Air Quality Permitting
Statement of Basis

March 8, 2007

Permit to Construct No. P-060134

CPM Development Corporation
Spokane Valley, WA

Facility ID No. 777-00392
(Portable Concrete Batch Plant: Erie Batch Plant)

Prepared by:

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AIR QUALITY DIVISION

FINAL

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Acronyms, Units, and Chemical Nomenclatures

AACC	acceptable ambient concentration for carcinogens
acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
CO	carbon monoxide
CPM	CPM Development Corporation
CRO	Coeur d'Alene Regional Office
cy/hr	cubic yards per hour
cy/day	cubic yards per day
cy/yr	cubic yards per consecutive 12-month period
DEQ	Department of Environmental Quality
EI	emissions inventory
EL	emission level
EPA	U.S. Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
$\mu g/m^3$	micrograms per cubic meter
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	sulfur dioxide
T/yr	tons per year
TAP	toxic air pollutant
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct. This is an initial permit for this facility.

2. FACILITY DESCRIPTION

CPM Development Corporation (CPM) operates a portable Erie-Strayer truck mix concrete plant. The plant's maximum capacity is 200 cubic yards of concrete per hour (cy/hr), with a normal maximum production of 300,000 cubic yards of concrete per year.

Concrete is produced by combining water, cement, sand (fine aggregate) and gravel (coarse aggregate). Supplementary cementing materials, also called mineral admixtures or pozzolan minerals may be added to make the concrete mixtures more economical, reduce permeability, increase strength, or influence other concrete properties. Typical examples are natural pozzolans, fly ash, ground granulated blast-furnace slag, and silica fume, which can be used individually with Portland or blended cement or in different combinations. Chemical admixtures are usually liquid ingredients that are added to concrete to entrain air, reduce the water required to reach a required slump, retard or accelerate the setting rate, to make the concrete more flowable or other more specialized functions.[1]

A portable concrete batch plant consists of storage bins or stockpiles for the sand and gravel, storage silos for the cement and cement supplement, weigh bins that weigh each component, conveyors, a water supply, and a control panel. Sand and gravel are either produced on site or purchased elsewhere. Typically, three or four different sizes of gravel and one or two different sizes of sand are stockpiled for varying job specifications. Cement and supplementary cementing materials are delivered by truck and pneumatically transferred to the appropriate storage silo. A baghouse or dust collector is mounted above each silo to capture cement or cement supplement as air is displaced in the silo. For this source category, the baghouse is considered primarily as process equipment, with a secondary function as air pollution control equipment. Power to run the facility is provided by the local utility or by a small diesel generator.

After all the storage bins are filled, the production process begins when sand and gravel are drop-fed into their respective weigh bins. When a pre-determined amount of each is weighed, the aggregate is heavily wetted for better mixing and to minimize fugitive dust prior to being dropped onto a conveyor, which transfers the mixture into either a truck for in-transit mixing or a truck mix drum for mixing onsite. A predetermined amount of cement and cement supplement is also weighed and drop-fed through a chute into the mixer. The chute provides a measure of dust control. Sometimes a separate baghouse is used to capture dust from the weigh bins. Water is then added to the truck mix or central mix drum.

3. FACILITY / AREA CLASSIFICATION

This CPM portable concrete batch plant is not a major facility as defined in IDAPA 58.01.01.205, nor is it a designated facility as defined in IDAPA 58.01.01.006.

Table 3.1 shows the estimated emissions of particulate matter (PM); criteria air pollutants (which includes only PM_{10} for this facility) and hazardous air pollutant (HAP) emissions from the concrete batch plant for Aerometric Information Retrieval System (AIRS) facility classification purposes. This portable concrete batch plant is classified as a minor facility because, as shown in the table, without

[1] AP-42 Section 11.12, November 29, 2005 draft.

imposing limits on the facility operations the estimated emissions are less than major source thresholds. The AIRS classification is therefore "B."

The facility is a portable facility and may locate anywhere in the state of Idaho except in any PM_{10} nonattainment area. A relocation form must be completed and submitted to DEQ prior to any relocation.

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant for this portable concrete batch facility. This required information is entered into the EPA AIRS database.

Table 3.1 FACILITY CLASSIFICATION EMISSION ESTIMATES [a]

Emission Source	PM (total) (T/yr)	PM_{10} (T/yr)	HAPs (total) (T/yr)	Any HAP (T/yr)
Major Source Thresholds	250 (PSD)	100 (Tier I)	25 (Tier I)	10 (Tier I)
Truck Mix Concrete Batch Plant Emissions, point sources only (silo and weigh batcher baghouses)	0.11	0.04	0.035	0.015 (Manganese)

[a] Facility Classification emissions are based on operation at 200 cy/hr for the batch plant for 8,760 hrs/year, with baghouses treated as process equipment.

4. APPLICATION SCOPE

CPM has requested authorization to operate this newly acquired 1997 portable concrete batch plant in Idaho, and has requested that this portable plant be allowed to operate at 200 cy/hr for a 24-hour day (4,800 cy/day), with the maximum annual production of concrete from this plant limited to 300,000 cy per year.

4.1 Application Chronology

October 2006	CPM/Aspen Consulting consulted with DEQ regarding modeling for the proposed project. Aspen submitted a modeling protocol on 10/24/2006 which was approved by DEQ via e-mail on 11/14/2006.
November 18, 2006	CPM published the legal notice for an information meeting to be held in Coeur d'Alene on November 27, 2006.
November 21, 2006	Receipt of 15-day pre-permit construction authorization application and $1,000 PTC application fee.
November 27, 2006	CPM holds information meeting in Coeur d'Alene, meeting the regulatory requirement to hold the meeting within 10 days of the application submittal. CPM reported that no comments were received at this meeting.
November 28, 2006	Pre-permit construction application denied by DEQ.
December 7, 2006	Receipt of 15-day pre-permit construction authorization application resubmittal.
December 13, 2006	Pre-permit construction authorized and application determined to be complete.
December 14, 2006	Draft permit and statement of basis sent electronically to Coeur d'Alene Regional Office (CRO) for review and comment.
January 4, 2007	Comments were received from the CRO and incorporated into the facility draft.
December 27, 2006 through January 26, 2007	Opportunity for public comment period.
January 10, 2007	Draft permit and statement of basis were sent electronically to CPM for review and comment.
January 23, 2007	Minor comments received from facility and incorporated into the final permit.
February 5, 2007	Receipt of $1,000 PTC processing fee.
February 27, 2007	Receipt of e-mail concurrence from facility would accept production limit of 3,600 cy/day for locations where the minimum setback is 250 feet.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

Table 5.1 contains the equipment listing and the emissions controls.

