



State of Idaho
Department of Environmental Quality
Air Quality Division

**AIR QUALITY PERMIT
STATEMENT OF BASIS**

Permit to Construct No. P-2009.0047

Final

Knife River, Inc.

Portable

Facility ID No. 777-00456

July 9, 2009

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Permit Writer

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

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Acronyms, Units, and Chemical Nomenclature

AAC	acceptable ambient concentration
AACC	acceptable ambient concentration for carcinogens
AIRS	Aerometric Information Retrieval System
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CO	carbon monoxide
cy/day	cubic yards per calendar day
cy/hr	cubic yards per hour
cy/yr	cubic yards per year
DEQ	Department of Environmental Quality
EL	screening emissions levels
HAP	hazardous air pollutant
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
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
Rules	Rules for the Control of Air Pollution in Idaho
SIP	State Implementation Plan
SO_2	sulfur dioxide
TAP	toxic air pollutant
T/yr	tons per year
VOC	volatile organic compound

1. FACILITY INFORMATION

1.1 Facility Description

The facility is a portable truck mix concrete batch plant consisting of aggregate stockpiles, a cement storage silo, a cement supplement (flyash) storage silo, a weigh batcher, and conveyors. The facility combines aggregate, flyash, and cement and transfers the mixture into a truck along with a measured amount of water for in-transit mixing of the concrete. Electric power will be supplied to the facility from the local power grid. A 0.55 MMBtu/hr water heater heats the water prior to use for the concrete.

1.2 Permitting Action and Facility Permitting History

This permit is the initial PTC for this facility.

2. APPLICATION SCOPE AND APPLICATION CHRONOLOGY

2.1 Application Scope

Knife River, Inc., has applied for a PTC to operate a portable concrete batch plant with a permitted throughput limit of 400,000 cubic yards per year.

2.2 Application Chronology

April 13, 2009 DEQ receives application
April 14, 2009 DEQ receives \$1,000 application fee
May 11, 2009 DEQ receives revised application
May 13, 2009 DEQ issues completeness letter
May 22, 2009 DEQ issues facility draft permit
May 27, 2009 Facility e-mails comments (no changes)
June 2, 2009 Public comment period starts
July 2, 2009 Public comment period ends
May 26, 2009 DEQ receives permit processing fee

3. TECHNICAL ANALYSIS

3.1 Emission Unit and Control Device

Table 3.1 EMISSION UNIT AND CONTROL DEVICE INFORMATION

Emissions Unit Description	Control Device Description
Cement Storage Silo	Baghouse
Cement Supplement Storage Silo	Baghouse
Weigh Batcher	Boot
Truck Loading	Boot
Materials Transfer (Fugitives)	Water Sprays or Equivalent

3.2 Emissions Inventory

The emissions were estimated using the DEQ Concrete Batch Plant Spreadsheet. Controlled emissions estimates are based on the use of the control devices and maximum production limits listed in Table 3.1.

Table 3.2 UNCONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit	PM ₁₀		LEAD
	lb/hr	T/yr	lb/quarter
Aggregate delivery to ground storage		1.63	
Sand delivery to ground storage		0.37	
Aggregate transfer to conveyor		1.63	
Sand transfer to conveyor		0.37	
Aggregate transfer to elevated storage		1.63	
Sand transfer to elevated storage		0.37	
Cement delivery to Silo (controlled EF because baghouse is process equipment)		0.04	0.00286
Cement supplement delivery to Silo (controlled EF because baghouse is process equipment)		0.09	0.137
Weigh hopper loading (sand & aggregate batcher loading)		2.08	
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		41.20	0.951
Water heater		0.02	
Total, Point Sources		43.44	1.09
Total, Process Fugitives		6.00	

Table 3.3 CONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit	PM ₁₀		LEAD
	lb/hr	T/yr	lb/quarter
Cement delivery to Silo (controlled EF because baghouse is process equipment)	0.01	0.0167	2.68E-07
Cement supplement delivery to Silo (controlled EF because baghouse is process equipment)	0.0215	0.0358	1.90E-06
Weigh hopper loading (sand & aggregate batcher loading)	0.0237	0.0395	
Truck mix loading	0.47	0.78	5.10E-06
Water heater	0.0041	0.0179	5.9E-04
Total, Point Sources	0.53	0.89	0.0006
Aggregate delivery to ground storage	0.09	0.155	
Sand delivery to ground storage	0.02	0.035	
Aggregate transfer to conveyor	0.09	0.155	
Sand transfer to conveyor	0.02	0.035	
Aggregate transfer to elevated storage	0.09	0.155	
Sand transfer to elevated storage	0.02	0.035	
Total, Process Fugitives	0.33	0.57	

There is a complete listing of emissions for the water heater in Appendix B.

Table 3.4 UNCONTROLLED TAP AND HAP EMISSIONS SUMMARY

TAPs	HAPs	24-hour Average ^a	Annual Average ^a
		lb/hr	lb/hr
Arsenic	Arsenic		1.7E-04
Beryllium	Beryllium		8.67E-06
Cadmium	Cadmium		1.85E-06
Chromium	Chromium	3.93E-04	
Manganese	Manganese	2.08E-03	
Nickel	Nickel		4.15E-04
Phosphorus	Phosphorus	1.66E-03	
Selenium	Selenium	8.90E-05	
Chromium VI ^c	Chromium VI ^c		8.47E-05

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

b. NA = not applicable.

c. Chromium is a HAP. Chromium VI is not specifically listed as a HAP by itself.

Table 3.5 CONTROLLED TAP AND HAP EMISSIONS SUMMARY

TAPs	HAPs	24-hour Average ^a	Annual Average ^a
		lb/hr	lb/hr
Arsenic	Arsenic		3.78E-06
Beryllium	Beryllium		3.20E-07
Cadmium	Cadmium		6.53E-07
Chromium	Chromium	4.75E-05	
Manganese	Manganese	9.57E-05	
Nickel	Nickel		1.31E-05
Phosphorus	Phosphorus	1.41E-04	
Selenium	Selenium	3.97E-06	
Chromium VI ^c	Chromium VI ^c		2.99E-06

- a. 24-hour average only applies to non-carcinogenic TAPs. Annual average only applies to carcinogenic TAPs.
- b. NA = not applicable.
- c. Chromium is a HAP. Chromium VI is not specifically listed as a HAP by itself.

There is a complete listing of TAP and HAP emissions for the water heater in Appendix B.

3.3 Ambient Air Quality Impact Analysis

Based on the emissions inventory, the potential emission rate of PM₁₀ from this concrete batch plant from point sources and fugitive sources was estimated at 0.9 lb/hr and 1.4 T/yr. These levels exceed the published DEQ modeling threshold (Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002) for PM₁₀ of 0.2 lb/hr and 1.0 T/yr.

The DEQ generic modeling results (Table 3.6) demonstrated that for the production rate limits and setbacks that were modeled—and that will be imposed on the operations for this concrete batch plant—the PM₁₀ emissions from the concrete batch plant combined with background concentrations would be less than the 24-hr PM₁₀ NAAQS.

Table 3.6 CRITERIA FOR USING DEQ'S GENERIC CONCRETE BATCH PLANT MODELING RESULTS FOR AIR IMPACT ANALYSES

Parameter	DEQ Model				Proposed Project	Comments
Water Heater	Natural gas-fired or Diesel-fired: Rating, hours, and fuel use may vary but emissions must not exceed DEQ modeling thresholds. Use DEQ spreadsheet to determine maximum daily and annual use				Natural gas: 24 hr/day 2500 hr/yr 0.0129 MMscf/day 1.348 MMscf/yr Diesel: Not used	Meets
CBP Power supply.	No generator. Line power is available.				Line Power	Meets
Number of cement and/or cement supplement (e.g., flyash) 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.					Meets
Maximum daily concrete production (cy/day)	1,500	2,400	3,600	4,800	2400	Meets
Minimum Setback Distance Minimum distance from nearest edge of any emissions source to a receptor. ^a	40 m (131 ft)	60 m (197 ft)	100 m (328 ft)	150 m (492 ft)	60 m	Meets
Maximum annual concrete production (cy/year)	300,000	400,000	500,000	500,000	400,000	Meets
Point Source Emissions Controls and Stack Parameters:						

Table 3.6 CRITERIA FOR USING DEQ'S GENERIC CONCRETE BATCH PLANT MODELING RESULTS FOR AIR IMPACT ANALYSES

Parameter	DEQ Model	Proposed Project	Comments
Cement and supplement storage silo baghouse(s)	Stack Height \geq 10 meters (32.8 ft) Minimum PM/PM ₁₀ control: 99%	Cement Silo BH – 60 ft. Supplement Baghouse – 65 ft.	Meets
Weigh hopper loading: Baghouse or equivalent, e.g., sealed boot connection with displaced air vented through silo baghouse.	Stack Height: \geq 10m (32.8 ft) Minimum PM/PM ₁₀ control: 99%	See Alternative Weigh hopper loading, below	
Alternative Weigh hopper loading: Unsealed boot, shroud, or enclosure.	Minimum PM/PM ₁₀ control: 95%	Specify release height: 28 feet	Meets
Truck-mix loadout or Central Mix loading	Boot enclosure, shroud, water sprays, or baghouse/cartridge filter Minimum PM/PM ₁₀ control: 95%	Boot enclosure 95% control	Meets
Fugitive Emissions:			
Transfer Point Fugitives	BMPs. No visible emissions leaving property boundary. (see/no see compliance demonstration) 75% control: water sprays, enclosures, shrouds, or aggregate/sand is damp on an as-received basis and used before significantly drying out.	Aggregate and sand is damp as received and used before drying out significantly. 75% Control	Meets

^a CBP is considered to be co-located if the minimum distance FROM any other emissions source TO any stockpile, silo baghouse stack, truck or central mix loading point, or weigh batcher transfer point is less than or equal to 200 meters (656 feet).

^b Minimum distance FROM any stockpile, silo baghouse stack, truck or central mix loading point, or weigh batcher transfer point TO any area outside of a building where the public has access.

By using DEQ's generic modeling approach for concrete batch plants, the Knife River, Inc. plant is required to have a minimum setback from the property boundary of approximately 197 feet. The proposed project meets all the recommended parameters of generic modeling.

Fugitive emissions from traffic and wind erosion from stockpiles are not considered in DEQ's generic modeling; emissions from these sources are controlled through the use of Best Management Practices (BMP) contained in the permit.

TAP emissions estimates in Table 3.4 of arsenic and chromium VI exceeded the applicable emissions screening level (EL). Compliance with the TAP increments was demonstrated through dispersion modeling which showed that the modeled emissions are below the AAC and AACC.

Knife River, Inc. has demonstrated compliance to DEQ's satisfaction that emissions from the Knife River, Inc. plant will not cause or significantly contribute to a violation of any ambient air quality standard. Knife River, Inc. has also demonstrated compliance to DEQ's satisfaction that an emissions increase due to this permitting action will not exceed any AAC or AACC for TAPs. Compliance was demonstrated using DEQ's generic modeling analysis.

4. REGULATORY REVIEW

4.1 Attainment Designation (40 CFR 81.313)

The facility is a portable facility and can be located in any attainment or unclassified area.

4.2 Permit to Construct (IDAPA 58.01.01.201)

A PTC is required for this facility because it is the construction of a new facility with estimated uncontrolled TAP emissions that exceed the AAC and AACC, so does not qualify for an exemption.

4.3 Tier II Operating Permit (IDAPA 58.01.01.401)

A Tier II operating permit is not required for this facility.

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

This source does not emit more than the Title V threshold of any applicable air pollutant, so it is not a Title V source. This is a true minor source facility.

4.5 PSD Classification (40 CFR 52.21)

This facility is not a PSD source.

4.6 NSPS Applicability (40 CFR 60)

There are no NSPS regulations that apply to this facility.

The provisions of Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants, do not apply to stand-alone screening operations at concrete batch plants without crushers or grinding mills. The concrete batch plant is therefore not subject to this NSPS.

The concrete batch plant will be powered by the electrical grid. The concrete batch plant is therefore not subject to 40 CFR 60, Subpart IIII – Standard of Performance for stationary Compression Ignition Internal Combustion Engines.

Subpart Dc is not applicable to the water heater because it is rated at 0.55 MMBtu, which is less than the minimum applicable rate of 10 MMBtu/hr and because it is not used to produce steam.

4.7 NESHAP Applicability (40 CFR 61)

There are no NESHAP regulations that apply to this facility.

4.8 MACT Applicability (40 CFR 63)

There are no MACT regulations that apply to this facility.

4.9 CAM Applicability (40 CFR 64)

CAM does not apply to non-Title V sources.

4.10 Permit Conditions Review

This section describes the permit conditions for this initial permit that have been added as a result of this permitting action.

Permit Conditions 1.3, 2.1, and 2.2

Describe the emission sources and emission 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. Applicability of DEQ's generic modeling analysis was also determined based on the descriptions of these controls.

Permit Condition 2.3:

Limits visible emissions from the concrete batch plant. Compliance with this limit is demonstrated by monitoring and recordkeeping requirements in Permit Condition 2.12.

Permit Condition 2.4:

The particulate matter standard from IDAPA 58.01.01.677 applies to the water heater. As long as the heater uses only natural gas for fuel, a reasonable assurance of compliance with this standard has been demonstrated. This water heater is designed to only operate on natural gas.

Permit Condition 2.5:

The water heater is restricted to burning natural gas only to demonstrate compliance with Permit Condition 2.4.

Permit Condition 2.6:

Limits the concrete production and setback distance from the property boundary. Compliance with carcinogenic TAPs requirements in the generic modeling for this setback distance was based upon the controlled production levels specified in the table. An annual production limit is therefore required in accordance with IDAPA 58.01.01.210.08.c. Compliance with the production limit is demonstrated by monitoring the concrete production as required by Permit Condition 2.10.

Requires a reasonable setback from any area outside a structure that is accessible to the general public. This condition is necessary to limit exposure to members of the public to PM₁₀ levels that may approach the 24-hour NAAQS limit. The minimum setback distance limit is based on the results of DEQ's generic modeling analysis. Modeling of ambient air impacts was based on distances from the approximate center of a typical concrete batch plant. This permit condition, however, is based on distance from the nearest edge of any stockpile or piece of equipment associated with the concrete batch plant. This is intended to simplify the method for demonstrating compliance, i.e., compliance can be demonstrated by directly measuring the distance as required by Permit Condition 2.11.

Permit Conditions 2.7 and 2.8

Requires the operation of control devices according to the manufacturer specifications, and the utilization of strategies and reasonable controls to minimize fugitive emissions. Proper operation of control devices and utilization of control measures is assumed in DEQ's generic modeling analysis.

Permit Condition 2.9

Requires control of fugitive dust and specifies when controls must be applied and types of strategies to use. Compliance is assessed as required on Permit Condition 2.13.

Permit Condition 2.10

Requires the permittee to physically measure the concrete production rate on a daily and an annual basis to demonstrate compliance with the limits in Permit Condition 2.6.

Permit Condition 2.11

Requires the permittee to physically measure the setback distance whenever the plant is moved or the layout is changed such that emissions sources are closer to a property boundary to demonstrate compliance with the limits in Permit Condition 2.6.

