max 500 ppm (0.05%) in off road diesel after June 2007 (40 CFR 80.510).

Pollutants shown in bold text are carcinogens subject to an annual standard. These lb/hr values are annual averages.

Title 40: Protection of Environment
PART 89—CONTROL OF EMISSIONS FROM NEW AND IN-USE NONROAD COMPRESSION-IGNITION ENGINES
Subpart B—Emission Standards and Certification Provisions

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§ 89.112 Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards.

(a) Exhaust emission from nonroad engines to which this subpart is applicable shall not exceed the applicable exhaust emission standards contained in Table 1, as follows:

Table 1.—Emission Standards (g/kW-hr)

Rated Power (kW)	Tier	Model Year[1]	NOx	HC	NMHC + NOx	CO	PM
kW<8	Tier 1	2000	—	—	10.5	8.0	1.0
	Tier 2	2005	—	—	7.5	8.0	0.80
8≤kW<19	Tier 1	2000	—	—	9.5	6.6	0.80
	Tier 2	2005	—	—	7.5	6.6	0.80
19≤kW<37	Tier 1	1999	—	—	9.5	5.5	0.80
	Tier 2	2004	—	—	7.5	5.5	0.60
37≤kW<75	Tier 1	1998	9.2	—	—	—	—
	Tier 2	2004	—	—	7.5	5.0	0.40
	Tier 3	2008	—	—	4.7	5.0	
75≤kW<130	Tier 1	1997	9.2	—	—	—	—
	Tier 2	2003	—	—	6.6	5.0	0.30
	Tier 3	2007	—	—	4.0	5.0	
130≤kW<225	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2003	—	—	6.6	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
225≤kW<450	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2001	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
450≤kW≤560	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2002	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
kW>560	Tier 1	2000	9.2	1.3	—	11.4	0.54
	Tier 2	2006	—	—	6.4	3.5	0.20

Model Year 2007, 309 kW

[1] The model years listed indicate the model years for which the specified tier of standards take effect.

Process Water Heater Emissions Inventory

NATURAL GAS COMBUSTION, AP-42 SECTION 1.4 (7/98) — 11/20/2007 13:10

	2.8 MMBtu/hr /	1,020 MMBtu/MMscf =	2.75E-03 MMscf/hr	By: Cheryl A. Robinson, P.E.	
Operating Assumptions: Criteria Emissions:		24 hr/day	8,760 hr/yr	Idaho DEQ/AQ Staff Engineer	
Uncontrolled TAPs Emissions are based on		24 hr/day	8,760 hr/yr	for Valley Ready Mix, INL site	

Criteria Air Pollutants	Emission Factor	Emissions		Air Rules Section 006 Significant Emission Rates		Less than 10% of Significant?
	lb/MMscf	lb/hr	T/yr			
NOx	100	2.75E-01	1.20E+00	40	T/yr	yes
CO	84	2.31E-01	1.01E+00	100	T/yr	yes
PM10	7.6	2.09E-02	9.14E-02	15	T/yr	yes
SO2	0.6	1.65E-03	7.21E-03	40	T/yr	yes
VOC	5.5	1.51E-02	6.61E-02	40	T/yr	yes
Lead	0.0005	1.37E-06	6.01E-06	0.6	T/yr	yes
Lead, continued			3.01E-03	lb/quarter		yes = Meets Cat I BRC Exemption
		TOTAL	2.38 T/yr			

Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs) - Uncontrolled Emission Rates (See Air Rules Section 210)

	lb/MMscf	lb/hr	EL (lb/hr)	Exceeds EL?	Idaho TAP?	Emissions < 10% of EL?	Emissions < EL?
PAH HAPs							
2-Methylnaphthalene	2.4E-05	6.59E-08					
3-Methylchloranthrene	1.8E-06	4.94E-09	2.50E-06	no	Y	yes	
Acenaphthene	1.8E-06	4.94E-09					
Acenaphthylene	1.8E-06	4.94E-09					
Anthracene	2.4E-06	6.59E-09					
Benzo(a)anthracene	1.8E-06	4.94E-09		See POM	Y		
Benzo(a)pyrene	1.2E-06	3.29E-09	2.00E-06	See POM	Y		
Benzo(b)fluoranthene	1.8E-06	4.94E-09					
Benzo(g,h,i)perylene	1.2E-06	3.29E-09		See POM	Y		
Benzo(k)fluoranthene	1.8E-06	4.94E-09		See POM	Y		
Chrysene	1.8E-06	4.94E-09		See POM	Y		
Dibenzo(a,h)anthracene	1.2E-06	3.29E-09		See POM	Y		
Dichlorobenzene	1.2E-03	3.29E-06					
Fluoranthene	3.0E-06	8.24E-09					
Fluorene	2.8E-06	7.69E-09					
Indeno(1,2,3-cd)pyrene	1.8E-06	4.94E-09		See POM	Y		
Naphthalene	6.1E-04	1.67E-06	3.33	no	Y	yes	
Phenanathrene	1.7E-05	4.67E-08					
Pyrene	5.0E-06	1.37E-08					
Polycyclic Organic Matter (POM) 7-PAH Group		3.13E-08	2.00E-06	no	Y	yes	
Non-PAH HAPs							
Benzene	2.1E-03	5.76E-06	8.00E-04	no	Y	yes	
Formaldehyde	7.5E-02	2.06E-04	5.10E-04	no	Y	NO	yes
Hexane	1.8E+00	4.94E-03	12	no	Y	yes	
Toluene	3.4E-03	9.33E-06	25	no	Y	yes	
Non-HAP Organic Compounds							
7,12-Dimethylbenz(a)anthracene	1.6E-05	4.39E-08					
Butane	2.1E+00	5.76E-03					
Ethane	3.1E+00	8.51E-03					
Pentane	2.6E+00	7.14E-03	110	no	Y	yes	
Propane	1.6E+00	4.39E-03					
Metals (HAPs)							
Arsenic	2.0E-04	5.49E-07	1.5E-06	no	Y	NO	yes
Barium	4.4E-03	1.21E-05	0.033	no	Y	yes	
Beryllium	1.2E-05	3.29E-08	2.8E-06	no	Y	yes	
Cadmium	1.1E-03	3.02E-06	3.7E-06	no	Y	NO	yes
Chromium	1.4E-03	3.84E-06	0.033	no	Y	yes	
Cobalt	8.4E-05	2.31E-07	0.0033	no	Y	yes	
Copper	8.5E-04	2.33E-06	0.013	no	Y	yes	
Manganese	3.8E-04	1.04E-06	0.067	no	Y	yes	
Mercury	2.6E-04	7.14E-07	0.003	no	Y	yes	
Molybdenum	1.1E-03	3.02E-06	0.333	no	Y	yes	
Nickel	2.1E-03	5.76E-06	2.7E-05	no	Y	NO	yes
Selenium	2.4E-05	6.59E-08	0.013	no	Y	yes	
Vanadium	2.3E-03	6.31E-06	0.003	no	Y	yes	
Zinc	2.9E-02	7.96E-05	0.667	no	Y	yes	
				yes = Meets TAPs BRC Exemption		yes = Meets TAPs Level I Exemption	

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

CONCLUSION: A 2.8 MMBtu/hr propane-fired water heater operated for unlimited hours in any consecutive 12-month period meets IDAPA 58.01.01.220 - 223 requirements for a Category I (BRC), TAPs Level I exemption from PTC reqmt's.