Table 5.1 EQUIPMENT LISTING AND EMISSIONS CONTROLS

Source Description	Emissions Control(s)
Concrete Batch Plant – Truck Mix (or equivalent 200 cy/hr truck mix plant) Manufacturer: Erie-Strayer Mfr Date: 5/1997 Model: Dry Concrete Batch Maximum production capacity: 200 cubic yards of concrete per hour (cy/hr)	Cement Storage Silo Baghouse/Cartridge Filter: Manufacturer: Stephens Model: SOS-1020 Control Efficiency: 99+% Stack Parameters: Height: 46 feet Exit Diameter: 1.64 feet Exit air flow rate: 5,450 acfm Cement Supplement (Flyash) Storage Silo Baghouse/Cartridge Filter: Manufacturer: Belle Model: not given Control Efficiency: 99+% Stack Parameters: Height: 43 feet Exit Diameter: 1.12 feet Exit air flow rate: 445 acfm Weigh Batcher Baghouse/Cartridge Filter: Manufacturer: Stephens Model: SOS-80 Control Efficiency: 99+% Stack Parameters: Height: 27.6 feet Exit Diameter: 0.984 feet Exit air flow rate: 420 acfm Truck Loadout Rubber Boot Enclosure Control Efficiency: 99.85% Material Transfer Point Water Sprays Control Efficiency: 75%

5.2 Emissions Inventory

The emissions inventory provided in the application for this portable concrete batch plant was based on AP-42 Section 11.12 emission factors for a truck-mix concrete batch plant, and the following assumptions: 200 cubic yard per hour (cy/hr) concrete production capacity, 24-hour per day operation, and annual concrete production limited to 300,000 cy per year.

Fugitive emissions of particulate matter (PM) and PM_{10} from material transfer points were assumed to be controlled by water sprays that reduce the emissions by an estimated 75%. Fugitive PM and PM_{10} emissions from the truck mix loadout are controlled by a rubber boot enclosure. Capture efficiency of the rubber boot was estimated at 99.85%. In accordance with DEQ guidance provided in the November 14, 2006 e-mail approval of the modeling protocol, fugitive emissions from vehicle traffic and wind erosion from storage piles were not estimated.

In accordance with DEQ's modeling protocol approval, emissions of hexavalent chromium were estimated at 20% of the total chromium emissions for cement silo filling and truck filling and at 30% of the total chromium emissions from cement supplement (flyash) silo filling.

DEQ confirmed that the emission inventory calculations provided in the application were based on reasonable assumptions, appropriately used the AP-42 emission factors, and were correct based on the assumptions given. The detailed EI for this concrete batch plant can be found in Appendix B.

5.3 Modeling

Based on the emissions inventory, the potential emission rate of PM_{10} from this facility from point sources and transfer points was estimated at 1.8 lb/hr and 1.07 tons/yr. In accordance with the November 14, 2006 DEQ approval of the modeling protocol, fugitive emissions from vehicle traffic and wind erosion from storage piles was not estimated or included. These levels exceed the published DEQ modeling thresholds[2] for PM_{10} of 0.2 lb/hr (24-hour average) and 1.0 tons/year. A full impact modeling analysis was therefore required.

Modeling results submitted with the application demonstrated compliance with the NAAQS and toxic air pollutant rules to DEQ's satisfaction. Modeling results showed that with concrete production of 4,800 cy/day, the short-term average PM_{10} concentration can be expected to reach 143 $\mu g/m^3$, or about 95% of the NAAQS 24-hour average limit of 150 $\mu g/m^3$. The annual average PM_{10} concentration can be expected to reach 29.6 $\mu g/m^3$, or about 59% of the NAAQS limit of 50 $\mu g/m^3$. These results were based on defining the modeled ambient air boundary as a circle with a radius of 100 meters (328 feet) from the center of a typical batch plant facility layout.

For consistency with other similar concrete batch plant facilities currently being permitted, DEQ reran the ISCST3 model using the same parameters except that the ambient air boundary was redefined as a circle with a radius of 75 meters rather than 100 meters. For this type of dispersion model, the distance to maximum near-field ambient impacts can not be scaled based on the emissions rate, but the magnitude of the ambient impacts generally are directly proportional to the estimated emissions (i.e., if you halve the concrete production rate/emissions, the ambient impact at any receptor drops by a factor of two). This allows estimating the production rate that could be allowed with a minimum 75-meter setback.

A summary of modeling and estimated results for the maximum total ambient impact for these two cases is shown in Table 5.2.

Table 5.2 ESTIMATED PM_{10} AMBIENT IMPACT FOR 4,800 CY/DAY and 3,600 CY/DAY

Parameter	**Modeled Ambient Impact (µg/m3)**		**Estimated Ambient Impact (µg/m3)**	**Back-ground (µg/m3)**	**NAAQS (µg/m3)**	**Total Ambient Impact (µg/m3) (Percent of NAAQS)**	
Concrete Production	**4,800 cy/day 300,000 cy/yr**		**3,600 cy/day 300,000 cy/yr**			**4,800 cy/day 300,000 cy/yr**	**3,600 cy/day 300,000 cy/yr**
Ambient Air Boundary (setback)	100 m[a] (328 ft)	75 m[b] (250 ft)	75 m[c] (250 ft)			100 m (328 ft)	75 m (250 ft)
PM_{10} - 24 hour	69.7	89.7	67.3	73	150	143 (95%)	140 (94%)
PM_{10} - Annual	3.62	4.91	3.68	26	50	29.6 (59%)	29.7 (59%)

[a] Modeling results submitted with the application
[b] Modeling results (DEQ), using files submitted with the application but decreasing the fenceline from 100 m to 75 m radius.
[c] Impact estimated at 75% of the modeled value for 4,800 cy/day, ambient air boundary set at 75 meter-radius.