Permit Condition 2.12

Requires the permittee to conduct inspection and monitoring to insure compliance with opacity limits in Permit Condition 2.3. Recordkeeping of the results of each inspection and when corrective measures are implemented is also required.

Permit Condition 2.13

Requires the permittee to conduct inspections each day that the plant is operating to assess the control of fugitive emissions and specifies actions to take as a result of such inspections.

Permit Condition 2.14

Requires the permittee to maintain records of the results of each baghouse/filter system that is specified in the O&M manual.

Permit Condition 2.15

Prohibits operation of the concrete batch plant in any PM₁₀ nonattainment area. IDAPA 58.01.01.006 defines a “significant contribution” as any increase in ambient concentrations that would exceed 5.0 µg/m³ (24-hr average) or 1.0 µg/m³ (annual average). The generic modeling analysis used to demonstrate preconstruction compliance with NAAQS for this concrete batch plant predicted that PM₁₀ impacts to ambient air quality would exceed these levels. In any nonattainment area, concrete batch plant operations would therefore result in a significant contribution. Should the permittee desire to operate in any PM₁₀ nonattainment area, the permittee shall submit a PTC application to modify this permit.

Permit Condition 2.16

Prohibits the concrete batch plant from collocating with any other source of emissions unless the other source has a permit that covers the operation of this plant. The provisions in the other permit apply. This limit is necessary to ensure compliance with the 24-hour PM₁₀ NAAQS.

Permit Condition 2.17

Requires reporting of the relocation of the concrete batch plant, including providing information necessary to demonstrate compliance with the minimum setback limits in Permit Condition 2.6.

5. PERMIT FEES

Table 5.1 lists the processing fee associated with this permitting action. The facility is subject to a processing fee of \$2,500 because it’s permitted emissions are between one and ten tons per year. Refer to the chronology for fee receipt dates. The fee calculation does not include fugitive emissions per IDAPA 58.01.01.225.

Table 5.1 PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.2	0	0.2
SO ₂	0.001	0	0.001
CO	0.2	0	0.2
PM ₁₀	0.9	0	0.9
VOC	0.01	0	0.01
HAPS	0.0	0	0.0
Total:	1.3	0	1.3
Fee Due	\$ 2,500.00		

6. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided from April 21 to May 6, 2009, in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application. There was a request for a public comment period on DEQ’s proposed action.

A public comment period was made available to the public from June 2, 2009 to July 2, 2009. During this time, comments were submitted in response to DEQ's proposed action. A response to public comments document has been crafted by DEQ based on comments submitted during the public comment period. That document is part of the final permit package for this permitting action.

Appendix A – AIRS Information

AIRS/AFS Facility-wide Classification Form

Facility Name: Knife River
Facility Location: Portable
Facility ID: 777-00456 **Date:** May 20, 2009
Project/Permit No.: P-2009.0047 **Completed By:** Carole Zundel

- Check if there are no changes to the facilitywide classification resulting from this action. (compare to form with last permit)
- Yes, this facility is an SM80 source.

Identify the facility's area classification as A (attainment), N (nonattainment), or U (unclassified) for the following pollutants:

	SO2	PM10	VOC	
Area Classification:	U	U	U	DO NOT LEAVE ANY BLANK

Check one of the following:

- SIP [0]** - Yes, this facility is subject to SIP requirements. (do not use if facility is Title V)
- OR
- Title V [V]** - Yes, this facility is subject to Title V requirements. (If yes, do not also use SIP listed above.)

For SIP or TV, identify the classification (A, SM, B, C, or ND) for the pollutants listed below. Leave box blank if pollutant is not applicable to facility.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	B	B	B	B	B	B	B

- PSD [6]** - Yes, this facility has a PSD permit.

If yes, identify the pollutant(s) listed below that apply to PSD. Leave box blank if pollutant does not apply to PSD.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	<input type="checkbox"/>						

- NSR - NAA [7]** - Yes, this facility is subject to NSR nonattainment area (IDAPA 58.01.01.204) requirements.

Note: As of 9/12/08, Idaho has no facility in this category.

If yes, identify the pollutant(s) listed below that apply to NSR-NAA. Leave box blank if pollutant does not apply to NSR - NAA.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	<input type="checkbox"/>						

- NESHAP [8]** - Yes, this facility is subject to NESHAP (Part 61) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable?

- NSPS [9]** - Yes, this facility is subject to NSPS (Part 60) requirements.

If yes, what CFR Subpart(s) is applicable?

If yes, identify the pollutant(s) regulated by the subpart(s) listed above. Leave box blank if pollutant does not apply to the NSPS.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	<input type="checkbox"/>						

- MACT [M]** - Yes, this facility is subject to MACT (Part 63) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable?

Appendix B – Emissions Inventory

CRITERIA POLLUTANT EMISSION INVENTORY for Portable Concrete Batch Plant

7/10/09 9:41

Facility Information		Assumptions Implied or Stated in Application:
Company: Knife River	777-00456	See control assumptions Truck Mix (T) or Central Mix (C)? <input checked="" type="checkbox"/> T
Facility ID: P-2009.0047	Portable Concrete Batch Plant	
Permit No.: Custom Geneva Steel		
Source Type:		
Manufacturer/Model:		

INCREASE IN Production¹

Maximum Hourly Production Rate:	120	cy/hr
Proposed Daily Production Rate:	2,400	cy/day
Proposed Maximum Annual Production Rate:	400,000	cy/year
Cement Storage Silo Capacity:	4540	ft ³ of aerated cement
Cement Storage Silo Large Compartment Capacity for cement only:	65%	of the silo capacity
Cement Storage Silo small Compartment Capacity for cement or ash:	35%	of the silo capacity

Per manufacturer
Hours of operation per day at max capacity

DEQ EI VERIFICATION WORKSHEET v. 032007
Tip: Purple text or numbers are meant to be changed.
Black text or numbers indicates it's hard-wired or calculated.
Review these before you change them.

Change in PM₁₀ 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	0.09	0.078	1.86	0.035	0.155	75% Water Sprays at Operator's Discretion
Sand delivery to ground storage		0.0007	0.02	0.018	0.42	0.008	0.035	75% Water Sprays at Operator's Discretion
Aggregate transfer to conveyor		0.0031	0.09	0.078	1.86	0.035	0.155	75% Water Sprays at Operator's Discretion
Sand transfer to conveyor		0.0007	0.02	0.018	0.42	0.008	0.035	75% Water Sprays at Operator's Discretion
Aggregate transfer to elevated storage		0.0031	0.09	0.078	1.86	0.035	0.155	75% Water Sprays at Operator's Discretion
Sand transfer to elevated storage		0.0007	0.02	0.018	0.42	0.008	0.035	75% Water Sprays at Operator's Discretion
Cement delivery to Silo (controlled EF)	0.0001		1.00E-02	8.35E-03	2.00E-01	3.81E-03	1.67E-02	0.00% Baghouse is process equipment, use controlled EF
Cement supplement delivery to Silo (controlled EF)	0.0002		2.15E-02	1.79E-02	4.29E-01	8.16E-03	3.58E-02	0.00% Baghouse is process equipment, use controlled EF
Weigh hopper loading (sand & aggregate batcher loading)		0.0040	2.37E-02	1.98E-02	4.74E-01	9.02E-03	3.95E-02	95.0% Sealed boot (vents back to silo) or baghouse
Truck mix loading, Table 11.12-2, "0.278 lb/ton of cement+flyash" x ((491 lb cement + 73 lb flyash)/cy concrete) / 2000 lb = 0.0784 lb/cy		0.0784	0.47	0.39	9.41	0.18	0.78	95.0% Boot, enclosure, or equivalent
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	99.9% Baghouse control
Point Sources Total Emissions		8.26E-02	5.26E-01	4.38E-01	1.05E+01	2.00E-01	8.76E-01	
Process Fugitive Emissions		0.0114	0.34	0.29	6.85	0.13	0.57	
Facility Wide Total: Point Sources + Process Fugitives (Except for Road Dust and Windblown Dust)		0.0940	0.87	0.72	17.36	0.33	1.45	

POINT SOURCE EMISSIONS for FACILITY CLASSIFICATION⁶	Controlled EF	at 1,051,200 cy/yr	T/yr
Facility Classification Total PM ⁵	8.40E-03		4.42E+00
Facility Classification Total PM ₁₀ ^{5,7}	4.21E-03		2.22E+00

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) + 0.0079 (weigh batcher)
for PM₁₀ = 0.0001 (cement silo) + 0.0002 (flyash silo) + 0.0040 (weigh batcher)

⁶ Emissions for Facility Classification are based on baghouses as process equipment, 24-hr day, 8760 hr/yr = 2,880 cy/day, and 1,051,200 cy/yr

⁷ Emissions for Facility Classification do not include truck mix loading emissions; this is typically considered a fugitive emission source for concrete batch plants.

Emissions Point	Lead Emission Factor ¹ (lb/ton of material loaded)		Increase in Emissions from this PTC			Emissions for Facility Classification	
	Controlled with fabric	Uncontrolled	Emission Rate, Max.	Emissions for Comparison with DEQ Modeling Threshold	Emission Rate, Quarterly		T/yr
Cement delivery to silo ²	1.09E-08	7.36E-07	3.21E-07	1.95E-04	1.07E-03	2.68E-07	Point Source 1.41E-06
Cement supplement delivery to Silo ³	5.20E-07	ND	2.28E-06	1.39E-03	7.59E-03	1.90E-06	Point Source 9.98E-06
Truck Loadout (with 95% control) ⁷		3.62E-06	6.13E-06	3.73E-03	2.04E-02	5.10E-06	Fugitive
Central Mix (with 130% control)		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Fugitive
Total			8.72E-06	5.31E-03	0.029		Point Sources 1.14E-05
DEQ Modeling Threshold				100	0.6		
Modeling Required?				No	No		

¹ The emissions factors are from AP-42, Table 11.12-8 (version 06/06)

² Max. hourly rate = EF x pound of cement/yd³ of concrete x max. hourly concrete production rate/(2000 lb/T)

³ lb/mo = EF x pound of material/yd³ of concrete x max. daily concrete production rate x (365/12)/(2000 lb/T)

⁴ T/yr = EF x pound of material/yd³ of concrete x max. annual concrete production rate/(2000 lb/T)

⁵ lb/hr, qtrly avg = lb/mo x 3 months per qtr / (8760/4) hrs per qtr

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

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	1665 pounds
Sand	1428 pounds
Cement	491 pounds
Water	73 pounds
Concrete	20 gallons
	4024 pounds

Truck Mix Loadout Factor: 1
Central Mix Batching Factor: 0

Company: Knife River
Facility ID: 777-00456
Permit No.: P-2009.0047
Source Type: Portable Concrete Batch Plant
Manufacturer: Custom Geneva Steel

DEQ EI VERIFICATION WORKSHEET Version 032007
Tip: Purple text or numbers are meant to be changed.
Black text or numbers indicates it's hard-wired or calculated.
Review these before you change them.

Increase in Production

Maximum Hourly Production Rate:	120 c/yhr	24 hrs/day
Proposed Daily Production Rate:	2,400 c/day	7 day/wk
Proposed Maximum Annual Production Rate:	400,000 c/year	52 wks/year
Uncontrolled (Unlimited) Production Rate)		
	2,880 c/day	
	1,051,200 c/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 (Percent of total Cr that is Cr-6)	
	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	Controlled with Fabric filter	Uncontrolled
Cement delivery to silo (with baghouse)	4.24E-09	1.68E-06	4.86E-10	1.79E-08	4.88E-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	2.58E-07	ND	2.28E-06	ND	3.54E-06	ND	7.24E-08	ND	30%	
Truck Loadout (no boot or shroud)	1.16E-05	3.04E-06	1.04E-07	2.44E-07	9.06E-09	3.49E-08	4.10E-06	1.14E-05	6.12E-05	0.00E+00	4.78E-06	1.19E-05	1.23E-05	3.84E-05	1.13E-07	2.62E-06	21.29%	
Central Mix Batching (NO boot or shroud)	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	21.29%	

UNCONTROLLED TAP EMISSIONS Note: Includes baghouses as process equipment.

Emissions Point	Arsenic		Beryllium		Cadmium		Chromium		Manganese		Nickel		Phosphorus		Selenium		Chromium VI	
	lb/hr annual avg.	Tyr ⁴	lb/hr annual avg.	Tyr	lb/hr annual avg.	Tyr	lb/hr 24-hr avg.	Tyr ⁵	lb/hr 24-hr avg.	Tyr	lb/hr annual avg.	Tyr	lb/hr 24-hr avg.	Tyr	lb/hr 24-hr avg.	Tyr	lb/hr annual avg.	Percent of total Cr that is Cr-6
Cement delivery to silo (with baghouse)	1.25E-07	5.47E-07	1.43E-08	6.27E-08	1.43E-08	6.27E-08	8.54E-07	3.28E-05	3.49E-06	1.51E-05	1.23E-06	5.39E-06	3.48E-04	1.52E-03	ND	ND	1.71E-07	
Cement supplement delivery to Silo (with baghouse)	4.38E-06	1.92E-05	3.96E-07	1.73E-06	8.67E-08	3.89E-07	5.34E-06	2.34E-05	1.12E-06	4.91E-06	9.99E-06	4.37E-05	1.55E-05	6.79E-05	3.17E-07	1.39E-06	1.60E-06	
Truck Loadout (NO boot/shroud)	1.03E-04	4.51E-04	8.26E-06	3.62E-05	1.18E-06	5.07E-06	3.86E-04	1.69E-03	2.07E-03	9.07E-03	4.03E-04	1.76E-03	1.30E-03	5.69E-03	8.87E-05	3.88E-04	8.21E-05	
Central Mix Batching (NO boot or shroud)	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	
Sources Total	1.07E-04	4.70E-04	8.67E-06	3.80E-05	1.26E-06	5.51E-06	3.92E-04	1.75E-03	2.08E-03	9.08E-03	4.14E-04	1.81E-03	1.58E-03	7.28E-03	8.90E-05	3.90E-04	8.39E-05	
IDAPA Screening EL (lb/hr)	1.50E-06	Yes	2.80E-05	No	3.70E-06	No	3.30E-02	No	3.33E-01	No	2.70E-05	Yes	7.00E-03	No	1.30E-02	No	5.60E-07	
EXCEEDS EL?	Yes		No		No		No		No		Yes		No		No		Yes	

Facility Classification: Total Annual HAPs Emissions
2.08E-02 Tons per year

CONTROLLED TAP EMISSIONS Note: Includes baghouses as process equipment.