RECORDKEEPING AND REPORTING REQUIRED. In accordance with IDAPA 58.01.01.223.05: Commencing on May 1, 1996, and annually thereafter, the owner or operator of a source claiming a Level I, II, or III exemption shall submit a certified report for the previous calendar year to DEQ for each Level I, II, or III exemption determination. The report shall be labeled "Toxic Air Pollutant Exemption Report" and shall state the date construction has or will commence and shall include copies of all exemption determinations completed by the owner or operator for each Level I, II, and III exemption.

Appendix C – Modeling Analysis

MEMORANDUM

DATE: September 18, 2007

Prepared by: Cheryl Robinson, P.E., Staff Engineer/Permit Writer, Air Quality Division

Reviewed by: Kevin Schilling, Modeling Coordinator, Air Quality Division

SUBJECT: Portable Concrete Batch Plants – Generic Modeling Results for Typical Plant

1. Summary

Most ready-mix concrete batch plants share many characteristics with each other such as equipment design, fugitive dust control practices, emissions quantities for a given processing rate, general facility layout, and emission release parameters. These shared characteristics allow the development of generic methods to assess the air quality impact of these batch plants. The appropriateness of using generic methods is particularly justifiable for ready-mix concrete batch plants because most are permitted as portable sources, and specific equipment configurations will change somewhat from site to site.

1.1 Generic Modeling Applicability

Use of this generic method to demonstrate preconstruction compliance with National Ambient Air Quality Standards (NAAQS) and Idaho toxic air pollutant (TAP) rules from operation of concrete batch plants is designed to generate reasonably conservative results, and may not be applicable to all batch plants.

The key criteria for determining the applicability of the generic modeling results are summarized in Table 1. In cases where the proposed operations differ from these assumptions (e.g., stack heights are lower, or emissions controls do not meet the minimum criteria), the applicant shall provide additional explanation in their modeling protocol to justify use of the generic modeling results. This information, along with DEQ's approval of the modeling protocol shall be included in the statement of basis for the permit.

The appropriateness of this method to specific conditions will be made on a case-by-case basis considering the following:

- Equipment used at the batch plant, especially considering the type and effectiveness of emissions control equipment and practices.
- Proposed location for the facility, considering the presence of any sensitive receptors near the property boundary and the distance from pollutant emitting equipment to the property boundary.
- The presence of other pollutant emitting activities occurring at the site, including collocation with another concrete batch plant, rock crushing equipment and/or hot mix asphalt plants.

Table 1. CRITERIA FOR USING DEQ's CONCRETE BATCH PLANT GENERIC MODELING RESULTS FOR AIR IMPACT ANALYSES

Parameter	DEQ Generic Modeling Assumptions			
Concrete batch plant type and capacity	Truck mix (redi-mix or dry mix) or Central mix Maximum 300 cy per hour capacity			
Operation in any PM_{10} nonattainment area	Not proposed.			
Presence of an electric generator.	No generator. Line power is available.			
No Collocation. Minimum distance from nearest edge of any emissions source to any other source of emissions, including another concrete batch plant, hot mix asphalt plant, or rock crushing plant.	200 meters (656 feet)			
Number of cement and/or cement supplement storage silos	Not limited. The model layout assumes all silo emissions are from the same point, and that cement/supplement is not transferred between storage silos.			
Maximum daily concrete production (cy/day)	1,500	2,400	3,600	4,800
Minimum Setback Distance. Minimum distance from nearest edge of any emissions source to any area outside of a building where the general public has access.[a]	**40 m (131 ft)**	**60 m (197 ft)**	**100 m (328 ft)**	**150 m (492 ft)**
Maximum annual concrete production (cy/year)	300,000	400,000	500,000	500,000
Cement and supplement storage silo baghouse(s) Minimum stack height (height above ground) Minimum PM/PM_{10} control	10 meters (32.8 ft) 99%			
Weigh hopper loading baghouse, or equivalent Minimum stack height (height above ground) Minimum PM/PM_{10} control	10 meters (32.8 ft) 99%			
Truck-mix loadout or Central Mix loading. Minimum PM/PM_{10} control.	95% Boot enclosure, shroud, water sprays, or baghouse/cartridge filter			
Transfer Point Fugitives. Minimum PM/PM_{10} control.	75% Water sprays, enclosures, shrouds, or aggregate/sand is damp on an as-received basis and used before significantly drying out.			

[a] The general public will be considered to have access to any facility area that is not fenced, posted with no trespassing signs and regularly patrolled or observable by facility staff during plant operations, or separated from the facility by a natural barrier such as a steep cliff. This distance shall be measured from the nearest edge of any storage pile, silo, weigh batcher, transfer point, or conveyor associated with this concrete batch plant.

1.2 Applicable Permit Conditions

The following permit conditions should be included in any permit using the generic modeling to demonstrate preconstruction compliance with NAAQS and TAPs:

- A prohibition on operating this plant in any PM_{10} nonattainment area. IDAPA 58.01.01.006 defines a PM_{10} impact increase of 5 µg/m3 (24-hour average) or 1 µg/m3 (annual average) as a "significant contribution." The predicted ambient impacts for each of the modeled daily and annual production rates exceed these thresholds.
- Daily concrete production limits based on the setback distance available that day. The setback for each modeled daily production rate is defined by the minimum distance needed to meet the 24-hour PM_{10} NAAQS standard.

- Annual concrete production limits based on the setback distance available at any location. Preconstruction compliance with state TAPs rules was demonstrated using controlled TAPs emissions, so per IDAPA 58.01.01.210.08, an emission limit must be imposed. The production limit inherently limits the TAPs emissions, so a pollutant-specific lb/yr limit is not needed.
- O & M manual and operational requirements that will ensure that a high level of control is consistently achieved and maintained for baghouse/cartridge filters and for control of fugitive emissions from material transfer points.

2. 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 concrete batch plant is a portable facility that may operate in any attainment or unclassifiable area anywhere in the State of Idaho.

2.1.2 Significant and Full Impact Analyses

If estimated maximum criteria pollutant impacts to ambient air from the emissions sources at this facility exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006, then a full impact analysis is necessary to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions 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 National Ambient Air Quality Standards (NAAQS) listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

The generic modeling does not currently include emissions from any generators (line power is required to be available), so PM10 and lead are the only criteria pollutants emitted by this facility.