[2] Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002.

At the 100-meter facility boundary, modeled ambient concentrations of uncontrolled arsenic and chromium (VI) emissions were predicted to be 9.0E-05 $\mu g/m^3$ (39.1% of the acceptable ambient concentration for carcinogens [AACC]) and 5.0E-05 $\mu g/m^3$ (60% of the AACC), respectively. With production limited to 300,000 cy/yr by a federally enforceable permit condition, the predicted ambient impact would be reduced to 6.7% and 10.3% of the applicable AACCs for arsenic and chromium (VI).

DEQ modeling using a 75-meter boundary predicted the same maximum 1st highest concentration for uncontrolled arsenic and chromium (VI) emissions as the analysis using a 100-meter ambient boundary. Unlike PM_{10} emissions, which include significant contributions from fugitive emissions, the emissions of arsenic and chromium (VI) are primarily from the elevated releases from the baghouse/cartridge filter stacks. Not surprisingly, the dispersion characteristics differ. Although it is not clear why this difference occurs, the uncontrolled ambient concentration for each of these two TAPs is well below the applicable AACC. These emissions are further limited by an annual restriction on the concrete production, which as noted above, reduces the predicted ambient impact of each of these TAPs to about 10% or less of the applicable AACC. Further investigation into the dispersion characteristics and modeling results is therefore not warranted.

DEQ’s modeling analysis report is included as Appendix C.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201..............................Permit to Construct Required

This is a newly-acquired 1997 portable concrete batch plant proposed to operate in the State of Idaho. The facility’s proposed project does not meet the permit to construct exemption criteria contained in Sections 220 through 223 of the Rules. Therefore, a PTC is required.

IDAPA 58.01.01.203..............................Permit Requirements for New and Modified Stationary Sources

The applicant has shown to the satisfaction of DEQ that the facility will comply with all applicable emissions standards, ambient air quality standards, and toxic increments.

IDAPA 58.01.01.224..............................Permit to Construct Application Fee

The applicant satisfied the PTC application fee requirement by submitting a fee of $1,000.00 at the time the original application was submitted, November 21, 2006.

IDAPA 58.01.01.225..............................Permit to Construct Processing Fee

The total emissions from the proposed new facility are less than one ton per year; therefore, the associated processing fee is $1,000.00. No permit to construct can be issued without first paying the required processing fee. DEQ received the $1,000 processing fee on February 5, 2007.

IDAPA 58.01.01.625..............................Visible Emissions

This rule has been incorporated as a permit condition to require control of particulate emissions from concrete batch plant point sources.

IDAPA 58.01.01.650-651 ....Rules for the Control of Fugitive Dust

This rule has been incorporated as a permit condition to require reasonable control of fugitive dust from the concrete batch plant.

40 CFR 60 .... New Source Performance Standards, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants

The provisions of this subpart do not apply to stand-alone screening operations at plants without crushers or grinding mills. The facility is therefore not subject to NSPS.

5.5 Permit Conditions Review

This section describes only those permit conditions that have been added as a result of this permit action, and that may not be self-explanatory.

5.5.1 Permit Condition 1.3 describes the emissions controls that shall be operated as part of this concrete batch plant. Demonstration of compliance with NAAQS and TAPs rules was based on emissions estimated using the capture efficiencies associated with these controls.

5.5.2 Permit Condition 2.4 limits the concrete production to 300,000 cy in any consecutive 12-month period, which reflects the production level requested in the application. Daily concrete production is limited to a maximum of 3,600 cy or 4,800 cy, depending on the minimum setback distance that is available at a particular site or on any day that the plant is operating. This provides flexibility for the permittee to operate the plant at higher capacity when it is located in more remote areas or where there is greater separation between the plant operations and members of the public.

5.5.3 Permit Condition 2.4 was imposed to require a reasonable setback from any building that may be normally occupied by members of the public, or an outdoor public gathering place. This condition is necessary to limit exposure to members of the public to PM_{10} levels approaching the 24-hour NAAQS limit.

The setback does not apply to the distance to a public road or highway because it is not reasonable that any member of the public would remain on the roadway throughout the day. The setback distance, however, does apply to the distance to any structure or outdoor public gathering place located across the roadway.

5.5.4 Permit Condition 2.9 requires the permittee to physically measure the minimum setback distance to within plus or minus 1.8 meters (6 feet). This provides reasonable flexibility for the methods that the permittee can select to measure the setback distance, but should not be construed to mean that the minimum setback distances specified in Permit Condition 2.4 can be reduced by 1.8 meters (6 feet).

5.5.5 Permit Condition 2.12 prohibits operation in any PM_{10} nonattainment area. The modeling analysis predicted that PM_{10} impacts to ambient air quality from operation of this facility would be 69.7 $\mu g/m^3$ (24-hr average, based on producing 4,800 cy/day of concrete) and 3.62 $\mu g/m^3$ (annual average, based on producing 300,000 cy/year of concrete). IDAPA 58.01.01.006 defines a "significant contribution" as any increase in ambient concentrations that would exceed 5.0 $\mu g/m^3$ (24-hr average) or 1.0 $\mu g/m^3$ (annual average). In any nonattainment area, facility operations would therefore result in a significant contribution to a violation of the PM_{10} air quality standard.

6. PERMIT FEES

An application fee of $1,000 is required in accordance with IDAPA 58.01.01.224. The application fee was received by DEQ on November 21, 2006. A permit processing fee of $1,000 is required in accordance with IDAPA 58.01.01.225, because the permit required engineering analysis and the increase in emissions from point sources is less than one ton per year. DEQ received the processing fee on February 5, 2007. This facility is not a major facility and is not subject to Tier I registration fees.