Emissions Point	Arsenic		Beryllium		Cadmium		Chromium		Manganese		Nickel		Phosphorus		Selenium		Chromium VI	
	lb/hr annual avg.	Tyr ⁴	lb/hr annual avg.	Tyr	lb/hr annual avg.	Tyr	lb/hr 24-hr avg.	Tyr ⁵	lb/hr 24-hr avg.	Tyr	lb/hr annual avg.	Tyr	lb/hr 24-hr avg.	Tyr	lb/hr 24-hr avg.	Tyr	lb/hr annual avg.	Percent of total Cr that is Cr-6
Cement delivery to silo (with baghouse)	4.75E-08	2.08E-07	5.45E-09	2.39E-08	5.45E-09	2.39E-08	7.12E-07	1.42E-06	2.87E-06	5.74E-06	4.69E-07	2.05E-06	ND	ND	ND	ND	6.50E-08	
Cement supplement delivery to Silo (with baghouse)	1.67E-06	7.30E-06	1.51E-07	6.60E-07	3.30E-08	1.45E-07	3.00E-05	8.91E-06	6.28E-06	1.87E-06	3.80E-06	1.66E-05	8.69E-05	2.59E-05	2.64E-07	5.29E-07	6.10E-07	
Truck Loadout (with boot)	1.96E-06	8.57E-06	1.57E-07	6.88E-07	2.20E-08	9.64E-08	1.61E-05	3.21E-05	8.63E-05	1.73E-04	7.66E-06	3.36E-05	5.41E-05	1.08E-04	3.69E-06	7.39E-06	1.56E-06	
Central Mix Batching (WITH boot or shroud)	0.00E+00	0.00E+00	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	
Sources Total	3.67E-06	1.61E-05	3.13E-07	1.37E-06	6.05E-08	2.69E-07	4.67E-05	4.29E-05	9.54E-05	1.80E-04	1.19E-05	5.23E-05	1.41E-04	1.34E-04	3.98E-06	7.92E-06	2.24E-06	
IDAPA Screening EL (lb/hr)	1.50E-06	Yes	2.80E-05	No	3.70E-06	No	3.30E-02	No	3.33E-01	No	2.70E-05	Yes	7.00E-03	No	1.30E-02	No	5.60E-07	
Percent of EL	244.76%	Yes	1.12%	No	1.63%	No	0.14%	No	0.0287%	No	41.19%	No	2.02%	No	0.0304%	No	399.64%	
EXCEEDS EL?	Yes		No		No		No		No		Yes		No		No		Yes	

95.00% Boot, enclosure, or equivalent

99.90% Baghouse control

4.35E-04 Tons per year

¹ lb/hr, annual average = EF x pound of cement / Yd³ of concrete x annual 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 / 24 hr/day
³ lb/hr, annual average = EF x pound of cement + cement supplement / Yd³ of concrete x annual concrete production rate / 2000lb/Ton / 24 hr/day
⁴ Tyr = lb/hr annual avg x 8760 hr/yr x (172000 lb)
⁵ Tyr = EF x pound of cement, or cement supplement, or cement + cement supplement x annual concrete production rate / 2000lb/Ton / 2000 lb/Ton

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

0.55 MMBtu/hr 1,020 MMBtu/MMscf = 5.39E-04 MMscf/hr

Fuel Use:

Operating Assumptions:

24 hr/day

0.013 MMscf/day

8,760 hr/yr

4.724 MMscf/year

Criteria Air Pollutants	Emission Factor	Emissions		
		lb/MMscf	lb/hr	T/yr
NO2	100	5.39E-02	2.36E-01	
CO	84	4.53E-02	1.98E-01	
PM10	7.6	4.10E-03	1.79E-02	
SOx	0.6	4.10E-03	1.79E-02	
		3.24E-04	1.42E-03	
VOC	5.5	3.24E-04	1.42E-03	
		2.97E-03	1.30E-02	
Lead	0.0005	2.70E-07	1.18E-06	
Lead, continued			5.37E-03	lb/quarter
TOTAL			4.67E-01	T/yr

Modeling Threshold	Modeling Required ?	Modeling Threshold	Modeling Required ?
2002 Guidance		Case-by-Case	
1 T/yr	No	7 T/yr	No
14 lb/hr	No	70 lb/hr	No
0.2 lb/hr	No	0.9 lb/hr	No
1 T/yr	No	7 T/yr	No
0.2 lb/hr	No	0.9 lb/hr	No
1 T/yr	No	7 T/yr	No
40 T/yr	No		
0.6 T/yr	No		
10 lb/mo	No		

Note: 100 lb/mo Pb in guidance reduced by factor of 10 based on Pb NAAQS (reduced in 2008 from 1.5 ug/m3 to 0.15 ug/m3)

Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)	ib/MMscf	lb/hr	EL (lb/hr)	Exceeds EL/Modeling Required?
PAH HAPs				
2-Methylnaphthalene	2.40E-05	1.29E-08	9.10E-05	No
3-Methylchloranthrene	1.80E-06	9.71E-10	2.50E-06	No
Acenaphthene	1.80E-06	9.71E-10	9.10E-05	No
Acenaphthylene	1.80E-06	9.71E-10	9.10E-05	No
Anthracene	2.40E-06	1.29E-09	9.10E-05	No
Benzo(a)anthracene	1.80E-06	9.71E-10	9.10E-05	See POM
Benzo(a)pyrene	1.20E-06	6.47E-10	2.00E-06	See POM
Benzo(b)fluoranthene	1.80E-06	9.71E-10		See POM
Benzo(g,h,i)perylene	1.20E-06	6.47E-10	9.10E-05	No
Benzo(k)fluoranthene	1.80E-06	9.71E-10		See POM
Chrysene	1.80E-06	9.71E-10		See POM
Dibenzo(a,h)anthracene	1.20E-06	6.47E-10		See POM
Dichlorobenzene	1.20E-03	6.47E-07	9.10E-05	No
Fluoranthene	3.00E-06	1.62E-09	9.10E-05	No
Fluorene	2.80E-06	1.51E-09	9.10E-05	No
Indeno(1,2,3-cd)pyrene	1.80E-06	9.71E-10		See POM
Naphthalene	6.10E-04	3.29E-07	3.33	No
Naphthalene	6.10E-04	3.29E-07	9.10E-05	No
Phenanthrene	1.70E-05	9.17E-09	9.10E-05	No
Pyrene	5.00E-06	2.70E-09	9.10E-05	No
Polycyclic Organic Matter (POM)	7-PAH G	6.16E-09	2.00E-06	No
Non-PAH HAPs				
Benzene	2.10E-03	1.13E-06	8.00E-04	No
Formaldehyde	7.50E-02	4.04E-05	5.10E-04	No
Hexane	1.80E+00	9.71E-04	12	No
Toluene	3.40E-03	1.83E-06	25	No
Non-HAP Organic Compounds				
7,12-Dimethylbenz(a)anthracene	1.60E-05	8.63E-09		
Butane	2.10E+00	1.13E-03		
Ethane	3.10E+00	1.67E-03		
Pentane	2.60E+00	1.40E-03	118	No
Propane	1.60E+00	8.63E-04		
Metals (HAPs)				
Arsenic	2.00E-04	1.08E-07	1.50E-06	No
Barium	4.40E-03	2.37E-06	0.033	No
Beryllium	1.20E-05	6.47E-09	2.80E-05	No
Cadmium	1.10E-03	5.93E-07	3.70E-06	No
Chromium	1.40E-03	7.55E-07	0.033	No
Cobalt	8.40E-05	4.53E-08	0.0033	No
Copper	8.50E-04	4.58E-07	0.013	No
Manganese	3.80E-04	2.05E-07	0.067	No
Mercury	2.60E-04	1.40E-07	0.003	No
Molybdenum	1.10E-03	5.93E-07	0.333	No
Nickel	2.10E-03	1.13E-06	2.70E-05	No
Selenium	2.40E-05	1.29E-08	0.013	No
Vanadium	2.30E-03	1.24E-06	0.003	No
Zinc	2.90E-02	1.56E-05	0.667	No

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

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

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

1.5 MMBtu/hr / 140 MMBtu/10³ gal = 1.07E-02 10³ gal/hr Fuel Use:

Operating Assumptions:

24 hr/day

257.14 gal/day

1,500 hr/yr

16,071 gal/year

0.0500% sulfur

Criteria Air Pollutants	Emission Factor	Emissions	
		lb/10 ³ gal	T/yr
NO2	24	2.57E-01	1.93E-01
CO	5	5.36E-02	4.02E-02
PM10 (filterable + condensab	3.3	3.54E-02	2.65E-02
		3.54E-02	2.65E-02
SOx (SO2 + SO3)	7.95	8.52E-02	6.39E-02
		8.52E-02	6.39E-02
VOC (TOC)	0.556	5.96E-03	4.47E-03
Lead EF = 9 lb/10 ¹² Btu	9	1.35E-05	1.01E-05
Lead, continued			5.06E-03 lb/quarter
		TOTAL	3.28E-01 T/yr

Modeling Threshold	Modeling Required ?	Modeling Threshold	Modeling Required ?
2002 Guidance		Case-by-Case	
1 T/yr	No	7 T/yr	No
14 lb/hr	No	70 lb/hr	No
0.2 lb/hr	No	0.9 lb/hr	No
1 T/yr	No	7 T/yr	No
0.2 lb/hr	No	0.9 lb/hr	No
1 T/yr	No	7 T/yr	No
40 T/yr	No		
0.6 T/yr	No		
10 lb/mo	No		

Note: 100 lb/mo Pb in guidance reduced by factor of 10 based on latest Pb NAAQS (reduced in 2008 from 1.5 ug/m3 to 0.15 ug/m3)

Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)	lb/10 ³ gal	lb/hr	EL (lb/hr)	Exceeds EL/ Modeling Required?
PAH HAPs				
Acenaphthene	2.11E-05	3.87E-08	9.10E-05	No
Acenaphthylene	2.57E-07	4.72E-10	9.10E-05	No
Anthracene	1.22E-06	2.24E-09	9.10E-05	No
Benzo(a)anthracene	4.01E-06	7.36E-09	9.10E-05	See POM
Benzo(a)pyrene			2.00E-06	See POM
Benzo(b,k)fluoranthene	1.48E-06	2.72E-09		See POM
Benzo(g,h,i)perylene	2.26E-06	4.15E-09	9.10E-05	No
Benzo(k)fluoranthene	0.00E+00	0.00E+00		See POM
Chrysene	2.38E-06	4.37E-09		See POM
Dibenzo(a,h)anthracene	1.67E-06	3.06E-09		See POM
Dichlorobenzene			9.10E-05	No
Fluoranthene	4.84E-06	8.88E-09	9.10E-05	No
Fluorene	4.47E-06	8.20E-09	9.10E-05	No
Indeno(1,2,3-cd)pyrene	2.14E-06	3.93E-09		See POM
Naphthalene	1.13E-03	2.07E-06	3.33	No
Naphthalene	1.13E-03	2.07E-06	9.10E-05	No
Phenanthrene	1.05E-05	1.93E-08	9.10E-05	No
Pyrene	4.25E-06	7.80E-09	9.10E-05	No
Polycyclic Organic Matter (POM) 7-PAH G		2.14E-08	2.00E-06	No
Non-PAH HAPs				
Benzene	2.14E-04	3.93E-07	8.00E-04	No
Ethyl benzene	6.36E-05	6.81E-07	2.90E+01	No
Formaldehyde	3.30E-02	6.05E-05	5.10E-04	No
Hexane	1.80E+00	1.93E-02	12	No
Toluene	6.20E-03	6.64E-05	25	No
o-Xylene	1.09E-04			
Metals (HAPs)	lb/10 ¹² Btu			
Arsenic	4.00E+00	1.03E-06	1.50E-06	No
Barium			0.033	No
Beryllium	3.00E+00	7.71E-07	2.80E-05	No
Cadmium	3.00E+00	7.71E-07	3.70E-06	No
Chromium	3.00E+00	4.50E-06	0.033	No
Cobalt			0.0033	No
Copper	6.00E+00	9.00E-06	0.013	No
Manganese	6.00E+00	9.00E-06	0.067	No
Mercury	3.00E+00	4.50E-06	0.003	No
Molybdenum			0.333	No
Nickel	3.00E+00	7.71E-07	2.70E-05	No
Selenium	1.50E+01	2.25E-05	0.013	No
Vanadium			0.003	No
Zinc	4.00E+00	6.00E-06	0.667	No

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

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

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

Appendix C – Ambient Air Quality Impact Analysis

MEMORANDUM

DATE: May 18, 2009

TO: Carole Zundel, Permit Engineer; Air Quality Division

FROM: Cheryl Robinson, P.E., Air Quality Engineer/Modeling Analyst, Air Quality Division

PROJECT NUMBER: P-2009.0047

SUBJECT: Modeling Review for Knife River, Idaho Falls, Facility ID 777-00456
Project: Initial PTC for a Portable Concrete Batch Plant, Initial Location: Idaho Falls

1.0 Summary

Knife River, Inc., submitted an application for an initial Permit to Construct (PTC) for a 120 cubic yard per hour (cy/hr) portable concrete batch plant, which was received by DEQ on April 13, 2009. Additional information was received on May 11, 2009.

The application materials received by DEQ on April 13 and May 11 included a completed copy of the *Air Dispersion Modeling Protocol: Request to use DEQ Generic Modeling Results to Demonstrate Preconstruction Compliance with Idaho Air Quality Rules*. This protocol was developed by DEQ as part of a streamlined permitting approach for concrete batch plants. For this streamlined approach, DEQ conducted dispersion modeling for a typical concrete batch plant layout for a range of daily and annual concrete production rates. If a proposed concrete batch plant project meets the criteria specified in the protocol, the applicant may be allowed to use the DEQ modeling results in lieu of conducting dispersion modeling. This provides preconstruction assurance that the proposed project will comply with the applicable National Ambient Air Quality Standards (NAAQS) and state toxic air pollutant (TAP) rules. At the same time, this approach reduces the level of effort for DEQ's review of such applications, the cost and resources needed for the applicant to prepare the PTC application, and can result in a significant reduction in the time needed to review and process the application.

Based on the information provided by the applicant in their request to use the generic modeling (the pre-application "modeling protocol" review), DEQ determined that the project met the criteria for using DEQ's "generic" modeling to demonstrate preconstruction compliance with ambient air quality standards. The applicant requested concrete production limits of a maximum of 2,400 cubic yards per day and 400,000 cubic yards per year. Collocation with another facility was not requested. A copy of that request is attached to this memo.

The proposed project differs from the minimum requirements in the following ways:

- Control of emissions from weigh hopper loading is provided by an unsealed boot (estimated 95% efficiency for PM/PM₁₀) rather than a baghouse or a sealed boot vented back to a silo served by a baghouse (minimum 99% capture efficiency). DEQ has determined that some variation in the emissions and emission parameters for this source does not have a significant impact on the ambient impact analysis (unlike the truck loadout emission point). The reduced level of control using an unsealed boot does not preclude using the generic modeling analyses.
- A natural gas-fired boiler rated at 0.55 million British thermal units per hour (MMBtu/hr) may be used to heat the process water (water to be mixed with the dry cement and aggregate) during cold weather. Operation of the boiler is proposed for a maximum of 20 hours per day and 2,600 hours per year.

DEQ estimated the potential additional ambient impact from this single additional small source as described below, and determined that additional modeling was not required. Based on the results of that evaluation, combined with the attached DEQ modeling analysis, DEQ determined that the predicted pollutant concentrations from emissions associated with the facility, when combined with representative background concentrations, were below applicable ambient air quality standards at all locations outside the “facility’s property boundary.” For this portable facility, the actual property boundary must include the area defined by the applicable minimum setback, which is set based on the maximum daily concrete production at that location. See the attached modeling analysis.