Table 2. CRITERIA AIR POLLUTANTS APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	Annual	1.0	50[f]	Maximum 1st highest[g]
	24-hour	5.0	150[h]	Maximum 6th highest[i]
Carbon Monoxide (CO)	8-hour	500	10,000[j]	Maximum 2nd highest[g]
	1-hour	2,000	40,000[j]	Maximum 2nd highest[g]
Sulfur Dioxide (SO_2)	Annual	1.0	80[f]	Maximum 1st highest[g]
	24-hour	5	365[j]	Maximum 2nd highest[g]
	3-hour	25	1,300[j]	Maximum 2nd highest[g]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[f]	Maximum 1st highest[g]
Lead	Quarterly	NA	1.5[h]	Maximum 1st highest[g]

[a] IDAPA 58.01.01.006
[b] Micrograms per cubic meter
[c] IDAPA 58.01.01.577 for criteria pollutants
[d] The maximum 1st highest modeled value is always used for significant impact analysis
[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[f] Never expected to be exceeded in any calendar year
[g] Concentration at any modeled receptor
[h] Never expected to be exceeded more than once in any calendar year
[i] Concentration at any modeled receptor when using five years of meteorological data
[j] Not to be exceeded more than once per year

2.1.3 Toxic Air Pollutant Analyses

Toxic Air Pollutant (TAP) requirements for PTCs are specified in IDAPA 58.01.01.210. If the increase associated with a new source or modification exceeds screening emission levels (ELs) contained in IDAPA 58.01.01.585 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 listed in IDAPA 58.01.01.585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) listed in IDAPA 58.01.01.586, then compliance with TAP requirements has been demonstrated.

2.2 Background Concentrations

Ambient background concentrations 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 used in these analyses are listed in Table 3. These are the default rural/agricultural background concentrations, which were used because concrete batch plants are typically located outside of urban areas.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration (µg/m3)[a]
PM_{10}[b]	24-hour	73
	annual	26
Carbon monoxide (CO)	1-hour	3,600
	8-hour	2,300
Sulfur dioxide (SO2)	3-hour	34
	24-hour	26
	Annual	8
Nitrogen dioxide (NO2)	Annual	17

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

3. Modeling Impact Assessment

3.1 Modeling Methodology

3.1.1 Model Selection and Key Parameters

Atmospheric dispersion modeling was used to evaluate the air quality impacts from point sources and process fugitive sources. Table 4 provides a summary of the model selection and modeling parameters used in the modeling analyses.

Table 4. MODELING PARAMETERS

Parameter	Description/ Values	Documentation/Additional Description
Model	AERMOD, Version 04300	The Gaussian dispersion model AMS/EPA Regulatory Model (AERMOD) was run for a single case (3,600 cy/day, 500,000 cy/year, with a 100-meter ambient air boundary). This case was used to demonstrate that ambient impacts predicted using AERMOD are lower than impacts predicted using ISCST3 for the same emission points and parameters. This is consistent with results reported by the EPA, which found that AERMOD typically predicted lower concentrations than ISCST3 for rural, low-level stacks; and short term urban, low-level stacks.[2]

[1] Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.
[2] U.S. EPA, Comparison of Regulatory Design Concentrations, AERMOD vs. ISCST3, CTDMPLUS, ISC-PRIME, Staff Report, EPA-454/R-03-002, June 2003 (see page 29).

Table 4. MODELING PARAMETERS		
Parameter	**Description/ Values**	**Documentation/Additional Description**
Model	ISCST3, Version 02035	Due to DEQ schedule and resource constraints, and because ISCST3 results are generally higher (conservative) than AERMOD for these types of near-field analyses, DEQ determined that the Industrial Source Complex Short Term (ISCST3), air dispersion model was acceptable at this time for predicting ambient impacts for all cases.
Meteorolog-ical data	Surface Data & Upper Air Data Boise, Idaho 1988-1992 (AERMOD) 1987-1991 (ISCST3)	Previous DEQ analyses showed that using Boise meteorological data generated the highest modeled values at typical concrete batch plant "fenceline" distances, in part because of the well-defined prevailing wind direction at the Boise monitoring location. For the AERMOD run, AERMET pulled the station anemometer height of 6.1 meters directly from the met data files. For the ISCST3 runs, the station anemometer height of 6.1 meters was used.
Land Use (urban or rural)	Rural	Urban area surface heating was not used in this analysis based on typical land use at concrete batch plant locations.
Terrain	Flat/Level	Flat (level) terrain was used because the results must be reasonably applicable to all locations for this portable facility. Maximum impacts from near ground-level emissions sources, such as those at typical concrete batch plants, are very near the emissions source. This assumption was deemed to be appropriate and is not a substantial limitation of this method.
Building downwash	Considered	To account for plume downwash effects from any buildings present, or equipment that may cause downwash, a 20-meter square building, 10 meters tall and positioned at the center of the plant layout, was used as a representation of structures associated with this concrete batch plant. For ISCST3, the building profile input program (BPIP) was used. The PRIME algorithm was not used because building cavity effects are not expected to be significant.
Receptor grid	Grid 1	10-meter spacing along a"fenceline" described by a circle with a radius of 40, 60, 100, or 150 meters.
	Grid 2	25-meter spacing for distances between the "fenceline" and 200 meters.
	Grid 3	50 meter spacing for distances between 200 meters and 500 meters.

3.1.2 Facility Layout and Ambient Air Boundary ("Fenceline")

Portable concrete batch plants are somewhat unique compared to other stationary sources in that the equipment layout may change at each new location. Because of this, a generic approach that reflects a typical batch plant layout is appropriate. The layout used for the modeling is shown in Figure 3-1.

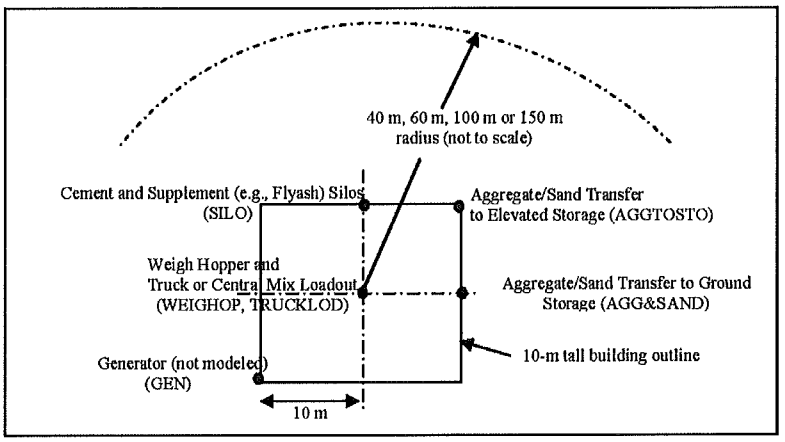

Figure 3-1. TYPICAL CONCRETE BATCH PLANT MODELING LAYOUT

For the generic modeling, the ambient air boundary or "fenceline" was taken to be along the perimeter of a circle with a radius of 40, 60, 100, and 150 meters from the center of a 20 meter by 20 meter "typical" plant layout shown in Figure 3-1. The boundaries of the 10-meter tall building added to the model to account for plume downwash effects are also defined by this 20 meter by 20 meter square.