Table 6.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	0.0	0	0.0
SO_2	0.0	0	0.0
CO	0.0	0	0.0
PM_{10}	6.32E-03	0	6.32E-03
VOC	0.0	0	0.0
HAPS	6.17E-05	0	6.17E-05
Total:	**6.38E-03**	0	**6.38E-03**
Fee Due	**$ 1,000.00**		

7. PERMIT REVIEW

7.1 Regional Review of Draft Permit

On December 14, 2006, a draft of the permit and statement of basis was provided electronically to the Coeur d'Alene Regional Office (CRO) for review. Comments received via e-mail on January 4, 2006 were addressed in the facility draft permit.

7.2 Facility Review of Draft Permit

On January 9, 2007, a draft of the permit and statement of basis was issued electronically to the facility for review. Comments received via e-mail on January 23, 2007 were addressed in the final permit.

7.3 Public Comment

An opportunity for public comment period on the PTC application was provided from December 27, 2006, through January 26, 2007, in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and were no requests for a public comment period on DEQ's proposed action.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that CPM Development Corporation, be issued final PTC No. P-060134 for this portable concrete ready-mix plant. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

CR/bf Permit No. P-060134

APPENDIX A

AIRS Information

P-060134

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

Facility Name: CPM Development Corporation, Erie Batch Plant, Portable Concrete Batch Plant
Facility Location: Portable
AIRS Number: 777-00392

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	--							U
NO_x	--							U
CO	--							U
PM_{10}	B							U
PT (Particulate)	B							U
VOC	--							U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					

[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

P-060134

CPM Development Corp.

Potential Emissions

Batch Concrete Plant

November 29, 2006

Maximum Proposed Production

Concrete Production (yd3/hr)	200
Concrete Production (yd3/hr) Max.	1,752,000
Concrete Production (yd3/yr) restricted	300,000

Typical Concrete Makeup per yd3

	lbs	% of mix
Aggregate	1,865	46.3%
Sand	1,428	35.5%
Cement	491	12.2%
Fly Ash	73	1.8%
Water	167	4.2%
Total	4,024	

Emissions Source	Production Rate (yd^3/yr)	Uncontrolled PM_{10} Emission Factor	Controlled PM_{10} Emission Factor	Emission Factor Units	Emission Factor Reference	Uncontrolled PM_{10} Potential Emissions (tons/yr)	Controlled PM_{10} Potential Emissions (lb/hr)	Controlled PM_{10} Potential Emissions (tons/yr)
Aggregate Dump to Ground	300,000	0.0031	75%	lb/yd^3	AP-42, 11.12-5 (6/06)	0.47	0.155	0.116
Sand Dump to Ground	300,000	0.0007	75%	lb/yd^3	AP-42, 11.12-5 (6/06)	0.11	0.035	0.026
Aggregate Dump to Conveyor	300,000	0.0031	75%	lb/yd^3	AP-42, 11.12-5 (6/06)	0.47	0.155	0.116
Sand Dump to Conveyor	300,000	0.0007	75%	lb/yd^3	AP-42, 11.12-5 (6/06)	0.11	0.035	0.026
Aggregate Conveyor to Elevated Storage	300,000	0.0031	75%	lb/yd^3	AP-42, 11.12-5 (6/06)	0.47	0.155	0.116
Sand Conveyor to Elevated Storage	300,000	0.0007	75%	lb/yd^3	AP-42, 11.12-5 (6/06)	0.11	0.035	0.026
Cement Silo Loading	300,000	0.0001	0.0001	lb/yd^3	AP-42, 11.12-5 (6/06)	0.02	0.020	0.015
Weigh Hopper Loading	300,000	0.0038	0.0038	lb/yd^3	AP-42, 11.12-5 (6/06)	0.57	0.760	0.570
Fly Ash Silo Unloading	300,000	0.0002	0.0002	lb/yd^3	AP-42, 11.12-5 (6/06)	0.030	0.040	0.030
Truck mix loading	300,000	0.278	0.000417	lb/ton*	AP-42, 11.12-2 (6/06)	20.75	0.041	0.031
Totals:						**23.07**		**1.07**

Notes:

* Emissions calculated by converting lb/ton to lb/yd3 using a factor of appoximately 2.01 tons/yd3 of concrete. Also assumes 99.85% control.

Unpaved road travel controlled 50% by road watering when visible emissions are observed.

yd^3/hr	Cubic yards of concrete produced per hour
lb/yd3	Pounds per cubic yard
PM	Particulate Matter
PM_{10}	Particulate Matter with an aerodynamic diameter less than 10 microns

DEQ Analysis Note: Truck Mix Loading = 300,000 cy/yr x 0.278 lb/ton of mat’l loaded x (1-0.9985) x [(493+73 lb/cy)(1 T/2000 lbs)] = 35.28 lb/yr = 0.018 T/yr
= 0.023 lb/hr

Modeling analysis used the higher estimated values in the application compared to the value(s) produced using the production, AP-42 factor, and boot capture efficiency.

CPM Development Corp.

Potential Emissions

Batch Concrete Plant

11/29/06

Truck Mix Concrete Batch Plant

Production Rate (yd3/hr of Concrete Produced):	200	
Production Rate (Tons/hr of Concrete Produced):	402	
Silo Filling Rate (tons/hr of cement loaded)	49.04	12.2% of Concrete is Cement (approx.)
Silo Filling Rate (tons/hr of flyash loaded)	7.29	1.8 % of Concrete is Flyash (approx.)