Key assumptions that should be considered in the development of the permit are presented in Table 1.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	Explanation/Consideration
No operations in PM ₁₀ or PM _{2.5} nonattainment areas.	New sources in a nonattainment area must not “significantly contribute” to the violation of the NAAQS. IDAPA 58.01.01.006 defines a PM ₁₀ impact increase of 5 µg/m ³ (24-hour average) or 1 µg/m ³ (annual average) as a “significant contribution.” The predicted ambient impacts for each of the modeled daily and annual concrete production rates exceed these thresholds. The EPA has not yet defined a significant contribution level for PM _{2.5} (use PM ₁₀ as a surrogate).
Daily concrete production is limited based on the setback distance available at that location, but will not exceed 2,400 cy/day.	The setback for each modeled daily production rate is defined by the minimum distance needed to meet the 24-hour PM ₁₀ NAAQS.
Annual concrete production is limited based on the setback distance available at that location, but should not exceed a maximum of 400,000 cy/yr.	Preconstruction compliance with state toxic air pollutant (TAP) rules was demonstrated using controlled carcinogenic TAP emissions, so per IDAPA 58.01.01.210.08, an emission limit must be imposed. The annual production limit inherently limits the annual TAPs emissions, so a pollutant-specific pound per hour or pound per year limit is not needed.
Operational requirements for particulate matter control ensure a high level of control is consistently achieved and maintained for baghouse/cartridge filters and for fugitive emissions.	Modeled emissions reflect a high level of control.
No Collocation. No other pollutant-emitting facility (e.g., a crusher, another concrete batch plant, or a hot mix asphalt plant) will be located within 200 meters (656 feet) of this concrete batch plant.	PM ₁₀ background values used were “typical” background levels in rural/agricultural areas. Co-contributing sources of PM ₁₀ were not evaluated in the modeling.
Stack parameters used in the modeling analysis are representative of the parameters described in the application.	The dispersion characteristics and resulting estimated ambient impact depend on these stack parameters. Pre-application approval to use the DEQ “generic” modeling analysis was based in part on the similarity of the facility stack parameters with the modeled parameters. (Note: Knife River did not submit their parameters for pre-application approval. DEQ reviewed the parameter as part of the application review).
0.55 MMBtu/hr natural gas-fired boiler <ul style="list-style-type: none"> Proposed operations are limited to a maximum of 20 hours per day and 2,600 hours per year. The modeling evaluation presumed 24 hr/day and 8,760 hours per year operation. 	Limit ground-level short-term concentrations of SO _x and annual NO ₂ and SO _x emissions. Modeling of CO, NO ₂ , and SO _x ambient impacts was not required based on keeping emissions below DEQ modeling threshold (by limiting the hours of operation and the fuel sulfur content).

1.1 Modeling Evaluation for Additional Small Sources

1.1.1 Comparison of CO, NO₂, and SO_x Emissions with DEQ Modeling Thresholds

The DEQ generic modeling was conducted only for PM₁₀ because there are typically no emissions of CO, NO₂, or SO_x from concrete batch plant operations served by line power.

The hourly and annual emissions from the boiler were taken from the application (20 hr/day and 2,600 hr/yr). For the purpose of the modeling review, DEQ also estimated hourly and annual emissions for 24 hr/day and 8,760 hr/yr). As shown in Table 2, emissions of carbon monoxide (CO), nitrogen dioxide (NO₂), and sulfur oxides (SO_x) from the proposed project do not exceed modeling thresholds, even if this very small boiler is operated 24 hours per day and 8,760 hours per year.

Additional modeling for these criteria pollutant emissions from the engine and boiler is not required.

	CO		NO ₂		SO _x	
	lb/hr, 1-hour average	T/yr	lb/hr, 1-hour average	T/yr	lb/hr, 1-hour average	T/yr
Proposed Operations: 0.55 MMBtu Nat gas Boiler 20 hr/day, 2,600 hr/yr	0.045	0.059	0.054	0.07	3.24E-04	4.21E-04
8,760 hr/yr Operations: 0.55 MMBtu Nat gas Boiler 24 hr/day, 8,760 hr/yr	0.045	0.20	0.054	0.24	3.24E-04	1.42E-03
DEQ Modeling Threshold ^a	14 lb/hr 70 lb/hr	n/a	n/a	1 T/yr	0.2 lb/hr 0.9 lb/hr	1 T/yr
Modeling Required?	No	n/a	n/a	No	No	No

^a The top number listed is from the State of Idaho Air Quality Modeling Guideline, Doc. ID AQ-011 (Revision 1, December 31, 2002). The bottom number listed is a value that may be used on a case-by-case basis only with DEQ review and approval.

1.1.2 Estimated Change to "Generic" PM₁₀ Modeled Ambient Impacts

Additional Emissions from the Boiler

The worst-case hourly PM₁₀ emissions from the boiler were taken from the application and converted to 24-hour and annual averages based on the requested hours of operation:

0.55 MMBtu/hr Boiler →	4.10E-03 lb/hr _{1-hour average}	
Boiler @ 20 hr/day, 2,600 hr/yr:	3.42E-03 lb/hr _{24-hr avg}	1.22E-03 lb/hr _{Annual avg}
Boiler @ 24 hr/day, 8,760 hr/yr:	4.10E-03 lb/hr _{24-hr avg}	4.10E-03 lb/hr _{Annual avg}

Estimated Change to Ambient Impact

The potential increase in the ambient impact was estimated by presuming a linear relationship between the emission rate and the ambient PM₁₀ impact predicted for the modeled daily concrete production rates and the requested maximum annual rate of 400,000 cy/year. As shown in Table 3, the total estimated ambient impacts including the proposed operation of the boiler, combined with representative background concentrations, are well below the NAAQS.

Table 3. ESTIMATED PM₁₀ AMBIENT IMPACT INCLUDING BOILER

Pollutant	Modeled Emissions (lb/hr) ^a	Modeled Impact (µg/m ³) ^b	Linear Factor (µg/m ³ per lb/hr)	Boiler Emissions (lb/hr)	Additional Ambient Impact (µg/m ³)	Background (µg/m ³) ^b	Total Ambient Impact (µg/m ³)	Percent of NAAQS ^c
Proposed Operations								
PM ₁₀ (24-hr avg)	0.437 (1,500 cy/day)	40.1 (63.2)	91.8	3.42E-03	0.31	73	113.4	75.6%
	0.705 (2,400 cy/day)	50.8 (79.8)	72.1	3.42E-03	0.25	73	124	82.7%
PM ₁₀ (annual avg)	0.339 (400,000 cy/yr)	7.6 (10.8)	22.4	1.22E-03	0.027	26	33.6	67.3%
8,760 hr/yr Operations								
PM ₁₀ (24-hr avg)	0.437 (1,500 cy/day)	40.1 (63.2)	91.8	4.10E-03	0.38	73	113.5	75.7%
	0.705 (2,400 cy/day)	50.8 (79.8)	72.1	4.10E-03	0.30	73	124.1	82.7%
PM ₁₀ (annual avg)	0.339 (400,000 cy/yr)	7.6 (10.8)	22.4	4.10E-03	0.092	26	33.7	67.4%

^a See Tables 6A and 6B of the attached modeling analysis)

^b See Table 8 of the attached modeling analysis. 24-hr ISCST3 results (in parentheses) were converted to “equivalent” AERMOD results by multiplying by (53.3/83.8) = 0.636. Annual ISCST3 result (in parentheses) were converted by multiplying by (5.53/7.91) = 0.699

^c 24-hour PM₁₀ NAAQS = 150 µg/m³, Annual PM₁₀ NAAQS = 50 µg/m³.

1.1.2 Estimated Change to “Generic” TAPs Modeled Ambient Impacts

Additional Emissions from the Boiler

DEQ estimated the TAPs emissions from the natural gas-fired boiler using AP-42 Section 1.4 emission factors, and calculated the 24-hour and annual pound per hour averages based on the requested hours of operation as well as for operating 8,760 hours per year. As shown in the attached spreadsheet, none of the TAPs emissions from the boiler exceeded the applicable screening emission level, even if the boiler is operated 8,760 hours per year. The spreadsheet also shows the combined total emissions of metal TAPs from the concrete batch plant and the boiler. As shown in the spreadsheet, modeling is required only for emissions of arsenic.

Estimated Change to Ambient Impact

Emissions of arsenic, hexavalent chromium, and nickel were modeled for the concrete batch plant. The potential increase in the ambient impact from the boiler operations was estimated by presuming a linear relationship between the emission rate and the ambient impact predicted for the modeled annual production rate of 400,000 cy/year. As shown in Table 4, the total estimated ambient impact for arsenic, including the proposed operation of the boiler, is well below the applicable acceptable ambient concentration for carcinogens (AACC).

Table 4. ESTIMATED TAPS AMBIENT IMPACT INCLUDING BOILER

Pollutant	Modeled Emissions (lb/hr) ^a	Modeled Impact (µg/m ³) ^b	Linear Factor (µg/m ³ per lb/hr)	Boiler Emissions (lb/hr)	Additional Ambient Impact (µg/m ³)	Total Ambient Impact (µg/m ³)	AACC (µg/m ³)	Percent of AACC
Arsenic (annual avg)	3.68E-06 (400,000 cy/yr)	8.79E-05	23.9	1.08E-07	2.58E-06	9.0E-05	2.3E-04	39.3%

^a See Tables 7A and 7B of the attached modeling analysis)

^b See Table 9 of the attached modeling analysis. ISCST3 results were used to demonstrate compliance.

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

0.55 MMBtu/hr / 1.020 MMBtu/MMscf = 5.39E-04 MMscf/hr

Fuel Use:

Operating Assumptions:

24 hr/day
8,760 hr/yr

0.013 MMscf/day
4,724 MMscf/year

Criteria Air Pollutants	Emission Factor	Emissions		Facility-Wide Emissions (T/yr)	Modeling Threshold	Modeling Required?	Modeling Threshold	Modeling Required?
		lb/MMscf	lb/hr					
NO2	100	5.39E-02	2.36E-01	2.36E-01	1 T/yr	No	7 T/yr	No
CO	84	4.53E-02	1.98E-01	1.98E-01	14 lb/hr	No	70 lb/hr	No
PM10	7.6	4.10E-03	1.79E-02	8.94E-01	0.2 lb/hr	No	0.9 lb/hr	No
		4.10E-03	1.79E-02		1 T/yr	No	7 T/yr	No
SOx	0.6	3.24E-04	1.42E-03	1.42E-03	0.2 lb/hr	No	0.9 lb/hr	No
		3.24E-04	1.42E-03		1 T/yr	No	7 T/yr	No
VOC	5.5	2.97E-03	1.30E-02	1.30E-02	40 T/yr	No		
Lead	0.0005	2.70E-07	1.18E-06	2.91E-02	0.6 T/yr	No		
Lead, continued			5.90E-04	lb/quarter	10 lb/mo	No		
TOTAL			4.67E-01	T/yr	Note: 100 lb/mo Pb in guidance reduced by factor of 10 based on latest Pb NAAQS (reduced in 2008 from 1.5 ug/m3 to 0.15 ug/m3)			

TOTAL FACILITY EMISSIONS (POINT SOURCES, T/YR)

1.37 Tons per year for PROCESSING FEE DETERMINATION

Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)	lb/MMscf	lb/hr	EL (lb/hr)	Exceeds EL/ Modeling Required?	% of EL (Boiler only)
2-Methylnaphthalene	2.40E-05	1.29E-08	9.10E-05	No	0.0142%
3-Methylchloranthrene	1.80E-06	9.71E-10	2.50E-06	No	0.0388%
Acenaphthene	1.80E-06	9.71E-10	9.10E-05	No	0.0011%
Acenaphthylene	1.80E-06	9.71E-10	9.10E-05	No	0.0011%
Anthracene	2.40E-06	1.29E-09	9.10E-05	No	0.0014%
Benzo(a)anthracene	1.80E-06	9.71E-10	9.10E-05	See POM	0.0011%
Benzo(a)pyrene	1.20E-06	6.47E-10	2.00E-06	See POM	0.0324%
Benzo(b)fluoranthene	1.80E-06	9.71E-10		See POM	
Benzo(g,h,i)perylene	1.20E-06	6.47E-10	9.10E-05	No	0.0007%
Benzo(k)fluoranthene	1.80E-06	9.71E-10		See POM	
Chrysene	1.80E-06	9.71E-10		See POM	
Dibenzo(a,h)anthracene	1.20E-06	6.47E-10		See POM	
Dichlorobenzene	1.20E-03	6.47E-07	9.10E-05	No	0.7111%
Fluoranthene	3.00E-06	1.62E-09	9.10E-05	No	0.0018%
Fluorene	2.80E-06	1.51E-09	9.10E-05	No	0.0017%
Indeno(1,2,3-cd)pyrene	1.80E-06	9.71E-10		See POM	
Naphthalene	6.10E-04	3.29E-07	3.33	No	0.0000%
Naphthalene	6.10E-04	3.29E-07	9.10E-05	No	0.3615%
Phenanthrene	1.70E-05	9.17E-09	9.10E-05	No	0.0101%
Pyrene	5.00E-06	2.70E-09	9.10E-05	No	0.0030%
Polycyclic Organic Matter (POM)	7-PAH	6.15E-09	2.00E-06	No	0.3074%
Non-PAH HAPs					
Benzene	2.10E-03	1.13E-06	8.00E-04	No	0.1415%
Formaldehyde	7.50E-02	4.04E-05	5.10E-04	No	7.9296%
Hexane	1.80E+00	9.71E-04	12	No	0.0081%
Toluene	3.40E-03	1.83E-06	25	No	0.0000%
Non-HAP Organic Compounds					
7,12-Dimethylbenz(a)anthra	1.60E-05	8.63E-09			
Butane	2.10E+00	1.13E-03			
Ethane	3.10E+00	1.67E-03			
Penane	2.60E+00	1.40E-03	118	No	0.0012%
Propane	1.60E+00	8.63E-04			

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

						CBP Emissions	TOTAL (lb/hr)	Exceeds EL/ Modeling Required?
Metals (HAPs)								
Arsenic	2.00E-04	1.08E-07	1.50E-06	No	7.1895%	3.67E-06	3.78E-06	YES
Barium	4.40E-03	2.37E-06	0.033	No	0.0072%			
Beryllium	1.20E-05	6.47E-09	2.80E-05	No	0.0231%	3.13E-07	3.20E-07	No
Cadmium	1.10E-03	5.93E-07	3.70E-06	No	16.0307%	6.05E-08	6.54E-07	No
Chromium	1.40E-03	7.55E-07	0.033	No	0.0023%	4.67E-05	4.75E-05	No
Cobalt	8.40E-05	4.53E-08	0.0033	No	0.0014%			
Copper	8.50E-04	4.58E-07	0.013	No	0.0035%			
Manganese	3.80E-04	2.05E-07	0.067	No	0.0003%	9.54E-05	9.57E-05	No
Mercury	2.60E-04	1.40E-07	0.003	No	0.0047%			
Molybdenum	1.10E-03	5.93E-07	0.333	No	0.0002%			
Nickel	2.10E-03	1.13E-06	2.70E-05	No	4.1939%	1.19E-05	1.31E-05	No
Selenium	2.40E-05	1.29E-08	0.013	No	0.0001%	3.96E-06	3.97E-06	No
Vanadium	2.30E-03	1.24E-06	0.003	No	0.0413%			
Zinc	2.90E-02	1.56E-05	0.667	No	0.0023%			

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



Concrete Batch Plant (CBP) Streamlined Air Quality Permitting

DISPERSION MODELING PROTOCOL: REQUEST TO USE DEQ GENERIC MODELING RESULTS TO DEMONSTRATE PRECONSTRUCTION COMPLIANCE WITH IDAHO AIR QUALITY RULES

Proposed Project: **Portable Concrete Batch Plant:** _____ 120 _____ CY/HR _____ 400,000 _____ CY/YR

Location (identify initial location): _____ 4055 Professional Way, Idaho Falls, Idaho 83402 _____
 (Street address, city, county)

The proposed project will meet all of the criteria specified below as noted, and Applicant agrees to accept permit conditions requiring continuing compliance with the physical parameters and setback distance(s) described in Table 1.