3.1.3 Emissions Release Parameters

Emissions from the handling of aggregate/sand and tuck loading were each modeled as volume sources. Table 5 provides parameters used for modeling these sources as well as point source parameters.

Emissions from the handling of aggregate and sand to ground storage and from ground storage to a ground-level conveyor were modeled together as a volume source in a 20-meter square area at the center of the plant. A 2-meter release height was used to represent the average transfer height. Emissions from conveyor transfer to elevated storage were modeled as an elevated volume source on the 20-meter square building, using a 5-meter release height.

Standard modeling guidance for volume sources on or adjacent to structures suggests setting initial dispersion coefficients as follows:

$$\sigma_{y0} = \text{horizontal dimension} / 4.3$$
$$\sigma_{z0} = \text{vertical dimension} / 2.15$$

Miscellaneous ground-level aggregate and sand handling was assumed to occur from activities in a 20-meter square area. Standard modeling guidance for volume sources not on or adjacent to structures suggests setting initial dispersion coefficients as follows:

$$\sigma_{y0} = \text{horizontal dimension} / 4.3$$
$$\sigma_{z0} = \text{vertical dimension} / 4.3$$

Point sources were conservatively modeled in the generic analyses assuming a horizontal release or a rain-capped stack. A stack gas exit velocity of 0.001 meters per second was used to eliminate momentum-induced plume rise, which would only occur from an uninterrupted vertical release.

Table 5. EMISSIONS RELEASE PARAMETERS FOR SOURCES

Point Sources						
Source	**UTM Coord. (m)**		**Stack Height (m)[a]**	**Stack Gas Temp. (K)[b]**	**Stack Dia. (m)**	**Flow Rate (m/sec)[c]**
	Easting	**Northing**				
Silo baghouse(s) stack	0	10	10	0, 298.15[d]	1.0	0.001[e]
Weigh hopper baghouse stack	0	0	10	0, 298.15[d]	1.0	0.001[e]
Volume Sources						
Source	**UTM Coord. (m)**		**Release Height (m)**	**Initial Horizontal Coefficient σ_{y0} (m)**	**Initial Vertical Coefficient σ_{z0} (m)**	
	Easting	**Northing**				
Aggregate/sand transfers at ground level	10	10	2	4.65	0.70	
Aggregate/sand transfers at elevated level	10	0	5	4.65	4.65	
Truck loading	0	0	5	4.65	4.65	

[a] Meters
[b] Kelvin
[c] Meters per second
[d] When a value of 0 K is used, the AERMOD model uses the ambient air temperature. This value was set to 77 degrees Fahrenheit (298.15 K) for the ISCST3 runs. This is not expected to result in a measurable difference in the ambient impact results.
[e] Set to 0.001 m/sec for a horizontal release or release from a rain-capped vertical stack.

3.1.4 Wind Speed Adjustments for Fugitive Emissions

The dispersion model AERMOD has an option by which emissions can be varied as a function of wind speed. There are six wind speed categories, and adjustment factors can be assigned for each category. Emissions for each hour modeled are calculated by multiplying the base rate by the appropriate adjustment factor, as determined by the wind speed specified for the hour within the meteorological data file.

For the AERMOD run, base emissions rates were calculated using a wind speed of 10 miles per hour. Wind speed adjustment factors were then developed for each of the six wind speed categories corresponding to the default wind speed categories within the model. The mean wind speed of each category was calculated, and emissions associated with that mean wind speed were calculated. An adjustment factor was calculated for each wind speed category by dividing the emissions rate for that category by the base emissions rate calculated at a 10 mile per hour wind speed. Table 6 summarizes the wind speed categories and the calculated adjustment factors.

Table 6. WIND SPEED ADJUSTMENT FACTORS FOR MATERIAL HANDLING EMISSIONS

Wind Speed Category	ISCST3 Default Upper Wind Speed for Category (m/sec[a])	Median Wind Speed for Category (m/sec (mph[b]))	Emissions Rate for Category (lb/ton[c])	Adjustment Factor[d]
1	1.54	0.77 (1.72)	3.32E-4	0.101
2	3.09	2.32 (5.18)	1.39E-3	0.425
3	5.14	4.12(9.20)	2.94E-3	0.897
4	8.23	6.69 (14.95)	5.52E-3	1.69
5	10.8	9.52 (21.28)	8.73E-3	2.67
6	Not Defined	12.4[e] (27.74)	1.23E-2	3.77

[a] Meters per second
[b] Miles per hour
[c] Pounds of emissions per ton of material handled
[d] Calculated by dividing the emissions rate for the category by the emissions rate for a 10 mph wind (3.27E-3 lb/ton)
[e] An upper value wind speed of 14 m/sec was used, based on highest values observed in the meteorological files used in the modeling analyses.

3.2 Emission Rates

The emissions inventories (EIs) used for the generic modeling were based on AP-42 Section 11.12 (dated 06/06) emission factors for a truck-mix concrete batch plant. Based on AP-42 factors, estimated emissions from central mix plants would be the same, except that emissions from loadout to a central mixer are expected to be lower.

Hexavalent chromium [Cr+6 or Cr(VI)] was presumed to comprise 20% of the total chromium emissions from cement silo filling, 30% of the total chromium emissions from cement supplement (e.g., flyash) silo filling, and 21.3% of the total chromium emissions from truck loadout.

Point source emissions from the cement and flyash storage silos were presumed to be controlled by baghouses or cartridge filters with minimum capture efficiencies of 99%.

Uncontrolled fugitive emissions of PM_{10} from material transfer points were based on minimum moisture contents taken from AP-42 Table 11.12-2 of 1.77% for aggregate and 4.17% for sand. Fugitive emissions from material transfer points were assumed to be further controlled by 1) receiving sand and aggregate in a wetted condition and using the stockpile before significant drying out occurs, and/or 2) using manual water sprays or water spray bars to control fugitive emissions that reduce the uncontrolled emissions by an estimated 75%.

Fugitive emissions from truck mix loadout or central mixer loading are controlled by a boot, shroud, or water sprays that reduce the uncontrolled emissions by an estimated 95%.

Fugitive emissions resulting from vehicle traffic and wind erosion from storage piles were excluded from the analysis.

Uncontrolled emissions of TAPs from cement and flyash silo filling and truck mix loadout were based on operation of a 300 cy per hour concrete batch plant for 8,760 hours per year. Cement and flyash silo baghouses/cartridge filters were treated as process equipment, i.e., the uncontrolled TAPs emissions from these sources have been reduced by the capture efficiency associated with the baghouse/cartridge filters.

Emissions were estimated for each of the four daily and annual production combinations (described above in Table 1). The 24-hour and annual average PM_{10} emission rates for each case, and the values used for the modeled source input are summarized in Tables 6A and 6B. The emission rates used for the AERMOD analysis were developed using the equations contained in Section 11.12 of AP-42, rather than using the emission factors from Table 11.12-5, so differ slightly due to rounding or as noted in the table. A sample detailed emissions calculation worksheet is included as Attachment 1 to this memorandum.