Pollution Control Equipment:	Baghouse
AP-42 Edition:	Jun-06

Pollutant	Cement Silo Filling Emission Factor (lb/ton)	Truck Filling Uncontrolled Emission Factor (lb/ton)	Truck Filling Controlled * Emission Factor (lb/ton)	Flyash Filling Emission Factor (lb/ton)	Emission Factor Reference	Silo Filling Emissions lb/hr	Truck Filling Emissions lb/hr	Flyash Filling Emissions lb/hr	Total lb/hr	Idaho EL (lb/hr)	Modeled 24-hour Concentration (µg/m3)	Modeled Annual Concentration (µg/m3)	Idaho AAC (mg/m3)	Idaho AAC/ AACC (µg/m3)
Arsenic	4.24E-09	3.04E-06	4.56E-09	1.00E-06	AP-42, Table 11.12-8 (6/06)	2.08E-07	1.83E-06	7.29E-06	9.33E-06	1.50E-06	-	9.00E-05		2.30E-04
Beryllium	4.86E-10	2.44E-07	3.66E-10	9.04E-09	AP-42, Table 11.12-8 (6/06)	2.38E-08	1.47E-07	6.59E-07 *	8.30E-07	2.80E-05	-	-		4.20E-03
Cadmium	4.86E-10	3.42E-08	5.13E-11	1.98E-10	AP-42, Table 11.12-8 (6/06)	2.38E-08	2.06E-08	1.44E-09	4.59E-08	3.70E-06	-	-		5.60E-04
Chromium	2.90E-08	1.14E-05	1.71E-08	1.22E-06	AP-42, Table 11.12-8 (6/06)	1.42E-06	6.87E-06	8.90E-06	1.72E-05	3.30E-02	-	-	2.50E-02	25
Chromium (VI)	5.80E-09	2.28E-06	3.42E-09	3.66E-07	DEQ Guidance	2.84E-07	1.37E-06	2.67E-06	4.33E-06	5.60E-07	-	5.00E-05		8.30E-05
Manganese	1.17E-07	6.12E-05	9.18E-08	2.56E-07	AP-42, Table 11.12-8 (6/06)	5.74E-06	3.69E-05	1.87E-06	4.45E-05	3.33E-01	-	-	2.50E-01	250
Nickel	4.18E-08	1.19E-05	1.78E-08	2.28E-06	AP-42, Table 11.12-8 (6/06)	2.05E-06	7.18E-06	1.66E-05	2.59E-05	2.70E-05	-	-		4.20E-03
Phosphorus	ND	3.84E-05	5.76E-08	3.54E-06	AP-42, Table 11.12-8 (6/06)	ND	2.32E-05	2.58E-05	4.90E-05	7.00E-03	-	-	5.00E-03	5
Selenium	ND	2.62E-06	3.93E-09	7.24E-08	AP-42, Table 11.12-8 (6/06)	ND	1.58E-06	5.28E-07	2.11E-06	1.30E-02	-	-	1.00E-02	10

* Controlled 99.85%

lb/hr Pounds per Hour

mg/m³ Milligrams per Cubic Meter

µg/m³ Micrograms per Cubic Meter

EL Emissions Level

AAC Acceptable Ambient Concentration

AACC Acceptable Ambient Concentration for Carcinogens

CRITERIA POLLUTANT EMISSION INVENTORY for Truck Mix Portable Concrete Batch Plant

Facility Information 2/27/07 16:15

Company:	CPM Development Corp., Spokane Valley, WA
Facility ID:	777-00392
Permit No.:	P-060134
Source Type:	(Truck Mix) Portable Concrete Batch Plant
Manufacturer:	Erie-Strayer Truck Mix (ERIE BATCH PLANT)

Assumptions Implied or Stated in Application:
Initial permit for this plant
See control assumptions

DEQ VERIFICATION WORKSHEET

INCREASE IN Production[1]

Maximum Hourly Production Rate:	200	cy/hr		
Proposed Daily Production Rate:	4,800	cy/day	24.00	Hours of operation per day at max capacity
Proposed Maximum Annual Production Rate:	300,000	cy/year		
Cement Storage Silo Capacity:		ft^3 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		

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		0.0030	0.15	0.15	3.66	0.03	0.11	75%	Control. Water Sprays.
Sand delivery to ground storage		0.0007	0.04	0.04	0.84	0.01	0.03	75%	Control. Water Sprays.
Aggregate transfer to conveyor		0.0030	0.15	0.15	3.66	0.03	0.11	75%	Control. Water Sprays.
Sand transfer to conveyor		0.0007	0.04	0.04	0.84	0.01	0.03	75%	Control. Water Sprays.
Aggregate transfer to elevated storage		0.0030	0.15	0.15	3.66	0.03	0.11	75%	Control. Water Sprays.
Sand transfer to elevated storage		0.0007	0.04	0.04	0.84	0.01	0.03	75%	Control. Water Sprays.
Cement delivery to Silo		**0.0001**	1.67E-04	**1.67E-04**	4.01E-03	2.86E-05	**1.25E-04**	99.00%	Baghouse is process equipment
Cement supplement delivery to Silo		**0.0002**	3.58E-04	**3.58E-04**	8.58E-03	6.12E-05	**2.68E-04**	99.00%	Baghouse is process equipment
Weigh hopper loading (sand & aggregate batcher loading)		**0.0040**	7.90E-03	**7.90E-03**	1.90E-01	1.35E-03	**5.93E-03**	99.00%	Baghouse is process equipment
Truck mix loading, Table 11.12-2		0.0784	0.02	0.02	0.56	0.00	0.02	99.85%	Control. Automatic rubber boot or equivalent.
Point Sources Total Emissions		**4.21E-03**	**8.43E-03**	**8.43E-03**	2.02E-01	**1.44E-03**	**6.32E-03**		
Process Fugitive Emissions		0.0897	0.59	0.59	14.07	0.10	0.44		
Facility Wide Total: Point Sources + Process Fugitives (Except for Road Dust and Windblown Dust)		0.0939	0.59	0.59	14.27	0.10	0.45		

POINT SOURCE EMISSIONS for FACILITY CLASSIFICATION[6]	Controlled EF	at 1,752,000 cy/yr	T/yr
Facility Classification Total PM[5]	1.29E-04		0.11
Facility Classification Total PM10[5]	4.21E-05		0.04

[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)*(1-controlCS) + 0.0003 (flyash silo)*(1-controlCSS) +0.0040(weigh batcher)*(1-controlWB)
for PM10 = 0.0001 (cement silo)*(1-controlCS) + 0.0002 (flyash silo)*(1-control CSS) +0.0040 (weigh batcher)*(1-controlWB)