Applicant is requesting that the DEQ emission inventory and generic model results be used to demonstrate preconstruction compliance with the National Ambient Air Quality Standards (NAAQS) and state-regulated toxic air pollutant (TAP) increments for this project.

If this modeling protocol is approved by DEQ, no modeling analysis will be submitted with the PTC application for this project.

In accordance with IDAPA 58.01.01.225, permit processing fees will be based on the requested maximum annual emissions for this project. An emissions inventory (EI) based on the plant's capacity and proposed maximum annual operations will be included with the application, and will comply with the following:

- a. Emissions will be calculated using EPA AP-42 factors and good engineering judgment.
- b. Fugitive emissions sources will be included in the EI, except for emissions resulting from vehicle traffic and wind erosion from storage piles.
- c. The level of emissions control assumed for each source will be clearly specified.
- d. Cr+6 will be presumed to comprise 20% of the total chromium emissions from cement silo filling, and 30% of the total chromium emissions from cement supplement (flyash) silo filling.

The original signed copy of this modeling protocol and a copy of the DEQ approval shall be submitted with the PTC application for this project.

I certify that based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

<u>Jim Trull</u>	<u>Knife River</u>	<u>(208) 941-0869</u>
Print Name	Company	Telephone/E-mail
		<u>5/11/09</u>
Signature	Title/Position	Date

Table 1. CRITERIA FOR USING DEQ's CBP GENERIC MODELING RESULTS FOR PRECONSTRUCTION PERMITTING AIR IMPACT ANALYSES

Parameter	DEQ Generic Modeling Assumptions	Proposed Project
Operations:		
Operation in any nonattainment area	Not proposed.	No
No Co-Located Operations ^a	≤ 200 meters (656 feet)	60 meters
Concrete Batch Plant:		
Concrete batch plant type	Truck mix (redi-mix or dry mix) or Central mix	Truck Mix

DEQ NOTE: Applicant was advised prior to this submittal that the facility would be considered co-located if another pollutant-emitting facility was located within 200 meters.

Concrete Batch Plant (CBP) Streamlined Air Quality Permitting

DISPERSION MODELING PROTOCOL: REQUEST TO USE DEQ GENERIC MODELING RESULTS TO DEMONSTRATE PRECONSTRUCTION COMPLIANCE WITH IDAHO AIR QUALITY RULES

Table 1. CRITERIA FOR USING DEQ's CBP GENERIC MODELING RESULTS FOR PRECONSTRUCTION PERMITTING AIR IMPACT ANALYSES

Parameter	DEQ Generic Modeling Assumptions				Proposed Project
Water Heater	Natural gas-fired or Diesel-fired: Rating, hours, and fuel use may vary but emissions must not exceed DEQ modeling thresholds. Use DEQ spreadsheet to determine maximum daily and annual use.				Natural gas: <u>24</u> hr/day <u>2,500</u> hr/yr <u>0.0129</u> MMscf/day <u>1,348</u> MMscf/yr Diesel: Max: _____ % by weight sulfur _____ hr/day _____ hr/yr _____ gal/day _____ gal/yr
CBP Power supply.	No generator. Line power is available.				Line Power
Number of cement and/or cement supplement (e.g., flyash) 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.				
Max concrete production (cubic yards/day)	1,500	2,400	3,600	4,800	2,400
Minimum Setback Distance ^a	40 m (131 ft)	60 m (197 ft)	100 m (328 ft)	150 m (492 ft)	60 m
Maximum annual concrete production (cy/year)	300,000	400,000	400,000	500,000	400,000
Point Source Emissions Controls and Stack Parameters:					
Cement and supplement storage silo baghouse(s)	Stack Height ≥ 10 meters (32.8 ft) Minimum PM/PM ₁₀ control: 99%				Cement Silo BH – 60 ft. Supplement Baghouse – 65 ft
Weigh hopper loading: Baghouse or equivalent, e.g., sealed boot connection with displaced air vented through silo baghouse.	Stack Height: ≥ 10 m (32.8 ft) Minimum PM/PM ₁₀ control: 99%				
Alternative Weigh hopper loading: Unsealed boot, shroud, or enclosure.	Minimum PM/PM ₁₀ control: 95%				Specify release height: <u>28</u> feet
Truck-mix loadout or Central mix loading	Boot enclosure, shroud, water sprays, or baghouse/cartridge filter Minimum PM/PM ₁₀ control: 95%				Boot enclosure 95% Control
Fugitive Emissions:					
Transfer Point Fugitives	BMPs. No visible emissions leaving property boundary. (see/no see compliance demonstration) 75% control: water sprays, enclosures, shrouds, or aggregate/sand is damp on an as-received basis and used before significantly drying out.				Aggregate and sand is damp as received and used before drying out significantly. 75% Control

^a CBP is considered to be co-located if the minimum distance FROM any other emissions source TO any stockpile, silo baghouse stack, truck or central mix loading point, or weigh batcher transfer point is less than or equal to 200 meters (656 feet).

^b Minimum distance FROM any stockpile, silo baghouse stack, truck or central mix loading point, or weigh batcher transfer point TO any area outside of a building where the public has access.

Please submit a signed copy of this form to: Air Quality Modeling
 Attn: Cheryl Robinson/Kevin Schilling
 Idaho Department of Environmental Quality
 1410 N. Hilton
 BOISE ID 83706

Or, to expedite DEQ receipt and processing, you may send a faxed or scanned copy of the signed form to:

Concrete Batch Plant (CBP) Streamlined Air Quality Permitting

**DISPERSION MODELING PROTOCOL: REQUEST TO USE DEQ GENERIC MODELING RESULTS TO
DEMONSTRATE PRECONSTRUCTION COMPLIANCE WITH IDAHO AIR QUALITY RULES**

Fax No.: 208.373.0340, Attn: Cheryl Robinson/Kevin Schilling
Email to both: Cheryl.Robinson@deq.idaho.gov and
Kevin.Schilling@deq.idaho.gov

MEMORANDUM

DATE: September 18, 2007

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

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

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.			
<u>No Collocation.</u> 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
<u>Minimum Setback Distance.</u> 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
<u>Cement and supplement storage silo baghouse(s)</u> Minimum stack height (height above ground)	10 meters (32.8 ft)			
<u>Minimum PM/PM₁₀ control</u>	99%			
<u>Weigh hopper loading baghouse, or equivalent</u> Minimum stack height (height above ground)	10 meters (32.8 ft)			
<u>Minimum PM/PM₁₀ control</u>	99%			
<u>Truck-mix loadout or Central Mix loading.</u> Minimum PM/PM ₁₀ control.	95% Boot enclosure, shroud, water sprays, or baghouse/cartridge filter			
<u>Transfer Point Fugitives.</u> 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 PM₁₀ nonattainment area. IDAPA 58.01.01.006 defines a PM₁₀ 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 PM₁₀ 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 (µg/m ³) ^b	Regulatory Limit ^c (µg/m ³)	Modeled Value Used ^d
PM ₁₀ ^e	Annual	1.0	50 ^f	Maximum 1 st highest ^g
	24-hour	5.0	150 ^h	Maximum 6 th highest ⁱ
Carbon Monoxide (CO)	8-hour	500	10,000 ^j	Maximum 2 nd highest ^g
	1-hour	2,000	40,000 ^j	Maximum 2 nd highest ^g
Sulfur Dioxide (SO ₂)	Annual	1.0	80 ^f	Maximum 1 st highest ^g
	24-hour	5	365 ^f	Maximum 2 nd highest ^g
	3-hour	25	1,300 ^f	Maximum 2 nd highest ^g
Nitrogen Dioxide (NO ₂)	Annual	1.0	100 ^f	Maximum 1 st highest ^g
Lead	Quarterly	NA	1.5 ^h	Maximum 1 st 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 2003¹. 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/m ³) ^a
PM ₁₀ ^b	24-hour	73
	annual	26
Carbon monoxide (CO)	1-hour	3,600
	8-hour	2,300
Sulfur dioxide (SO ₂)	3-hour	34
	24-hour	26
	Annual	8
Nitrogen dioxide (NO ₂)	Annual	17

^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, CTDMPUS, 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.
Meteorological 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.

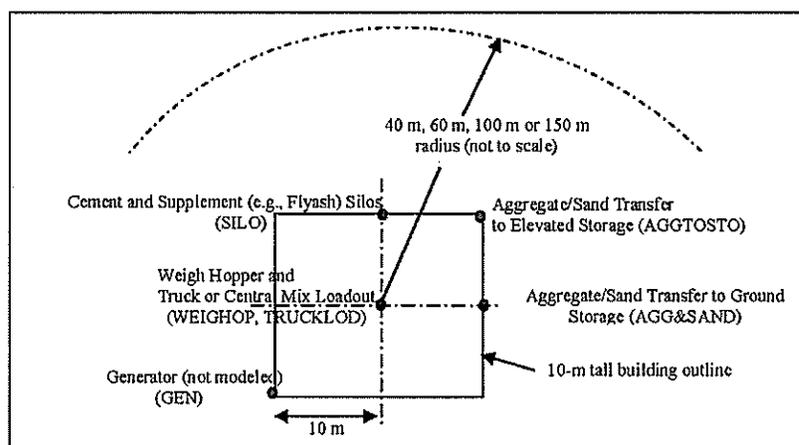


Figure 3-1. TYPICAL CONCRETE BATCH PLANT MODELING LAYOUT

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) ^e	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 PM₁₀ 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 PM₁₀ 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 - PM₁₀

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/hr ₂₄ ^c	lb/hr _{YR} ^c	lb/hr ₂₄	lb/hr _{YR}
	lb/cy ^a					
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 - PM₁₀

Source	Emission Factor	Control	AERMOD	ISCST3	ISCST3	AERMOD	ISCST3
	lb/cy ^a		3,600 cy/day ^b	3,600 cy/day	4,800 cy/day	500,000 cy/yr ^b	500,000 cy/yr ^b
			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^e	3.93E-02	5.25E-02	1.497E-02^e	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 fence line 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		
	Source	Arsenic	Nickel	Cr (VI)	Arsenic	Nickel
	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}					
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 – PM₁₀

Pollutant	Averaging Period	Modeled Design Concentration ^a (µg/m ³) ^b	Background Concentration (µg/m ³)	Total Ambient Impact ^a (µg/m ³)	NAAQS ^c (µg/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 PM₁₀ 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 ($\mu\text{g}/\text{m}^3$) ^b	AACC ^c ($\mu\text{g}/\text{m}^3$)	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: Facility ID: Permit No.: Source Type: Manufacture/Model:	DEQ GENERIC MODEL - 3,600 cy/day and 500,000 cy/year 777-xxxxxx P-2007_xxxx Portable Concrete Batch Plant	Assumptions Implied or Stated in Application: Presumes this is an initial permit, not a modification. See control assumptions. Truck Mix (T) or Central Mix (C)? <input checked="" type="checkbox"/> T

INCREASE IN PRODUCTION¹		
Maximum Hourly Production Rate:	360	cy/day
Proposed Daily Production Rate:	3,600	cy/day
Proposed Maximum Annual Production Rate:	500,000	cy/year
Hours of operation per day at max capacity:	12.00	
Cement Storage Silo Capacity:	N/A of aerial cement	
Cement Storage Silo Large Compartment Capacity for cement only:	N/A of the silo capacity	
Cement Storage Silo Small Compartment Capacity for cement or ash:	N/A of the silo capacity	

DEQ EI VERIFICATION WORKSHEET v. 032007
Tip: Purple text or numbers are meant to be changed.
Black text or numbers and cells if's hard-wired or calculated.
Review these before you change them.

Change in PM₁₀ Emissions due to this PTC

Emissions Point	PM ₁₀ Emission Factor ¹ (lb/cy)		Controlled Emission Rate, Max. (lb/cy)	Controlled Emission Rate, 24-hour average (lb/hr)		Controlled Emission Rate, annual average (Tyr)		Control Assumptions:
	Controlled	Uncontrolled		lb/hr	lb/day ²	lb/yr ³	Tyr 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	0.028	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	0.028	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	0.028	0.63	0.010	0.044	75%	Control: Water sprays
Cement delivery to Silo (controlled EF)	0.0001	2.50E-02	1.26E-02	3.00E-01	4.76E-03	2.00E-02	0.00%	Baghouses in process equipment
Cement supplement delivery to Silo (controlled EF)	0.0002	5.30E-02	2.66E-02	6.44E-01	1.02E-02	4.47E-02	0.00%	Baghouses in process equipment
Weight hopper loading (sand & aggregate batcher loading)	0.0040	1.10E-02	5.93E-03	1.42E-01	2.26E-03	9.88E-03	99.00%	Baghouses in process equipment
Truck mix loading, Table 11.12-2, "0.270 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 dust on mixer/drum
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	0.0378	0.60	0.00	0.00	0.00	0.00	95.00%	Control: Automatic dust on mixer/drum
Point Sources Total Emissions	4.21E-03	9.05E-02	4.63E-02	1.09E+00	1.72E-02	7.64E-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		

12/hr
24-hr
Annual
0.225
0.285
0.109
0.495
0.545
0.109

POINT SOURCE EMISSIONS for FACILITY CLASSIFICATION⁵	Controlled EF	at 2,628,000 cy/yr	Tyr
Facility Classification Total PM¹⁰	5.08E-03		6.67E+00
Facility Classification Total PM¹⁰⁶	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 (1665 lb aggregate, 1428 lb sand, 491 lb cement, 73 lb cement supplement, and 20 gallons of water = 4024 lb/cy), and closely match Table 11.12-5 values (version 0306) 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 holiday.
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/cy)
⁵ Controlled EFs for PM₁₀ = 0.0002 (cement silo) + 0.0003 (flyash silo) + 0.0078 (weight batcher) * (1-control%)
for PM₁₀ = 0.0001 (cement silo) + 0.0002 (flyash silo) + 0.0040 (weight batcher) * (1-control%)
⁶ Emissions for Facility Classification are based on baghouses as process equipment, 24-hr day, 0760 hr/yr = 7,200 cy/day, and 2,628,000 cy/yr

Emissions Point	Lead Emission Factor ¹ (lb/ton of material loaded)		Increase in Emissions from this PTC				Emissions for Facility Classification	
	Controlled with PTCs	Uncontrolled	Emission Rate, Max. (lb/cy)	Emission Rate, 24-hr avg ² (lb/hr)	Emission Rate, 12-hr avg ³ (lb/hr)	Emission Rate, 1-hr avg ⁴ (lb/hr)	Point Source	Tyr
Cement delivery to silo ²	1.03E-08	2.26E-07	8.03E-07	2.03E-04	1.34E-03	4.01E-07	Point Source	3.52E-08
Cement supplement delivery to Silo ³	5.20E-07	1.02	5.69E-06	2.00E-03	9.49E-03	2.85E-06	Point Source	2.49E-05
Truck Loadout (with 120% control)	3.82E-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			2.18E-05	7.88E-03	0.036		Point Sources	2.85E-05
DEQ Modeling Threshold			100	0.6				
Modeling Threshold			10	0.6				

¹ The emission factors are from AP-42, Table 11.12-5 (version 0306)
² Max. hourly rate = EF x pound of cement/cy³ of concrete x max. hourly concrete production rate (2000 lb/h)
³ 12-hr = EF x pound of material/cy³ of concrete x max. daily concrete production rate x (365/12) x (2000 lb/h)
⁴ 1-hr = EF x pound of material/cy³ of concrete x max. annual concrete production rate (2000 lb/h)
⁵ lb/hr, 24-hr avg = lb/ton x 3 months per yr / (8760/24) hrs per yr

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

Estimate estimates are based on EPA 4042, Table 11.12.4 (version 2006)
 Use the following combination of one unit of concrete

Company	DEQ GENERIC MODEL - 3,600 cylinders and 500,000 c/y/yr
Facility ID	777-000000
Plant No.	P-2007-2444
Source Type	Pneumatic Concrete Batch Plant
Manufacturer	D

DEQ EMISSIONS WORKSHEET Version 032007
 Note: Purple text or numbers are meant to be changed.
 Black text or numbers indicates ES TAPs-4003 or 4004-004.
 Review table before you change them.