Table 6A. EMISSIONS RATES FOR SOURCES - PM_{10}

Source	Emission Factor	Control	ISCST3 1,500 cy/day [b] 300,000 cy/yr [b]		ISCST3 2,400 cy/day 400,000 cy/yr	
	lb/cy [a]		lb/hr$_{24}$ [c]	lb/hr$_{YR}$ [c]	lb/hr$_{24}$	lb/hr$_{YR}$
Aggregate to ground	0.0031	75%	0.048	0.027	0.078	0.035
Sand to ground	0.0007	75%	0.011	0.006	0.018	0.008
Aggregate to conveyor	0.0031	75%	0.048	0.027	0.078	0.035
Sand to conveyor	0.0007	75%	0.011	0.006	0.018	0.008
AGG&SAND			**0.119**	**0.065**	**0.190**	**0.086**
Aggregate to elevated storage	0.0031	75%	0.048	0.027	0.078	0.035
Sand to elevated storage	0.0007	75%	0.011	0.006	0.018	0.008
AGGTOSTO			**0.059**	**0.033**	**0.095**	**0.043**
Cement to silo (controlled)	0.0001	--	5.22E-03	2.86E-03	8.35E-03	3.81E-03
Flyash to silo (controlled)	0.0002	--	1.12E-02	6.12E-03	1.79E-02	8.16E-03
SILO			**1.64E-02**	**8.98E-03**	**2.62E-02**	**1.20E-02**
Weigh hopper baghouse stack	0.0040	99%	2.47E-03	1.35E-03	3.95E-03	1.80E-03
WEIGHOP			**2.47E-03**	**1.35E-03**	**3.95E-03**	**1.80E-03**
Truck loadout	0.0784	95%	0.24	0.13	0.39	0.18
TRUCKLOD			**0.24**	**0.13**	**0.39**	**0.18**

[a] Pounds per cubic yard of concrete.
[b] Cubic yards of concrete per day and per year.
[c] Pounds per hour on a 24-hour average and annual average.

Table 6B. EMISSIONS RATES FOR SOURCES - PM_{10}

Source	Emission Factor	Control	AERMOD 3,600 cy/day [b]	ISCST3 3,600 cy/day	ISCST3 4,800 cy/day	AERMOD 500,000 cy/yr [b]	ISCST3 500,000 cy/yr [b]
	lb/cy [a]		lb/hr_{24}	lb/hr_{24} [c]	lb/hr_{24} [c]	lb/hr_{YR}	lb/hr_{YR}
Aggregate to ground	0.0031	75%		0.116	0.155		0.044
Sand to ground	0.0007	75%		0.026	0.035		0.010
Aggregate to conveyor	0.0031	75%		0.116	0.155		0.044
Sand to conveyor	0.0007	75%		0.026	0.035		0.010
AGG&SAND			**0.2814**	**0.285**	**0.380**	**0.1071**	**0.109**
Aggregate to elevated storage	0.0031	75%		0.116	0.155		0.044
Sand to elevated storage	0.0007	75%		0.026	0.035		0.010
AGGTOSTO			**0.1407**	**0.143**	**0.190**	**0.0535**	**0.054**
Cement to silo (controlled)	0.0001	--		1.25E-02	1.67E-02		4.76E-03
Flyash to silo (controlled)	0.0002	--		2.68E-02	3.58E-02		1.02E-02
SILO			**3.939E-02[g]**	**3.93E-02**	**5.25E-02**	**1.497E-02[g]**	**1.50E-02**
Weigh hopper baghouse stack **WEIGHOP**	0.0040	99%	**2.964E-02[h]**	**5.93E-03**	**7.90E-03**	**1.128E-02[h]**	**2.26E-03**
Truck loadout **TRUCKLOD**	0.0784	95%	**0.588**	**0.59**	**0.78**	**0.2234**	**0.22**

[a] Pounds per cubic yard of concrete.
[b] Cubic yards of concrete per day and per year.
[c] Pounds per hour on a 24-hour average and annual average.

The AERMOD analysis for a 300 cy/hr concrete batch plant demonstrated preconstruction compliance for TAPs using uncontrolled emissions and a 100-meter fenceline radius. The uncontrolled emissions, however, were estimated using an older version of AP-42 Table 11.12-8. Using AP-42 factors from the most recent 06/06 edition, uncontrolled emissions of all TAPs for a 300 cy/hr plant were below the applicable screening emission level except for arsenic, nickel, and hexavalent chromium (see page 2 of the example calculation in Attachment 1. Each of these TAPs is a carcinogen, and is subject to an annual AACC. For the ISCST3 analyses, dispersion modeling was done for the controlled emissions of each of these three TAPs. The controlled TAPs emissions used in the ISCST3 analyses are summarized in Tables 7A and 7B.

Table 7A. EMISSIONS RATES FOR SOURCES – CONTROLLED TAPs EMISSIONS

Modeling Case	ISCST3 300,000 cy/yr			ISCST3 400,000 cy/yr		
Pollutant	**Arsenic**	**Nickel**	**Cr (VI)**	**Arsenic**	**Nickel**	**Cr (VI)**
Source	lb/hr_{YR} [a]	lb/hr_{YR}	lb/hr_{YR}	lb/hr_{YR}	lb/hr_{YR}	lb/hr_{YR}
Cement delivery to silo (with baghouse)	3.56E-08	3.51E-07	4.88E-08	4.75E-08	4.69E-07	6.50E-08
Supplement delivery to silo (with baghouse)	1.25E-06	2.85E-06	4.58E-07	1.67E-06	3.80E-06	6.10E-07
SILO	**1.286E-06**	**3.004E-06**	**5.068E-07**	**1.718E-06**	**4.269E-06**	**6.75E-07**
Truck loadout: Cement and supplement delivery to silo (no controls) **TRUCKLOD**	**1.47E-06**	**5.75E-06**	**1.17E-06**	**1.96E-06**	**7.66E-06**	**1.56E-06**

[a] Pounds per hour, annual average.

Table 7B. EMISSIONS RATES FOR SOURCES – CONTROLLED TAPs EMISSIONS

Modeling Case	ISCST3 500,000 cy/yr			[Reserved]		
Pollutant	**Arsenic**	**Nickel**	**Cr (VI)**	**Arsenic**	**Nickel**	**Cr (VI)**
Source	lb/hr$_{YR}$ [a]	lb/hr$_{YR}$	lb/hr$_{YR}$	lb/hr$_{YR}$	lb/hr$_{YR}$	lb/hr$_{YR}$
Cement delivery to silo (with baghouse)	5.94E-08	5.86E-07	8.13E-08			
Supplement delivery to silo (with baghouse)	2.08E-06	4.75E-06	7.63E-07			
SILO	**2.139E-06**	**5.33E-06**	**8.443E-07**			
Truck loadout: Cement and supplement delivery to silo (no controls) **TRUCKLOD**	**2.45E-06**	**9.58E-06**	**1.95E-06**			

[a] Pounds per hour, annual average.