[6] Emissions for Facility Classification are based on baghouses as process equipment, 24-hr day, 8760 hr/yr = 4,800 cy/day, and 1,752,000 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/yr[4]	lb/hr qtrly avg[5]		T/yr
Cement delivery to silo [2]	**1.09E-08**	7.36E-07	5.35E-07	3.91E-04	8.03E-04	5.35E-07	Point Source	2.34E-06
Cement supplement delivery to Silo [3]	**5.20E-07**	ND	3.80E-06	2.77E-03	5.69E-03	3.80E-06	Point Source	1.66E-05
Truck Loadout (with S36% control)		**3.62E-06**	3.06E-07	2.24E-04	4.59E-04	3.06E-07	Fugitive	[illegible]
Total			**4.64E-06**	**3.39E-03**	**0.007**		**Point Sources**	**1.90E-05**
DEQ Modeling Threshold				100	0.6			
Modeling Required?				No	No			

[1] The emissions factors are from AP-42, Table 11.12-8 (version 06/06)
[2] Max. hourly rate = EF x pound of cement/yd[3] of concrete x max. hourly concrete production rate/(2000 lb/T)
[3] lb/mo = EF x pound of material/yd[3] of concrete x max. daily concrete production rate x (365/12)/(2000 lb/T)
[4] T/yr = EF x pound of material/yd[3] 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

DEQ VERIFICATION WORKSHEET

Facility Information

Company:	CPM Development Corp., Spokane Valley, WA
Facility ID:	777-00392
Permit No.:	P-060134
Source Type:	(Truck Mix) Portable Concrete Batch Plant
Manufacturer:	Erie-Strayer Truck Mix (ERIE BATCH PLANT)

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

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

Increase in Production

Maximum Hourly Production Rate:	200	cy/hr	
Proposed Daily Production Rate:	4,800	cy/day	
Proposed Maximum Annual Production Rate:	300,000	cy/year	

Uncontrolled (Unlimited Production Rate)

	24 hrs/day,
4,800 cy/day	7 day/wk,
1,752,000 cy/year	52 wks/year

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

Emissions Point	Arsenic EF (lb/ton of material loaded)		Beryllium EF (lb/ton of material loaded)		Cadmium EF (lb/ton of material loaded)		Chromium EF (lb/ton of material loaded)		Manganese EF (lb/ton of material loaded)		Nickel EF (lb/ton of material loaded)		Phosphorus EF (lb/ton of material loaded)		Selenium EF (lb/ton of material loaded)		Chromium VI
	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Controlled with Fabric filter	Uncontrolled	Percent of total Cr that is Cr+6
Cement delivery to silo (with baghouse)	4.24E-09	1.68E-06	4.86E-10	1.79E-08	4.86E-10	2.34E-07	2.90E-08	2.52E-07	1.17E-07	2.02E-04	4.18E-08	1.76E-05	ND	1.18E-05	ND	ND	20%
Cement supplement delivery to Silo (with baghouse)	1.00E-06	ND	9.04E-08	ND	1.98E-08	ND	1.22E-06	ND	2.56E-07	ND	2.28E-06	ND	3.54E-06	ND	7.24E-08	ND	30%
Truck Loadout (no boot or shroud)	1.16E-06	3.04E-06	1.04E-07	2.44E-07	9.06E-09	3.42E-08	4.10E-06	1.14E-05	2.09E-05	6.12E-05	4.78E-06	1.19E-05	1.23E-05	3.84E-05	1.13E-07	2.62E-06	21.29%

UNCONTROLLED TAP EMISSIONS — Note: Includes baghouses as process equipment. 4,800 cy/day, and 1,752,000 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)	2.08E-07	9.12E-07	2.39E-08	1.05E-07	2.39E-08	1.05E-07	1.42E-06	5.42E-05	5.74E-06	2.52E-05	2.05E-06	8.99E-06	5.79E-04	2.54E-03	ND	ND	2.85E-07	
Cement supplement delivery to Silo (with baghouse)	7.30E-06	3.20E-05	6.60E-07	2.89E-06	1.45E-07	6.33E-07	8.91E-06	3.90E-05	1.87E-06	8.19E-06	1.66E-05	7.29E-05	2.58E-05	1.13E-04	5.29E-07	2.31E-06	2.67E-06	
Truck Loadout (NO boot or shroud)	1.71E-04	7.51E-04	1.38E-05	6.03E-05	1.93E-06	8.45E-06	6.43E-04	2.82E-03	3.45E-03	1.51E-02	6.71E-04	2.94E-03	2.17E-03	9.49E-03	1.48E-04	6.47E-04	1.37E-04	Facility Classification: Total Annual HAPs Emissions
Point Sources Total	1.79E-04	7.84E-04	1.44E-05	6.33E-05	2.10E-06	9.19E-06	6.53E-04	2.91E-03	3.46E-03	1.52E-02	6.90E-04	3.02E-03	2.77E-03	1.21E-02	1.48E-04	6.50E-04	1.40E-04	3.47E-02 Tons per year
IDAPA Screening EL (lb/hr)	1.50E-06		2.80E-05		3.70E-06		3.30E-02		3.33E-01		2.70E-05		7.00E-03		1.30E-02		5.60E-07	
EXCEEDS EL?	Yes		No		No		No		No		Yes		No		No		Yes	

CONTROLLED TAP EMISSIONS — Note: Includes baghouses as process equipment. 4,800 cy/day, and 300,000 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]	3.56E-08	1.56E-07	4.09E-09	1.79E-08	4.09E-09	1.79E-08	1.42E-06	1.07E-06	5.74E-06	4.31E-06	3.51E-07	1.54E-06	ND	ND	ND	ND	4.88E-08	
Cement supplement delivery to Silo (with baghouse)2	1.25E-06	5.48E-06	1.13E-07	4.95E-07	2.48E-08	1.08E-07	5.99E-05	6.68E-06	1.26E-05	1.40E-06	2.85E-06	1.25E-05	1.74E-04	1.94E-05	5.29E-07	3.96E-07	4.58E-07	
Truck Loadout (WITH boot or shroud)	4.40E-08	1.93E-07	3.53E-09	1.55E-08	4.95E-10	2.17E-09	9.64E-07	7.23E-07	5.18E-06	3.88E-06	1.72E-07	7.55E-07	3.25E-06	2.44E-06	2.22E-07	1.66E-07	3.52E-08	99.85% Control. Automatic rubber boot or equivalent.
Point Sources Total	1.33E-06	5.82E-06	1.21E-07	5.28E-07	2.93E-08	1.28E-07	6.23E-05	8.47E-06	2.35E-05	9.59E-06	3.37E-06	1.48E-05	1.77E-04	2.18E-05	7.50E-07	5.63E-07	5.41E-07	6.17E-05 Tons per year
IDAPA Screening EL (lb/hr)	1.50E-06		2.80E-05		3.70E-06		3.30E-02		3.33E-01		2.70E-05		7.00E-03		1.30E-02		5.60E-07	
Percent of EL	88.65%		0.43%		0.79%		0.19%		0.0071%		12.50%		2.53%		0.0058%		96.68%	
EXCEEDS EL?	No		No		No		No		No		No		No		No		No	