Uncontrolled (Unlimited Production Rate)

Uncontrolled (Unlimited Production Rate)	24 tons/yr
Uncontrolled (Unlimited Production Rate)	1,200 c/y/yr
Uncontrolled (Unlimited Production Rate)	4,000 c/y/yr

TAP Emission Factors from AP-42, Table 11.12.4 (Version 06/03)

Emission Factor	Arsenic EF (lb/ton of material loaded)		Cadmium EF (lb/ton of material loaded)		Chromium EF (lb/ton of material loaded)		Copper EF (lb/ton of material loaded)		Lead EF (lb/ton of material loaded)		Manganese EF (lb/ton of material loaded)		Mercury EF (lb/ton of material loaded)		Nickel EF (lb/ton of material loaded)		Selenium EF (lb/ton of material loaded)		Zinc EF (lb/ton of material loaded)		
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	
Concrete	6.3E-09	1.0E-08	4.8E-10	1.7E-09	1.7E-07	2.9E-08	4.1E-08	1.7E-07	2.9E-08	4.1E-08	1.7E-07	2.9E-08	4.1E-08	1.7E-07	2.9E-08	4.1E-08	1.7E-07	2.9E-08	4.1E-08	1.7E-07	2.9E-08
Gravel	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06
Water	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06
Other	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06

UNCONTROLLED TAP EMISSIONS Note: Includes baghouses as process equipment.

Emission Factor	Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Nickel		Selenium		Zinc			
	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr		
Concrete	3.9E-07	1.7E-07	3.0E-08	1.4E-08	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07
Gravel	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07
Water	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07
Other	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07

CONTROLLED TAP EMISSIONS Note: Includes baghouses as process equipment.

Emission Factor	Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Nickel		Selenium		Zinc			
	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr	lb/yr	kg/yr		
Concrete	3.9E-07	1.7E-07	3.0E-08	1.4E-08	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07
Gravel	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07
Water	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07
Other	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07	1.0E-06	4.5E-07

Annual Average = EF x annual rate / 365 days/yr
 Daily Average = EF x annual rate / 365 days/yr
 Annual Average = EF x annual rate / 365 days/yr
 Daily Average = EF x annual rate / 365 days/yr

Attachment 2. "Fenceline" Radius Calculations

Concrete Batch Plant - Typical Plant Layout Modeling

3/2/2007

"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)	Angle (degrees)	EAST (x)	NORTH (y)	Angle (degrees)	EAST (x)	NORTH (y)	Angle (degrees)	EAST (x)	NORTH (y)
10	39.39	6.95	10	59.09	10.42	10	73.86	13.02	10	123.10	21.71
20	37.59	13.68	20	56.38	20.52	20	70.48	25.65	20	117.46	42.75
30	34.64	20.00	30	51.96	30.00	30	64.95	37.50	30	108.25	62.50
40	30.64	25.71	40	45.96	38.57	40	57.45	48.21	40	95.76	80.35
50	25.71	30.64	50	38.57	45.96	50	48.21	57.45	50	80.35	95.76
60	20.00	34.64	60	30.00	51.96	60	37.50	64.95	60	62.50	108.25
70	13.68	37.59	70	20.52	56.38	70	25.65	70.48	70	42.75	117.46
80	6.95	39.39	80	10.42	59.09	80	13.02	73.86	80	21.71	123.10
90	0.00	40.00	90	0.00	60.00	90	0.00	75.00	90	0.00	125.00
100	-6.95	39.39	100	-10.42	59.09	100	-13.02	73.86	100	-21.71	123.10
110	-13.68	37.59	110	-20.52	56.38	110	-25.65	70.48	110	-42.75	117.46
120	-20.00	34.64	120	-30.00	51.96	120	-37.50	64.95	120	-62.50	108.25
130	-25.71	30.64	130	-38.57	45.96	130	-48.21	57.45	130	-80.35	95.76
140	-30.64	25.71	140	-45.96	38.57	140	-57.45	48.21	140	-95.76	80.35
150	-34.64	20.00	150	-51.96	30.00	150	-64.95	37.50	150	-108.25	62.50
160	-37.59	13.68	160	-56.38	20.52	160	-70.48	25.65	160	-117.46	42.75
170	-39.39	6.95	170	-59.09	10.42	170	-73.86	13.02	170	-123.10	21.71
180	-40.00	0.00	180	-60.00	0.00	180	-75.00	0.00	180	-125.00	0.00
190	-39.39	-6.95	190	-59.09	-10.42	190	-73.86	-13.02	190	-123.10	-21.71
200	-37.59	-13.68	200	-56.38	-20.52	200	-70.48	-25.65	200	-117.46	-42.75
210	-34.64	-20.00	210	-51.96	-30.00	210	-64.95	-37.50	210	-108.25	-62.50
220	-30.64	-25.71	220	-45.96	-38.57	220	-57.45	-48.21	220	-95.76	-80.35
230	-25.71	-30.64	230	-38.57	-45.96	230	-48.21	-57.45	230	-80.35	-95.76
240	-20.00	-34.64	240	-30.00	-51.96	240	-37.50	-64.95	240	-62.50	-108.25
250	-13.68	-37.59	250	-20.52	-56.38	250	-25.65	-70.48	250	-42.75	-117.46
260	-6.95	-39.39	260	-10.42	-59.09	260	-13.02	-73.86	260	-21.71	-123.10
270	0.00	-40.00	270	0.00	-60.00	270	0.00	-75.00	270	0.00	-125.00
280	6.95	-39.39	280	10.42	-59.09	280	13.02	-73.86	280	21.71	-123.10
290	13.68	-37.59	290	20.52	-56.38	290	25.65	-70.48	290	42.75	-117.46
300	20.00	-34.64	300	30.00	-51.96	300	37.50	-64.95	300	62.50	-108.25
310	25.71	-30.64	310	38.57	-45.96	310	48.21	-57.45	310	80.35	-95.76
320	30.64	-25.71	320	45.96	-38.57	320	57.45	-48.21	320	95.76	-80.35
330	34.64	-20.00	330	51.96	-30.00	330	64.95	-37.50	330	108.25	-62.50
340	37.59	-13.68	340	56.38	-20.52	340	70.48	-25.65	340	117.46	-42.75
350	39.39	-6.95	350	59.09	-10.42	350	73.86	-13.02	350	123.10	-21.71
360	40.00	0.00	360	60.00	0.00	360	75.00	0.00	360	125.00	0.00

Appendix D – Response to Public Comments



Air Quality Permitting Response to Public Comments

July 9, 2009

Permit to Construct No. P-2009.0047

**Knife River, Inc.
Idaho Falls, Idaho**

Facility ID No. 777-00456

Prepared by:
Carole Zundel, Permit Writer
AIR QUALITY DIVISION

Final

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1. BACKGROUND

As deemed appropriate by the Director, the Department of Environmental Quality (DEQ) provided for public comment the proposed concrete batch plant Permit to Construct No. P-2009.0047 for Knife River, Inc. initially located in Idaho Falls, Idaho.

An opportunity for public comment was provided from April 21, 2009 through May 6, 2009. During this time, a member of the public requested a public comment period. DEQ provided the comment period from June 2, 2009 through July 2, 2009. Comments were provided via e-mail. Each comment and DEQ's response is provided in the following section. Comments with a common theme have been grouped together as one comment and responded to as one comment. All comments submitted in response to DEQ's proposed action are included as the appendix of this document.

2. PUBLIC COMMENT AND RESPONSES

Public comments regarding the permit analysis and air quality aspects of the proposed permit are summarized below. Due to the similarity of many of the comments received, the summary presented below combines and/or paraphrases some comments in order to eliminate duplication and to provide a more concise summary. Questions, comments, and/or suggestions received during the comment period that did not relate to the air quality aspects of the permit application, the Department's technical analysis, or the proposed permit are not addressed.

Comment 1: A public hearing is requested.

Response 1: Public hearings, in which comments may be submitted verbally as well as in writing, are not held for minor source permits to construct in accordance with IDAPA 58.01.01.209. Comments may be submitted to DEQ in writing for the permit to construct action during the public comment period.

Result: *No changes made to the permit or statement of basis.*

Comment 2: The operation of a hot mix asphalt plant will cause noise, odor, air pollution, adverse health issues, and decreased property values.

Response 2: This permit action is for a concrete batch plant, not a hot mix asphalt plant. DEQ does not have the authority to regulate noise or property value impacts. These are local ordinance and zoning issues. DEQ writes air permits based on state and federal rules and regulations that specify limitations on air pollution and air pollution-emitting activities. During the development of the regulations, numerous health issues have been considered. Scientific studies have been done for each pollutant listed in the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01)(Rules), and health-based limits have been established for the criteria and toxic air pollutants listed in the Rules.

The air pollution for a concrete batch plant is regulated in IDAPA 58.01.01. The type and amount of emissions have been quantified, based on the production capability of the equipment and limits on production that have been written into this permit. Appendix B in the Statement of Basis shows the estimated emissions from this facility. These emissions were compared to the limits that have been set in the Rules, and have been determined to be less than the regulatory limits. For some pollutants, air dispersion modeling was conducted to ensure that the estimated emissions were less than the regulatory limits.

The facility is required to monitor and record the production daily and annually to show compliance with the production limits in the permit. The production rate is used to estimate the amount of emissions, so limiting the production rate also limits the estimated emissions.

The facility is required to use only natural gas in the hot water heater, because other fuels, such as diesel, have not been evaluated to determine if the emissions would be in compliance with the regulatory limits.

The facility is required to use air pollution control equipment and operating practices to ensure that the emissions are properly controlled. The permit also requires that the control equipment be inspected and maintained regularly.

There is a minimum distance requirement, specifying that the facility must be operated a certain distance from the property line to ensure that the air pollutants outside of the property boundaries are below the regulatory concentration limits.

Odor is not usually an issue with concrete batch plants, and is more of a concern with hot mix asphalt plants.

There is currently a hot mix asphalt plant (HMA) operating within the Cranny Pit at 4055 Professional Way. Knife River notified DEQ of the relocation of this specific portable unit (#777 – 00426) to this specific location on January 28, 2009. This unit was issued a Permit to Construct (PTC) on November 7, 2008 and is permitted to operate within the Cranny Pit in accordance with conditions specified in the permit document. This is not the same piece of equipment that is seeking a new permit.

Recently, citizens became concerned over the permitting of a second portable HMA Unit # 777-00452. This is the specific unit seeking a permit that will be open for public review and comment under a separate public comment period. Knife River has stated that they are not presently operating this particular unit nor have they yet moved any equipment to the Cranny Pit specified in the new permit.

Result: No changes made to the permit or statement of basis.

Comment 3: The environmental impacts of the plume must be studied before issuing a permit.

Response 3: The environmental impacts from air pollution of all stationary sources of emissions at the plant have been evaluated during the permitting process in accordance with the Rules. The mass emission rate of criteria and toxic air pollutants were estimated using the production rate and emission factors published by the U. S. Environmental Protection Agency in AP-42. The emissions were then compared to the regulatory limits. For the pollutants that required further analysis, air dispersion modeling was conducted. The results of the modeling for PM₁₀ are as follows:

ESTIMATED PM ₁₀ AMBIENT IMPACT INCLUDING BOILER								
Pollutant	Modeled Emissions (lb/hr) ^a	Modeled Impact (µg/m ³) ^b	Linear Factor (µg/m ³ per lb/hr)	Boiler Emissions (lb/hr)	Additional Ambient Impact (µg/m ³)	Background (µg/m ³) ^b	Total Ambient Impact (µg/m ³)	Percent of NAAQS ^c
Proposed Operations								
PM ₁₀ (24-hr avg)	0.437 (1,500 cy/day)	40.1 (63.2)	91.8	3.42E-03	0.31	73	113.4	75.6%
	0.705 (2,400 cy/day)	50.8 (79.8)	72.1	3.42E-03	0.25	73	124	82.7%
PM ₁₀ (annual avg)	0.339 (400,000 cy/yr)	7.6 (10.8)	22.4	1.22E-03	0.027	26	33.6	67.3%
8,760 hr/yr Operations								
PM ₁₀ (24-hr avg)	0.437 (1,500 cy/day)	40.1 (63.2)	91.8	4.10E-03	0.38	73	113.5	75.7%
	0.705 (2,400 cy/day)	50.8 (79.8)	72.1	4.10E-03	0.30	73	124.1	82.7%
PM ₁₀ (annual avg)	0.339 (400,000 cy/yr)	7.6 (10.8)	22.4	4.10E-03	0.092	26	33.7	67.4%

^a See Tables 6A and 6B of the attached modeling analysis)

^b See Table 8 of the attached modeling analysis. 24-hr ISCST3 results (in parentheses) were converted to “equivalent” AERMOD results by multiplying by (53.3/83.8) = 0.636. Annual ISCST3 result (in parentheses) were converted by multiplying by (5.53/7.91) = 0.699

^c 24-hour PM₁₀ NAAQS = 150 µg/m³, Annual PM₁₀ NAAQS = 50 µg/m³.