3.3 *Results for Significant and Full Impact Analyses*

A significant contribution analysis was not submitted for this application. Aspen submitted a full impact analysis for the proposed modification project. The results of the facility-wide modeling for criteria pollutants are shown in Table 8.

Table 8. RESULTS OF FULL IMPACT ANALYSES – PM_{10}

Pollutant	Averaging Period	Modeled Design Concentration[a] ($\mu g/m^3$)[b]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact[a] ($\mu g/m^3$)	NAAQS[c] ($\mu g/m^3$)	Percent of NAAQS
ISCST3 Case 1. Low Production:		1,500 cy/day, 300,000 cy/yr, Fenceline at radius of 40 meters				
PM_{10}[d]	24-hour	63.2	73	136.2	150	90.8% (73.2%)[e]
	Annual	11.2	26	37.2	50	74.4%
ISCST3 Case 2. Moderate Production:		2,400 cy/day, 400,000 cy/yr, Fenceline at radius of 60 meters				
PM_{10}[d]	24-hour	79.8	73	152.8	150	102% (82.1%)[e]
	Annual	10.8	26	36.8	50	73.4%
AERMOD Case 3. Moderate Production:		**3,600 cy/day, 500,000 cy/yr, Fenceline at radius of 100 meters**				
PM_{10}[d]	24-hour	53.3	73	126	150	**84.2%**
	Annual	5.53	26	31.5	50	**63.1%**
ISCST3 Case 3. Moderate Production:		**3,600 cy/day, 500,000 cy/yr, Fenceline at radius of 100 meters**				
PM_{10}[d]	24-hour	83.8	73	156.8	150	**104.5% (84.2%)[e]**
	Annual	7.91	26	33.9	50	**67.8%**
ISCST3 Case 4. High Production:		4,800 cy/day, 500,000 cy/yr, Fenceline at radius of 150 meters				
PM_{10}[d]	24-hour	73.8	73	146.8	150	97.9% (78.9%)[e]
	Annual	4.86	26	30.9	50	61.7%

[a] Maximum 6th highest value (24-hour standard) for five years of meteorological data.
[b] Micrograms per cubic meter
[c] National ambient air quality standards
[d] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[e] AERMOD results for Case 3 indicate that using the currently approved AERMOD model would result in significantly lower predicted ambient impact than the ISCST3 analysis (about 20% lower, based on Case No.3 results). The estimated ambient impact for this case had AERMOD been run instead of ISCST3 is shown in brackets. This result was deemed acceptable to demonstrate preconstruction compliance with the 24-hr PM_{10} NAAQS standard.

The results of the ISCST3 results for the controlled ambient impact for TAPs emissions are shown in Table 9.

Table 9. RESULTS OF TAPs ANALYSIS - CONTROLLED EMISSIONS				
TAP	**Averaging Period**	**Modeled Design Concentration[a] ($\mu g/m^3$)[b]**	**AACC[c] ($\mu g/m^3$)**	**Percent of AACC**
Case 1	**1,500 cy/day**	**300,000 cy/year**	**40 meters**	
Arsenic	Annual	7.51E-05	2.3E-04	32.7%
Chromium (VI)	Annual	4.54E-05	8.3E-05	54.7%
Nickel	Annual	2.67E-04	4.23E-03	6.4%
Case 2	**2,400 cy/day**	**400,000 cy/year**	**60 meters**	
Arsenic	Annual	8.79E-05	2.3E-04	38.2%
Chromium (VI)	Annual	6.10E-05	8.3E-05	73.5%
Nickel	Annual	3.12E-04	4.23E-03	7.4%
Case 3	**3,600 cy/day**	**500,000 cy/year**	**100 meters**	
Arsenic	Annual	6.78E-05	2.3E-04	29.5%
Chromium (VI)	Annual	4.63E-05	8.3E-05	55.8%
Nickel	Annual	2.38E-04	4.23E-03	5.6%
Case 4	**4,800 cy/day**	**500,000 cy/year**	**150 meters**	
Arsenic	Annual	4.38E-05	2.3E-04	39.1%
Nickel	Annual	2.98E-05	8.3E-05	35.9%
Chromium (VI)	Annual	1.53E-04	4.23E-03	3.6%

[a] Maximum 1st highest value for five years of meteorological data.
[b] Micrograms per cubic meter
[c] Acceptable ambient concentration for carcinogens

4.0 Conclusions

The ambient air impact analysis conducted by DEQ demonstrated to DEQ's satisfaction that emissions from a concrete batch plant facility that meets the criteria specified in Table 1 will not cause or significantly contribute to a violation of any air quality standard.

Attachment 1.
Sample Emissions Calculation – 3,600 cy/day and 500,000 cy/year

CRITERIA POLLUTANT EMISSION INVENTORY for Truck Mix Portable Concrete Batch Plant

Facility Information					3/20/07 17:37
Company:	DEQ GENERIC MODEL - 3,600 cy/day and 500,000 cy/year			Assumptions Implied or Stated in Application:	
Facility ID:	777-xxxxxx			Presumes this is an initial permit, not a modification	
Permit No.:	P-2007.xxxx			See control assumptions	
Source Type:	Portable Concrete Batch Plant				
Manufacturer/Model:				Truck Mix (T) or Central Mix (C)?	T

INCREASE IN Production[1]

Maximum Hourly Production Rate:	300	cy/hr		
Proposed Daily Production Rate:	3,600	cy/day	12.00	Hours of operation per day at max capacity
Proposed Maximum Annual Production Rate:	500,000	cy/year		
Cement Storage Silo Capacity:		ft³ of aerated cement		
Cement Storage Silo Large Compartment Capacity for cement only:		of the silo capacity		
Cement Storage Silo small Compartment Capacity for cement or ash:		of the silo capacity		

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Change in PM_{10} Emissions due to this PTC

Emissions Point	PM_{10} Emission Factor[1] (lb/cy)		Controlled Emission Rate, Max	Controlled Emission Rate, 24-hour average		Controlled Emission Rate, annual average		Control Assumptions:
	Controlled	Uncontrolled	lb/hr[2]	lb/hr[3]	lb/day[3]	lb/hr[4]	T/yr[4]	
Aggregate delivery to ground storage		0.0031	0.23	0.116	2.79	0.044	0.194	75% Control: Water sprays
Sand delivery to ground storage		0.0007	0.05	0.026	0.63	0.010	0.044	75% Control: Water sprays
Aggregate transfer to conveyor		0.0031	0.23	0.116	2.79	0.044	0.194	75% Control: Water sprays
Sand transfer to conveyor		0.0007	0.05	0.026	0.63	0.010	0.044	75% Control: Water sprays
Aggregate transfer to elevated storage		0.0031	0.23	0.116	2.79	0.044	0.194	75% Control: Water sprays
Sand transfer to elevated storage		0.0007	0.05	0.026	0.63	0.010	0.044	75% Control: Water sprays
Cement delivery to Silo (controlled EF)	0.0001		2.50E-02	1.25E-02	3.00E-01	4.76E-03	2.09E-02	0.00% Baghouse is process equipment
Cement supplement delivery to Silo (controlled EF)	0.0002		5.36E-02	2.68E-02	6.44E-01	1.02E-02	4.47E-02	0.00% Baghouse is process equipment
Weigh hopper loading (sand & aggregate batcher loading)		0.0040	1.19E-02	5.93E-03	1.42E-01	2.26E-03	9.88E-03	99.00% Baghouse is process equipment
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		0.0784	1.18	0.59	14.11	0.22	0.98	95.00% Control: Automatic feed to replacement
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	0.00	0.00	0.00	0.00	0.00	95.00% Control: Automatic feed to replacement
Point Sources Total Emissions		4.21E-03	9.05E-02	4.53E-02	1.09E+00	1.72E-02	7.54E-02	
Process Fugitive Emissions		0.0898	2.03	1.02	24.38	0.39	1.69	
Facility Wide Total: Point Sources + Process Fugitives (Except for Road Dust and Windblown Dust)		0.0940	2.12	1.06	25.47	0.40	1.77	