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

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

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

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

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

APPENDIX C

Modeling Review

P-060134

M E M O R A N D U M

DATE: February 23, 2007

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

Reviewed by: Darrin Mehr, Modeler/Air Quality Analyst, Air Quality Division

PROJECT NUMBER: P-060134

SUBJECT: Modeling Review for CPM Development Corporation, Initial Permit to Construct Application for a Portable Concrete Batch Plant (the "Erie Batch Plant"), with a proposed initial location near Coeur d'Alene, Idaho

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1.0 Summary

On behalf of CPM Development Corporation (CPM), and in preparation for submitting a Permit to Construct (PTC) application and requesting a 15-day pre-permit construction authorization for a newly-acquired 1997 portable 200 cubic yard per hour concrete batch plant, Aspen Consulting & Engineering, Inc. (Aspen) submitted a modeling protocol to DEQ on October 24, 2006. The protocol, which was approved via e-mail on November 14, 2006, reflected previous telephone discussions with DEQ Modeling Coordinator, Kevin Schilling, and was based on using a "typical" concrete batch plant layout and modeling input files provided by DEQ.

On November 21, 2006, DEQ received the PTC application, including ISC modeling based on an emissions inventory developed by Aspen. DEQ denied the application, citing discrepancies in the emission inventory calculations. On December 7, 2006, the application was resubmitted, including modeling using the corrected emission inventory.

A technical review of the submitted air quality analyses was conducted by DEQ. The submitted modeling analyses in combination with DEQ's staff analyses: 1) utilized appropriate methods and models; 2) were conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor locations. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
NAAQS compliance was demonstrated based on an ambient air boundary—referred to as "the fenceline" in the application—defined by a 100-meter (328 feet) radius from the approximate center of the facility footprint. The ambient concentration at this boundary, calculated from the predicted high 6^{th}-high modeled concentration at this point and a generic background concentration for portable sources, reaches 95.3% of the 24-hour PM_{10} NAAQS. This was based on an assumption that the batch plant is operated for 24 hours per day.	A permit condition imposing a setback requirement should be added to ensure that the distance to any sensitive receptor is at least equal to the distance for the modeled ambient air boundary. To reduce the required setback distance in any modification to this permit, the facility may want to consider demonstrating PM_{10} NAAQS compliance based on an operational day that is less than 24 hours.
The 24-hour ambient impact for PM_{10} was predicted to be 69.7 $\mu g/m^3$. The annual PM_{10} impact was predicted to be 3.62 $\mu g/m^3$.	IDAPA 58.01.01.006 defines a PM_{10} impact increase of 5 $\mu g/m^3$ (24-hour average) or 1 $\mu g/m^3$ (annual average) as a "significant contribution." A permit condition prohibiting operation of this portable facility in any PM_{10} nonattainment area should be imposed.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

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

2.1.1 Area Classification

The CPM Erie 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 pollutant impacts to ambient air from the emissions sources at this new 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. PM_{10} is the only criteria pollutant 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

[a] Micrograms per cubic meter

[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

DEQ provided Aspen with ISC3 input files set up for a "typical" batch plant layout. DEQ's evaluation of the modeling methodology was limited to reviewing the modeling analysis results and model input and output files provided with the application to ensure that the analysis used the methodology proposed in the modeling protocol, and followed the "typical" plant layout in the DEQ-provided input files. DEQ did not rerun the modeling analysis. Table 4 provides a summary of the modeling parameters used in the modeling analysis.

Table 4. MODELING PARAMETERS

Parameter	Description/ Values	Documentation/Additional Description
Model	ISCST3	Industrial Source Complex Short Term (ISCST3, version 02035) air dispersion model was deemed acceptable by DEQ because the protocol was submitted prior to November 9, 2006.
Meteorological data	Surface Data & Upper Air Data Boise, Idaho 1987-1991	Previous DEQ analyses showed that using Boise meteorological data generated the highest modeled values for concrete batch plants. In the November 14, 2006 approval of the submitted protocol, DEQ directed that the applicant use Boise 5-year met data. The station anemometer height of 6.1 meters was used in the modeling analysis.
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 maximum impacts from concrete batch plants are very near the facility.
Building downwash	Considered	The building profile input program (BPIP) was used.
Receptor grid	Grid 1	25-meter spacing along "fenceline" described by a circle with a radius of 100 meters.
	Grid 2	50-meter spacing for distances between 100 meters and 1,100 meters (1 km beyond the facility's 100-meter boundary).
	Grid 3	100 meter spacing for distances between 1,100 meters to 5, 100 meters (5 km beyond the facility's 100-meter boundary).

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

3

3.1.1 Modeling protocol

A protocol was submitted by Aspen to DEQ prior to submission of the ISC3 modeling demonstrations. Aspen used the ISC3 modeling inputs provided by DEQ for the "typical" batch plant modeling demonstration.

Modeling was conducted using methods required by the *State of Idaho Air Quality Modeling Guideline*.[2]

3.1.2 Model Selection

ISC3 was used by Aspen to conduct the final ambient air impact analyses for this project.

3.1.3 Meteorological Data

Surface and upper air meteorological data for 1987 through 1991 from Boise, Idaho were used for this portable batch plant. Previous DEQ analyses using ISC-based models showed that using Boise meteorological data generated the highest modeled values for concrete batch plants. In the November 14, 2006 approval of the submitted protocol, DEQ directed that the applicant use Boise 5-year met data.