Air dispersion modeling was also conducted for arsenic, hexavalent chromium, and nickel. The modeled emissions rate of these air pollutants were less than the corresponding acceptable ambient concentration for carcinogens (AACC) increment specified in IDAPA 58.01.01.586.

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

Complete documentation of the modeling analysis that was done is included as Appendix C in the statement of basis for the permit.

Result: No changes made to the permit or statement of basis.

Comment 4: The facility will have dust emissions.

Response 4: The permit regulates dust as fugitive particulate matter (PM) emissions in Permit Condition 2.9, which incorporates the regulation, IDAPA 58.01.01.650-651. This permit condition requires the facility to take all reasonable precautions to prevent particulate matter from becoming airborne. In determining what is reasonable, consideration will be given to factors such as the proximity of dust emitting operations to human habitations and/or activities and atmospheric conditions that might affect the movement of PM. Some of the reasonable precautions include using water or dust-suppression chemicals on roads and stockpiles and using dust control equipment, such as hoods, fans, and fabric filters or equivalent systems to enclose and vent the handling of dusty materials.

Each day that the facility is operated, a facility-wide inspection of potential sources of fugitive emissions must be conducted to ensure that the methods used to reasonably control fugitive emissions are effective. If fugitive emissions are not being reasonably controlled, corrective action must be taken as expeditiously as practicable. Records of the results of each fugitive emissions inspection must be maintained.

In addition, the DEQ regional office inspectors conduct inspections of the facility as well as respond to citizen complaints of excessive dust emissions.

Result: No changes made to the permit or statement of basis.

–END–

Appendix
Public Comments Submitted for
Knife River, Inc.
Concrete Batch Plant
P-2009.0047

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

DEQ seeks comment on proposed air quality permit to construct Knife River plant, Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2670#comments

Name: Kristy Sorensen

Email Address: sorensenslp@hotmail.com

Affiliation: Resident close to the area

Comments: Due to all of the plants that have gone in recently with no avail, I feel that our air quality is continuing to decrease. Yes, the permits were there long before the homes however, things change. We, as a population, are constantly evolving to our surroundings and the plants that go in should have to as well. Our air quality is being affected. Our children cannot play outside and breathe good air anymore. I demand a public hearing on this issue and make the hearing known to all the public. This means more then a small add in the paper. Not everyone gets the paper. Maybe then the public will really be able to give their opinion and have it matter.

From: Steven Sorensen [sorensen_s@hotmail.com]
To: Faye Weber
Subject: Knife River, Inc., DEQ permit no. P-2009.0029, REQUEST FOR PUBLIC HEARING Faye Weber

I would like to request that a public hearing be held on the request by Knife River to build a portable hot mix asphalt plant.

DEQ permit No. P-2009.0029
Proposed Location: 4055 Professional Way, Idaho Falls, ID

Thank you.

Steven Sorensen
677 Birmingham Lane
Idaho Falls, ID 83402

208-346-3373

Rediscover Hotmail®: Get quick friend updates right in your inbox. Check it out.

From: Dgk37@aol.com
To: Faye Weber
Subject: Knife River Permit

I request a 30-day public comment period on the proposed permit to regulate emissions from the Knife River, Inc. Plant in Idaho Falls, ID.

Gail Kemper
452 Hickory Circle
Idaho Falls, ID 83404

208-523-1706

New Deals on Dell Netbooks - Now starting at \$299

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: GORDON M. WILCOX

Email Address: gwtwpar@msn.com

Affiliation: Homeowner - 424 Hickory Circle

Comments: The proposed site for this plant is directly west of a concentrated residential area.

Waterford and several other newer sub divisions would have to endure the smell, dust, and truck traffic if this approved. Please do not approve it.yp3kl

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: susan and gary west

Email Address: send2wests@cablone.net

Affiliation: homeowner near knife river plant

Comments: Please allow us a time to learn and comment on this proposed plant. We live just a short distance (approximately 2 miles) away along with hundreds of other homeowners. We are very concerned about the air pollution/smells and need a comment period to learn more about this company and the impact it will or will not have on our neighborhood, homes and quality of life. We have just learned about this company's plans and need adequate time to make our voices heard.

Thank you. (I sent this separately to faye.weber's email before I saw this form. My apologies if you get it twice.)

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Damond and Jinger Watkins

Email Address: mascoma3@mac.com

Affiliation: Waterford HomeOwners Association

Comments: Very much against the proposed plat. Please hold a public hearing.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Lesli Wagner

Email Address: lebwagner@yahoo.com

Affiliation: Home owner

Comments: I am very much opposed to a Hotmix plant located in an area so close to a subdivision. What will this air quality do to our children?

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:
Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Jerrold Stucki
Email Address: jsms04@gmail.com
Affiliation: President Thayer Bridge Homeowners Association
Comments: Noise is one thing, but the odor being down wind

from Knife River Construction to have a hot mix

plant is more than we feel we can take.

Therefore we the homeowners of Thayer Bridge

vehemently oppose this permit being issued.

Jerrold Stucki President THBA

From:	PublicComment@deq.idaho.gov
To:	Faye Weber
Subject:	Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Steven Sorensen

Email Address: sorensen_s@hotmail.com

Affiliation: concerned citizen and property owner

Comments: My family and I live in the subdivision that is closest to the proposed site. First and foremost I want to make something clear NOT IN MY BACKYARD! Second, I will do everything in my power as a concerned citizen to block and protest Knife River's proposal to build a hot mix asphalt plant so close to a residential neighborhood. We live close enough that the prevailing winds would blow the toxic fumes and smell right into our subdivision. The homeowners in the neighborhoods have worked hard to purchase our homes and do not want to see our hard earned equity be diminished by Knife River's ability to develop in our backyards. Also I want to know why we as homeowners have not been allowed an opportunity to have a public hearing in a public place on this subject? The internet is not public and does not allow for our questions and concerns to be voiced collectively. Because of this, the DEQ's deadline to request such an event is no longer possible. We as stakeholders in this issue have not been informed or allow an opportunity to be heard adequately or completely. Please we all ask you to not allow Knife River to pollute the fresh air that we breathe. I believe that access to fresh air is our right and we should be able to enjoy that right every time that we go outside our homes to enjoy our neighborhood. Please do not allow Knife river to override our right to clear non-polluted air. Please do not grant Knife River the ability to infringe on my rights as a concerned citizen to enjoy the quality of life that we have work so hard to obtain.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Kristy Sorensen

Email Address: sorensenslp@hotmail.com

Affiliation: Resident in Carriage Gate Subdivision

Comments: I do not think we should have a hot mix asphalt plant in the planned area in Idaho Falls. Eventhough it is said that the emissions from the plant will be regulated we do not need any more emissions in this area of Idaho Falls. I am sure the homeowners in the area will not be able to enjoy being outside due to this plant. This planned area is close to my home and I have no desire to live in an area that has air that is going to be made unpleasant in any way. I do not believe that any of my neighbors would permit this as well. It is of the utmost importance that the building of this facility not happen and the public given a formal offer to verbalize how they feel about the plant coming into the area. It is my opinion that the plant not be built at all in this area or any surrounding areas. It is too close to populated areas which will make living in this area a nightmare.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Georgeanna Smith

Email Address: geo89801@yahoo.com

Affiliation: Homeowner near the proposed site

Comments: The area being considered by the Asphalt Plant Co. has changed dramatically in recent years. It is no longer solely an industrial area. As a homeowner near the proposed site, I am very concerned about the change in air quality that will occur from an asphalt plant. Please allow time for public comment on this important issue.

Thank you.

Georgeanna Smith
4071 Cambria Dr.
Idaho Falls

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Ron Porter

Email Address: rporter@ifpediatrics.com

Affiliation:

Comments: This proposed plant will be very close to our new home. My wife suffers from chronic migraines, and is very sensitive to smells. A strong smell like the one that will be emitted from a plant like this constantly wafting in our direction will not only be unpleasant to us all, but will be particularly difficult for my wife as it is sure to trigger frequent migraines.

Please open this up for a public discussion so we can all air our concerns about the construction of this plant in our area.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Natalie & Aaron Pittard

Email Address: nataliepittard@gmail.com

Affiliation:

Comments: We do not want this asphalt plant built so close to many neighborhood communities. This would be a monumental infringement on the environment and community we made to establish our home. Please strongly reconsider location for this plant.

thank you

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Binh Pham

Email Address: phamcambinh@yahoo.com

Affiliation:

Comments: The plan is too close to residential area, the dust from it will worsen the air quality and cause bad allergy.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Carol Neidner

Email Address: neidner@cableone.net

Affiliation: none

Comments: I am opposed to the Knife River asphalt plant in the vicinity of Sunnyside Road in Idaho Falls. Although the property is zoned for commercial development and there is some industrialization in the vicinity, a hot asphalt plant would be detrimental to other light businesses in the area and to nearby residential areas, churches and schools because of the noxious fumes generated by and emanating from asphalt products. Further, predominant winds from the south will carry the asphalt odors north into many of the business communities of Idaho Falls, causing much of Idaho Falls to become a very undesirable place to live and work. I am very much in favor of new business development in the community and understand that air quality emissions will be maintained within acceptable standards, however, the obvious, far reaching effects of a batch plant in this area cannot be overlooked. My request is that the permit be denied in favor of the well being of the City of Idaho Falls.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Eleanor Moor

Email Address: idahoellie@cableone.net

Affiliation: Waterford Property Owner

Comments: It has come to my attention that a permit is about to be issued to permit Knife River, Inc., to construct a hot mix asphalt plant close to Sunnyside and South Yellowstone Highway, and that the Waterford addition will be downwind from this plant. It is my also my understanding that there will be an odor coming from this plant, which would devalue property in that addition. This is a real concern to me.

From: ANNE MITCHELL [anneidaho1@msn.com]
To: Faye Weber
Subject: KNIFE RIVER, INC. PERMIT

DEAR FAYE:

As a soon to be resident of the Waterford sub division I am deeply concerned about the proposed location of the above asphalt plant's location. I am requesting that you delay approval for 30 days, and request a public hearing. Even if I weren't moving to Waterford, I am currently just East of there and would be adversely affected by such construction. Additionally, so would the dozens of health care providers offices and the two Ida Falls medical care facilities!

Thanks,

Anne Mitchell
Remax Realty
3525 Merlin Dr.
Ida Falls, 83404
529-5600

From: richard mitchell [idafalls06@msn.com]
To: Faye Weber

Dear Ms. Weber:

As a concerned resident of the Waterford development in Idaho Falls, I respectfully request the you approve a 30 day delay in the issuance of Knife Rivers permit for the hot mix plant.

The location is clearly inappropriate!

Sincerely,
R.A. Mitchell
428 Hickory Circle
Idaho Falls, 83404

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:
Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Dale & Laurie Luke
Email Address: lukede@cableone.net
Affiliation: Resident of Waterford Homeowner's Association
Comments: Tuesday, April 7, 2009

Late this afternoon, we received the e-mail from Waterford Homeowner's Association informing us that DEQ is about to issue a permit to Knife River, Inc. to construct a hot mix asphalt plant close to Sunnyside and South Yellowstone Highway.

We firmly believe that this plant will have a detrimental impact to us and many other homeowners in the Waterford subdivision. We are especially concerned about the air pollution and odors that will be emitted, as well as the possibility of additional noise pollution.

Since the first part of February, 2009, we have heard Knife River's rock crusher working all night and all day, for days on end. The crusher is located in the pit near 4055 Professional Way, in Idaho Falls. The obnoxious noise alone is bad enough, but now we will also have to endure the unpleasant pungent smells associated with an asphalt plant and more importantly, the unknown health effects associated with increased air pollution. That is a huge concern to us, especially to one who already has allergy problems!

We have already discovered that we are "downwind," from Knife River's operation, so that causes real concern about unwelcome smells and particulates that would drift into our area during the operation of Knife River's asphalt plant. What will this do to our great community, to outdoor activities, and to those residents who open their windows for 'fresh air'? Of additional concern, what will happen to the value of homeowners' properties? It certainly won't increase their values!

As homeowners who will be impacted by this, we want to express strong opposition to DEQ's approval and the pursuant Use Permit issued by Bonneville County for the construction of an asphalt plant by Knife River at this location. It is much, much too close to our residential area within the city of Idaho Falls.

We are frustrated that Bonneville County and/or DEQ did not notify residents sooner to allow them adequate time (more than a few hours) to become knowledgeable about Knife River's plans, so that residents could voice their opinions, either pro or con.

We request a delay of approval and a publicized date for a public hearing so residents can become better informed.

Thank you for your serious consideration,

Dale & Laurie Luke
3671 Tuscany Dr

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Desiree Lowney

Email Address: des72ee@msn.com

Affiliation: Thayer Bridge Townhome Association Board member

Comments: I am opposed to having the permit issued for this location although, it is zoned to allow for this type of business. As a person having asthma I feel the overall affects of having this type of operation so close to residential areas will increase asthma and othere air related allergies to many in the close surrounding area. Not to mention the overall potential traffic congestion so close to a large public park, zoo and recreation area. I respectfully request a delay in issuing the permit to allow a public hearing which would allow all concerns to be reviewed prior to a final decision.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Brady Johnson

Email Address: bradyj75@hotmail.com

Affiliation: homeowner

Comments: Of course a public comment period is needed for the approval of such a construction project. Personally, I can't believe it is even being considered so close to housing developments. I strongly oppose the issuing of this permit!

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Kimberly Johnson

Email Address: kimberlyj75@gmail.com

Affiliation: homeowner

Comments: As if the trains and rock crusher round the clock weren't nuisance enough! I strongly oppose construction of an asphalt plant so near residential areas. Bad for property values, bad for quality of life, bad for the environment especially

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: William (Bill) & Marilyn Houlihan
Email Address: mhoulihan@cableone.net
Affiliation: Resident

Comments: We are strongly opposed to Knife River, Inc.
constructing a hot mix asphalt plant close to Sunnyside & South Yellowstone Highway.

There are obvious healthy risks from such a plant as well as affecting property values.
It is close to many residential areas which may well have a serious impact on the health of children as well as adults.

It needs to be stopped NOW.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Roger and Connie Hanson

Email Address: dadman@q.com

Affiliation: Thayer Bridge Homeowner

Comments: My wife and I are totally against the proposed asphalt plant. Not only are we down wind of the site, but the noise would ruin our property value. The economy has done enough. It needs to be way further away from all residential communities in the area.

Roger and Connie Hanson

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Brinn Granat

Email Address: brinnandramona@gmail.com

Affiliation: Idaho Falls Resident

Comments: I am opposed to the Knife River Inc. request to have a plant put in at 4055 Professional Way, as are many of my neighbors. We are also upset that my neighborhood was not notified of this request since we are directly impacted and are one of the closest subdivisions to the plant. We are opposed to the plant because of the location. The noise and the odor will be disruptive to the residents in my neighborhood, not to mention the elementary schools and jr. high schools. Whether or not pollution is a factor the odor will be a problem and we have a lot of young families in my neighborhood with children and having such a facility nearby will directly impact how often we let our children spend time outside. We are also worried as an association because we feel the noise and odor will have a negative impact on our home values. Which have already suffered due to the downturn in the economy. If home values decrease this could cripple the overall real estate market in our neighborhood and make it even more difficult for families to sell their homes in the future.