POINT SOURCE EMISSIONS for FACILITY CLASSIFICATION[5]	Controlled EF	at 2,628,000 cy/yr	T/yr
Facility Classification Total PM	5.08E-03		6.67E+00
Facility Classification Total PM10[6]	3.02E-04		3.97E-01

[1] 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.

[2] Max. hourly rate includes reductions associated with control assumptions

[3] 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

[4] 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)

[5] Controlled EFs for PM = 0.0002 (cement silo) + 0.0003 (flyash silo) + 0.0078(weigh batcher)*(1-control/98)
for PM10 = 0.0001 (cement silo) + 0.0002 (flyash silo) + 0.0040 (weigh batcher)*(1-control/98)

[6] Emissions for Facility Classification are based on baghouses as process equipment, 24 hr/day, 8760 hr/yr = 7,200 cy/day, and 2,628,000 cy/yr

Lead emissions			Increase in Emissions from this PTC				Emissions for Facility Classification	
Emissions Point	Lead Emission Factor[1] (lb/ton of material loaded)		Emission Rate, Max	Emissions for Comparison with DEQ Modeling Threshold		Emission Rate, Quarterly		
	Controlled with fabric	Uncontrolled	lb/hr, 1-hr avg[2]	lb/month[3]	t/y[4]	lb/hr qtrly avg[5]		T/yr
Cement delivery to silo[2]	1.09E-08	7.25E-06	8.03E-07	2.93E-04	1.34E-03	4.01E-07	Point Source	3.52E-06
Cement supplement delivery to Silo[3]	5.20E-07	[illegible]	5.89E-06	2.08E-03	9.49E-03	2.85E-06	Point Source	2.49E-05
Truck Loadout (with 125% control)		3.62E-06	1.53E-05	5.59E-03	2.55E-02	7.66E-06	Fugitive	
Central Mix (with 130% control)		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Fugitive	
Total			2.16E-05	7.86E-03	0.036		Point Sources	2.86E-05
DEQ Modeling Threshold				100	0.6			
Modeling Required?				No	No			

[1] The emissions factors are from AP-42, Table 11.12-5 (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, Truck Mix Concrete Batch Plant

3/22/2007 17:37

Facility Information

Company:	DEQ GENERIC MODEL - 3,600 cy/day and 500,000 cy/year
Facility ID:	777-xxxxxx
Permit No.:	P-2007.xxxx
Source Type:	Portable Concrete Batch Plant
Manufacturer	0

Emissions estimates are based on EFs in AP-42, Table 11.12-6 (version 06/06) and the following composition of one yard of concrete:

Coarse aggregate		1865 pounds
Sand		1425 pounds
Cement		491 pounds
Cement supplement		73 pounds
Water		20 gallons
Concrete		4324 pounds

Truck Mix Loadout Factor: 1

Central Mix Batching Factor: 0

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Increase in Production

Maximum Hourly Production Rate:	300	cy/hr
Proposed Daily Production Rate:	3,600	cy/day
Proposed Maximum Annual Production Rate	500,000	cy/year

Uncontrolled (Unlimited Production Rate)

	24 hr/day,
7,200 cy/day	7 day/wk,
2,628,000 cy/year	52 wks/year

TAP Emission Factors from AP-42, Table 11.12-6 (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	1.13E-08	4.85E-10	1.29E-09	4.85E-10	1.29E-09	2.90E-08	7.73E-08	1.17E-07	3.11E-07	4.18E-08	1.11E-07	ND	1.18E-06	ND	ND	20%
Cement supplement delivery to Silo (with baghouse)	1.03E-06	ND	9.84E-08	ND	1.58E-08	ND	1.22E-06	ND	2.56E-07	ND	2.22E-06	ND	3.54E-06	ND	7.24E-06	ND	30%
Truck Loadout (WO dust or emissions)	8.11E-06	3.04E-06	1.56E-07	2.44E-07	7.59E-08	3.42E-08	4.16E-05	1.14E-05	2.60E-06	5.12E-05	4.16E-05	1.15E-05	1.73E-05	3.84E-05	ND	2.62E-06	21.29%
Central Mix Batching (WO dust or emissions)	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. 7,200 cy/day, and 2,628,000 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)	3.12E-07	1.37E-06	3.56E-08	1.57E-07	3.56E-08	1.57E-07	2.14E-06	9.13E-06	8.62E-06	3.77E-05	3.08E-06	1.35E-05	8.69E-04	3.81E-03	ND	ND	4.27E-07	
Cement supplement delivery to Silo (with baghouse)	1.10E-05	4.82E-05	9.90E-07	4.34E-06	2.17E-07	9.50E-07	1.24E-05	5.85E-05	2.82E-06	1.23E-05	2.50E-05	1.09E-04	3.88E-05	1.70E-04	7.93E-07	3.47E-06	4.01E-06	
Truck Loadout (WO dust or emissions)	2.57E-04	1.13E-03	2.06E-05	9.04E-05	2.83E-06	1.27E-05	9.64E-04	4.22E-03	5.78E-03	2.27E-02	1.01E-03	4.41E-03	3.25E-03	1.42E-02	2.22E-04	9.71E-04	2.05E-04	
Central Mix Batching (WO dust or emissions)	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	
Sources Total	**2.68E-04**	**1.18E-03**	**2.17E-05**	**9.49E-05**	**3.15E-06**	**1.38E-05**	**3.80E-04**	**4.35E-03**	**5.19E-03**	**2.27E-02**	**1.03E-03**	**4.53E-03**	**4.16E-03**	**1.82E-02**	**2.22E-04**	**9.74E-04**	**2.10E-04**	**5.21E-02**
IDAPA Screening EL (lb/hr)	1.50E-05		2.80E-05		3.70E-06		3.33E-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	