3.1.4 Terrain Effects

Impacts were assessed assuming flat terrain because the results must be reasonably applicable to all locations for this portable facility. Since 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 the method.

3.1.5 Facility Layout and Ambient Air Boundary

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.

For this case, the ambient air boundary was taken to be along the perimeter of a circle with a radius of 100 meters from the center of a 20 meter by 20 meter "typical" plant layout shown in Figure 3-1.

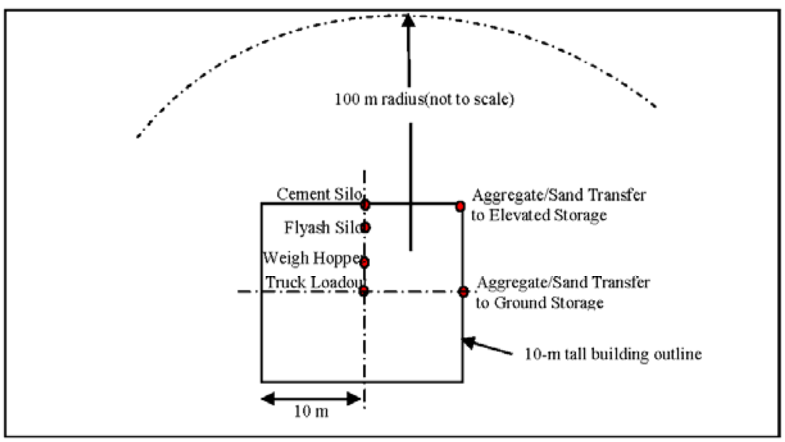

Figure 3-1. Typical Concrete Batch Plant Modeling Layout

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

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3.1.6 Building Downwash

To account for plume downwash from any buildings that may be 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 ready mix concrete batch plant.

3.1.7 Receptor Network

The receptor grids used in this analysis met the minimum recommendations specified in the State of Idaho Air Quality Modeling Guideline.

3.2 Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application, and include criteria pollutant emissions from all point sources (silo and weigh hopper baghouses) and fugitive emissions sources (modeled as volume sources) including transfers to aggregate and sand storage, aggregate/sand transfer to elevated storage, and truck loadout. Per DEQ direction, fugitive emissions excluded wind erosion from aggregate and sand piles and emission from vehicle traffic. The TAPs emissions inventory included uncontrolled emissions from cement and flyash silo filling and truck loadout. Uncontrolled emissions of all TAPs were below the applicable screening emission level except for arsenic and hexavalent chromium (Chromium VI).

DEQ verified that all modeled criteria pollutant emissions rates and TAPs emission rates were equal to or greater than the facility's emissions calculated in the PTC application (see Appendix B of the permit statement of basis). Demonstration of preconstruction compliance for TAPs emissions was based on uncontrolled emissions (200 cy/hr x 8,760 hours per year, with silo baghouses treated as process equipment rather than air pollution control devices).

3.3 Emission Release Parameters

Emission release parameters used in the dispersion modeling analysis submitted by the applicant were reviewed against those in the permit application. Values used for stack height, stack diameter, exhaust temperature, and exhaust velocity for the point sources appeared reasonable and within expected ranges. Additional documentation for the verification of these parameters was not required. Release parameters are summarized in Tables 7-1 and 7-2 from the application (see Attachment 1 to this modeling memo).

3.4 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 5.

Table 5. RESULTS OF FULL IMPACT ANALYSES

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
PM_{10}[d]	24-hour	69.7	73	143	150	95.3%
	Annual	3.62	26	30	50	60.0%

a. Maximum 6th highest value (24-hour standard) or 1st highest (annual 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

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The results of the results for the TAPs analysis are shown in Table 6.

Table 6. RESULTS OF TAPs ANALYSIS (UNCONTROLLED EMISSIONS)				
TAP	**Averaging Period**	**Modeled Design Concentration[a] (μg/m^3)[b]**	**AACC[c] (μg/m^3)**	**Percent of AACC**
Arsenic	Annual	9.00E-05	2.30E-04	39.1%
Chromium (VI)	Annual	5.00E-05	8.30E-05	60.0%

a. Maximum 1st highest 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 submitted, in combination with DEQ's verification review, demonstrated to DEQ's satisfaction that emissions from the facility, as represented by the applicant in the permit application, will not cause or significantly contribute to a violation of any air quality standard.

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Attachment 1.
CPM Development Corp., Erie Batch Plant Emission Release Parameters

TABLE 7-1
POINT SOURCE MODEL INPUT PARAMETERS
CPM DEVELOPMENT CORP.
ERIE PORTABLE

Source Name	Source Description	UTM Easting (m)	UTM Northing (m)	Stack Height (ft)	Stack Diameter (ft)	Stack Temp (F)	Flowrate (acfm)	PM_{10} Model 24-Hour Ave. Emission Rate (lb/hr)	PM_{10} Model Annual Ave. Emission Rate (ton/yr)
CMNTSILO	Storage silo filling baghouse	0	10	46	1.64	77	42.98	0.02	0.015
WEIGHOP	Weigh hopper loading baghouse	0	2.5	28	0.98	77	9.19	0.76	0.57
FLYSILO	Flyash silo baghouse	0	7.5	43	1.12	77	7.65	0.04	0.03

TABLE 7-2
VOLUME SOURCE
MODEL INPUT PARAMETERS
CPM DEVELOPMENT CORP.
ERIE PORTABLE

Source ID	Source Description	Easting (m)	Northing (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	PM_{10} Model 24-Hour Ave. Emission Rate (lb/hr)	PM_{10} Model Annual Ave. Emission Rate (ton/yr)
AGG&SAND	Aggregate/sand to/from storage pile	10	0	1.50	11.6	0.70	0.38	0.28
AGGTOSTO	Aggregate/sand to elevated storage	10	10	5.00	1.16	4.65	0.19	0.14
TRUCKLOD	Truck loading	0	0	5.00	2.33	4.65	0.04	0.03