We also believe that this location, with it's new I-15 access is an area that also defines Idaho Falls. Anyone who uses this access will most likely develop an opinion quickly of the area and our neighborhood based off their initial assessment when coming into town. The potential noise and odor caused by this facility will be key factors in their opinion of this area of Idaho Falls.

We feel that there are better locations for these types of industrial plants. In an area such as Idaho Falls there are many other RURAL areas that are not located next door to residential neighborhoods for a plant of this nature to go in that will not impact nearby residents.

We really hope for the sake of the Idaho Falls residents that you will NOT approve the Knife River Inc. permit to go into the 4055 Professional Way area.

Sincerely,

Brinn Granat

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Ramona Granat

Email Address: ramona.granat@century21.com

Affiliation: Idaho Falls Realtor and Resident

Comments: I am opposed to the Knife River Inc. request to have a plant put in at 4055

Professional Way. I am opposed to the plant because of the location. I believe that this would have a drastic negative effect on the South Idaho Falls area which is predominantly residential. The noise and the odor will be disruptive to the residents in this area, not to mention the elementary schools and jr. high schools. As a Realtor I can see the devastating impact that the noise and odor will have on the real estate market. Home values will decrease and this could cripple the overall real estate market in the Idaho falls area that is already suffering from economic lows.

I also believe that this location, with it's new I-15 access is an area that defines Idaho Falls. Anyone who uses this access will base their opinion of the area based on their assessment when coming into the town, and noise and odor are factors in this assessment.

I think that there are better locations for these types of industrial plants. In an area such as Idaho Falls there are plenty of RURAL areas for a plant to go in that will not impact it's residents.

I really hope for the sake of the Idaho Falls Residents that you will NOT approve the Knife River Inc. permit to go into the 4055 Professional Way area.

Sincerely,

Ramona Granat

Century 21 Advantage Realtor and Idaho Falls Resident

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Ramona Granat

Email Address: ramonagranat@hotmail.com

Affiliation: Idaho Falls Resident

Comments: I am opposed to the Knife River Inc. request to have a plant put in at 4055 Professional Way. I am opposed to the plant because of the location. I am upset that my neighborhood was not notified of the permit request when my neighborhood is one of the closest in proximity to where the plant would go in. The noise and the odor will be disruptive to my neighborhood, not to mention the elementary schools and jr. high schools near by. Whether or not pollution is a factor the odor will be a problem and there are a lot of young families in my neighborhood with children and having such a facility nearby will directly impact how often we let our children spend time outside. I am worried that this type of plant will have a negative impact on our home values, which have already suffered due to the downturn in the economy. If home values decrease this could cripple the overall real estate market in our neighborhood and make it even more difficult for families to sell their homes in the future.

I feel that there are better locations for these types of industrial plants. In an area such as Idaho Falls there are many other RURAL areas that are not located next door to residential neighborhoods for a plant of this nature to go in that will not impact nearby residents.

I really hope that you will NOT approve the Knife River Inc. permit to go into the 4055 Professional Way area.

Sincerely,

Ramona Granat

From:	PublicComment@deq.idaho.gov
To:	Faye Weber
Subject:	Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: Ronald W. Goin

Email Address: rongoin@cableone.net

Affiliation: Waterford Homeowner's Association

Comments: I am really concerned about the odor from a hot mix asphalt plant since the 180 homes in Waterford are downwind from the proposed plant. I am president of the Waterford HOA. On behalf of the 180 home owners, we request that a 30 day public comment period be held so that we may express our concerns.

We only heard about this plant proposal this afternoon, otherwise we would have responded sooner.

We have had several complaints about the noise from the rock crushing facility at the same area, running 24/7. Several people have disrupted sleep, etc. If they are allowed to put in the hot mix facility, we will have the odor of hot asphalt.

Please provide a 30 day comment period.

Thank you.

Ronald W. Goin

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:

Knife River, Inc. applies to DEQ for air quality permit to construct for new plant in Idaho Falls
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Name: Patrick Gibson

Email Address: ggibson@cableone.net

Affiliation: N/A

Comments: We live in the Waterford home subdivision just east of the proposed location for this plant. We are very concerned that the emissions/odors from a hot-mix plant will negatively affect the quality of life in this upscale residential area, but also negatively affect property values. Waterford is but one of several new subdivisions in this area and more are sure to be developed. It would be much better to locate this kind of facility farther away from residential areas.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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Name: Richard and Erin Dyer

Email Address: dyerbunch@hotmail.com

Affiliation: proposed plant neighbors

Comments: We were dismayed to have just learned tonight about the proposed hot mix asphalt plant just down the street from our home. We definitely feel that there should be an opportunity for public comment concerning this plant and the adverse effect we feel it will have on our quality of life as well as the property values in the area.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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Name: Brent Thompson

Email Address: brentlymai@aol.com

Affiliation: Nearby resident

Comments: While I live nearby, there is actually another residential subdivision very near to the north and northeast of this proposed plant. While the plant may comply with code, I can't understand why something like this is allowed adjacent to a developed urban area - it just makes no sense. I am opposed to granting this permit.

From: Joel & Lynette [dulingjoel@cablone.net]
To: Faye Weber
Cc: Brinn Granat
Subject: Knife River, Inc PTC

Ms. Weber:

The residents of Ridgewood Park Subdivision request that the Idaho Department of Environmental Quality (IDEQ) provide a public comment period for the Knife River, Inc portable hot mix asphalt plant Permit to Construct (PTC) number P-2009.0029. The residents of Ridgewood Park have significant concerns over the potential environmental impacts of the proposed plant, not the least of which includes air quality considerations. The residents are concerned with the approval of such a plant within 1/2 mile of a significant concentration of single family dwellings located in subdivisions such as Ridgewood Park, Carriage Gate and Waterford. The PTC contains a significant amount of information that the residents need to review before providing meaningful comment. At first glance, the application and documents appear to contain inaccurate assumptions and contradictions that need to be evaluated. Some of these include the air dispersion model which classifies the surrounding area as rural even though a large concentration of urban dwellings are within the evaluation area. In addition, the hours of operation seem inconsistent and refer to an open operation period in some areas where others specify reduced operation from October to March to meet air quality standards. The PTC also contains over 30 pages of analytical data that must be evaluated by the residents to understand and provide any comment on potential impacts.

Although the PTC is related to air quality, significant issues also appear to be associated with the storage and location of approximately 70,000 gallons of environmental pollutants in close proximity to the Snake River. No information is provided related to pollution control and spill response nor any information related to the increased truck traffic (and associated air pollutants) from this operation. Based upon all of these factors, the residents of Ridgewood Park request a formal public comment period to evaluate and provide the IDEQ with meaningful comments related to this PTC

Sincerely,

Joel W Duling (REA, NREP, NAEP)
Vice President
Ridgewood Park Homeowners Association

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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Name: ReNae Cunningham

Email Address: renaedc@gmail.com

Affiliation: concerned homeowner

Comments: I have just learned about this plant being built close to my home. I am not very pleased that it is close to my neighborhood. I feel that this is something that was trying to be quietly done so that concerned homeowners and close businesses would not be able to comment, thus disrupting the plans of Knife River. I'm not saying it is bad just not at this location. There are professional businesses around but did they stop to take into consideration the odor, wind and how it would effect surrounding nearby homes. Maybe that is why they wanted this done quietly. I would like to have the opportunity to learn more about this before it is given the go ahead.

From: Holly Cook [lavenderlily33@hotmail.com]
To: Faye Weber
Subject: Knife River

We would like to respond regarding the Knife River project and the hot mix asphalt plant in Idaho Falls. We live just east of this area and would like to have a say in what is being done with this project. The noise is already quite loud, but the asphalt plant would be very undesirable for our neighborhoods. This is in protest to allowing this to go forward.

Holly and Evan Cook
3877 Nottingham Lane
Idaho Falls, ID

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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Name: Byron Christiansen

Email Address: byron.christiansen@gmail.com

Affiliation: Home owner

Comments: I am concerned about the installation of this new portable HMA plant. We are home owners that will be downwind from this facility and will be directly effected by its chemical emissions. The city of Idaho Falls has allowed the construction of many homes in the surrounding area and the installation of this facility will directly effect our quality of life. Facilities like these should be located further away from dense residential areas.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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Name: Melvin E Call

Email Address: melcall@cableone.net

Affiliation: Home owner near Sunnyside and 5th West

Comments: It is respectfully requested a study of the possible or probable effects of the air pollution and odor from a hot mix asphalt plant this near - and downwind from my residence. and the residence of many my age (85) and older - plus the even closer nursing home and serious medical problems for many of those residence.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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Name: Paul Beebe & Judith Gray
Email Address: paulbeebe@me.com
Affiliation: none

Comments: Certainly, the opportunity to increase business in Idaho Falls and SE ID in general is an important matter. And this proposed plant may well help in that effort. However, in light of prevailing winds in SE ID, mainly from the southwest, plumes from this plant will track northeast over residential and business areas. The environmental effects on residents must be fully understood and assessed before building permits are granted. The Environmental Impact Statement and Assessment must comprehend the effects of plume track and effluent, as well as an evaluation of alternate sites for this plant.

From: susie bauchman [susiebauchman@hotmail.com]
To: Faye Weber
Subject: Knife River project I have a home in Idaho Falls in Waterford, and I am very concerned about living too close to the Knife River Project... Please allow more time for discussion before issuing a permit... susan bauchman 3860 Tuscany Dr Idaho falls, Id 83404208 5290209

Rediscover Hotmail®: Now available on your iPhone or BlackBerry Check it out.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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Name: Jan Allred

Email Address: janallred@comcast.net

Affiliation: Waterford Homeowner

Comments: With the economic crisis, our home values have already deteriorated enough. Knife River should not be allowed to construct their asphalt plant in the proposed location, potentially resulting in further deterioration of the values of homes in neighborhoods that could be affected by the odor. Please think about struggling homeowners when you make the decision whether to issue the permit.

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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Name: Brinn Granat

Email Address: brinngranat@hotmail.com

Affiliation: Ridgewood Park Homeowner Association President

Comments: On behalf of the Ridgewood Park Homeowner Association we are opposed to the Knife River Inc. request to have a plant put in at 4055 Professional Way. We are also upset that my neighborhood was not notified of this request since we are directly impacted and are one of the closest subdivisions to the plant. We are opposed to the plant because of the location. The noise and the odor will be disruptive to the residents in my neighborhood, not to mention the elementary schools and jr. high schools. Whether or not pollution is a factor the odor will be a problem and we have a lot of young families in my neighborhood with children and having such a facility nearby will directly impact how often we let our children spend time outside. We are also worried as an association because we feel the noise and odor will have a negative impact on our home values. Which have already suffered due to the downturn in the economy. If home values decrease this could cripple the overall real estate market in our neighborhood and make it even more difficult for families to sell their homes in the future. We also believe that this location, with it's new I-15 access is an area that also defines Idaho Falls. Anyone who uses this access will most likely develop an opinion quickly of the area and our neighborhood based off their initial assessment when coming into town. The potential noise and odor caused by this facility will be key factors in their opinion of this area of Idaho Falls. We feel that there are better locations for these types of industrial plants. In an area such as Idaho Falls there are many other RURAL areas that are not located next door to residential neighborhoods for a plant of this nature to go in that will not impact nearby residents. We really hope for the sake of the Idaho Falls Ridgewood Park Homeowner Association that you will NOT approve the Knife River Inc. permit to go into the 4055 Professional Way area.

Sincerely,
Brinn Granat

Ridgewood Park Homeowner Association President

From: Dave Black [daveb@cableone.net]
To: Faye Weber
Subject: Knife River Hot Mix Asphalt Plant

Faye,

We are fairly new homeowners in the Waterford addition of Idaho Falls which is only about one mile from the proposed hot mix plant and have only tonight heard of this proposal. We do have concerns over potential noise, odor, and pollution.

We have downloaded the permit application, but would like more time to review it so that we can fully assess the impact. This additional period of time, it would seem, would be in order since this proposal has caught not only us unawares, but many others we know as well.

We do hope the homeowners nearby this proposed site (who will doubtless be affected by it operation) can be more adequately informed and heard from before permits are granted.

Thank you for your consideration.

--Dave & Kathy Black

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2596#comments

Name: john lindsay
Email Address: jtlind@cableone.net
Affiliation: Waterford Homeowners' Assoc.
Comments: Request public hearing.

From:	Joel & Lynette [dulingjoel@cableone.net]
To:	Faye Weber
Cc:	Brinn Granat
Subject:	Knife River, Inc PTC

Ms. Weber:

The residents of Ridgewood Park Subdivision request that the Idaho Department of Environmental Quality (IDEQ) provide a public comment period for the Knife River, Inc portable hot mix asphalt plant Permit to Construct (PTC) number P-2009.0029. The residents of Ridgewood Park have significant concerns over the potential environmental impacts of the proposed plant, not the least of which includes air quality considerations. The residents are concerned with the approval of such a plant within 1/2 mile of a significant concentration of single family dwellings located in subdivisions such as Ridgewood Park, Carriage Gate and Waterford. The PTC contains a significant amount of information that the residents need to review before providing meaningful comment. At first glance, the application and documents appear to contain inaccurate assumptions and contradictions that need to be evaluated. Some of these include the air dispersion model which classifies the surrounding area as rural even though a large concentration of urban dwellings are within the evaluation area. In addition, the hours of operation seem inconsistent and refer to an open operation period in some areas where others specify reduced operation from October to March to meet air quality standards. The PTC also contains over 30 pages of analytical data that must be evaluated by the residents to understand and provide any comment on potential impacts.

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Sincerely,

Joel W Duling (REA, NREP, NAEP)
Vice President
Ridgewood Park Homeowners Association

From: Wayne & Glenda Moe [wmoe2@cableone.net]
To: Faye Weber
Subject: Request for public comment period, PTC

4/8/09

Pursuant to the following notice

Knife River, Inc., Idaho Falls, has applied to the Department of Environmental Quality (DEQ) for a permit to construct, No. P-2009.0029, for construction of a portable hot mix asphalt plant. The facility is proposed to be located at 4055 Professional Way in Idaho Falls. A public comment period on the proposed permit will be provided if a written request is submitted on or before April 8, 2009

Please accept this written request for a 30 day public comment period concerning the aforementioned PTC. I am an interested and concerned resident near the area proposed for the referenced facility.

Thank you.
Wayne Moe

185 W Woodhaven Ln

Idaho Falls, ID 83404

2085692740

wmoe2@cableone.net

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

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Name: Brady Johnson

Email Address: bradyj75@hotmail.com

Affiliation: homeowner

Comments: Of course a public comment period is needed for the approval of such a construction project. Personally, I can't believe it is even being considered so close to housing developments. I strongly oppose the issuing of this permit!

From: PublicComment@deq.idaho.gov
To: Faye Weber
Subject: Public Comment

You have received a public comment on:
Knife River, Inc. applies to DEQ for air quality permit to construct for new concrete batch plant in
Idaho Falls
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2622#comments

Name: Justin Coleman
Email Address: colejust@gmail.com
Affiliation:
Comments: I would like to request a public comment period for this.