Facility Classification: Total Annual HAPs Emissions — Tons per year

CONTROLLED TAP EMISSIONS Note: Includes baghouses as process equipment. 3,600 cy/day, and 500,000 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]	5.94E-08	2.60E-07	5.61E-09	2.98E-08	5.81E-09	2.98E-08	1.37E-06	1.73E-05	4.31E-06	7.15E-05	5.86E-07	2.57E-06	ND	ND	ND	ND	8.13E-08	
Cement supplement delivery to Silo (with baghouse)[2]	2.09E-06	9.13E-06	1.88E-07	8.25E-07	4.13E-08	1.81E-07	4.49E-06	1.11E-05	9.43E-06	2.34E-05	4.75E-06	2.08E-05	1.30E-04	3.23E-05	3.96E-07	6.61E-07	7.63E-07	
Truck Loadout (WITH dust or emissions)[3]	2.45E-06	1.07E-05	1.96E-07	8.60E-07	2.75E-08	1.21E-07	2.41E-05	4.02E-05	1.26E-04	2.16E-04	9.58E-06	4.19E-05	8.12E-05	1.35E-04	5.54E-06	9.24E-06	1.95E-06	95.00% Control: Automatic boot or equivalent
Central Mix Batching (WITH dust or emissions)	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	95.00% Control: Automatic boot or equivalent
Sources Total	**4.59E-06**	**2.01E-05**	**3.82E-07**	**1.71E-06**	**7.59E-08**	**3.31E-07**	**7.01E-05**	**5.31E-05**	**1.43E-04**	**2.25E-04**	**1.45E-05**	**6.53E-05**	**2.12E-04**	**1.65E-04**	**5.94E-06**	**9.90E-06**	**2.82E-06**	**5.43E-04**
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	305.99%		1.40%		2.04%		0.21%		0.0430%		55.23%		3.02%		0.0457%		499.55%	
EXCEEDS EL?	Yes		No		No		No		No		No		No		No		Yes	

Tons per year

[1] lb/hr, annual average = EF x pound of cement / Yd³ 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 / Yd³ 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) / Yd³ 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 x 2000 lb/ton

Attachment 2.
"Fenceline" Radius Calculations

Concrete Batch Plant - Typical Plant Layout Modeling 3/9/2007

"Fenceline" or Ambient Air Boundary Coordinates

Radians = deg * Pi/180
x = Xoffset + c cos (Angle)
y= Yoffset + c sin(Angle)

CASE 1, 40 meter RADIUS			CASE 2, 60 meter RADIUS			CASE 3, 100 meter RADIUS			CASE 4, 125 meter RADIUS		
Radius c	40	(meters)	Radius c	60	(meters)	Radius c	75	(meters)	Radius c	125	(meters)
Origin Offset	0	(meters)	Origin Offset	0	(meters)	Origin Offset	0	(meters)	Origin Offset :	0	(meters)
Origin Offset	0	(meters)	Origin Offset	0	(meters)	Origin Offset	0	(meters)	Origin Offset '	0	(meters)

Angle (degrees)	EAST (x)	NORTH (y)
10	39.39	6.95
20	37.59	13.68
30	34.64	20.00
40	30.64	25.71
50	25.71	30.64
60	20.00	34.64
70	13.68	37.59
80	6.95	39.39
90	0.00	40.00
100	-6.95	39.39
110	-13.68	37.59
120	-20.00	34.64
130	-25.71	30.64
140	-30.64	25.71
150	-34.64	20.00
160	-37.59	13.68
170	-39.39	6.95
180	-40.00	0.00
190	-39.39	-6.95
200	-37.59	-13.68
210	-34.64	-20.00
220	-30.64	-25.71
230	-25.71	-30.64
240	-20.00	-34.64
250	-13.68	-37.59
260	-6.95	-39.39
270	0.00	-40.00
280	6.95	-39.39
290	13.68	-37.59
300	20.00	-34.64
310	25.71	-30.64
320	30.64	-25.71
330	34.64	-20.00
340	37.59	-13.68
350	39.39	-6.95
360	40.00	0.00

Angle (degrees)	EAST (x)	NORTH (y)
10	59.09	10.42
20	56.38	20.52
30	51.96	30.00
40	45.96	38.57
50	38.57	45.96
60	30.00	51.96
70	20.52	56.38
80	10.42	59.09
90	0.00	60.00
100	-10.42	59.09
110	-20.52	56.38
120	-30.00	51.96
130	-38.57	45.96
140	-45.96	38.57
150	-51.96	30.00
160	-56.38	20.52
170	-59.09	10.42
180	-60.00	0.00
190	-59.09	-10.42
200	-56.38	-20.52
210	-51.96	-30.00
220	-45.96	-38.57
230	-38.57	-45.96
240	-30.00	-51.96
250	-20.52	-56.38
260	-10.42	-59.09
270	0.00	-60.00
280	10.42	-59.09
290	20.52	-56.38
300	30.00	-51.96
310	38.57	-45.96
320	45.96	-38.57
330	51.96	-30.00
340	56.38	-20.52
350	59.09	-10.42
360	60.00	0.00

Angle (degrees)	EAST (x)	NORTH (y)
10	73.86	13.02
20	70.48	25.65
30	64.95	37.50
40	57.45	48.21
50	48.21	57.45
60	37.50	64.95
70	25.65	70.48
80	13.02	73.86
90	0.00	75.00
100	-13.02	73.86
110	-25.65	70.48
120	-37.50	64.95
130	-48.21	57.45
140	-57.45	48.21
150	-64.95	37.50
160	-70.48	25.65
170	-73.86	13.02
180	-75.00	0.00
190	-73.86	-13.02
200	-70.48	-25.65
210	-64.95	-37.50
220	-57.45	-48.21
230	-48.21	-57.45
240	-37.50	-64.95
250	-25.65	-70.48
260	-13.02	-73.86
270	0.00	-75.00
280	13.02	-73.86
290	25.65	-70.48
300	37.50	-64.95
310	48.21	-57.45
320	57.45	-48.21
330	64.95	-37.50
340	70.48	-25.65
350	73.86	-13.02
360	75.00	0.00

Angle (degrees)	EAST (x)	NORTH (y)
10	123.10	21.71
20	117.46	42.75
30	108.25	62.50
40	95.76	80.35
50	80.35	95.76
60	62.50	108.25
70	42.75	117.46
80	21.71	123.10
90	0.00	125.00
100	-21.71	123.10
110	-42.75	117.46
120	-62.50	108.25
130	-80.35	95.76
140	-95.76	80.35
150	-108.25	62.50
160	-117.46	42.75
170	-123.10	21.71
180	-125.00	0.00
190	-123.10	-21.71
200	-117.46	-42.75
210	-108.25	-62.50
220	-95.76	-80.35
230	-80.35	-95.76
240	-62.50	-108.25
250	-42.75	-117.46
260	-21.71	-123.10
270	0.00	-125.00
280	21.71	-123.10
290	42.75	-117.46
300	62.50	-108.25
310	80.35	-95.76
320	95.76	-80.35
330	108.25	-62.50
340	117.46	-42.75
350	123.10	-21.71
360	125.00	0.00