

Statement of Basis

**Permit to Construct No. P-2015.0012
Project ID 62610**

**Oldcastle Infrastructure - Nampa
Nampa, Idaho**

Facility ID 027-00085

Final

December 3, 2021

**Shawnee Chen, P.E. *SYC*
Senior Air Quality Engineer**

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

acfm	actual cubic feet per minute
Btu	British thermal unit
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EF	emissions factor
EPA	U.S. Environmental Protection Agency
GACT	Generally Available Control Technology
HAP	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
ND	no data
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
Oldcastle	Oldcastle Infrastructure - Nampa
PC	permit condition
PM	particulate matter
PM _{2.5}	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	Synthetic Minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO ₂	sulfur dioxide
SO _x	sulfur oxides
TAP	toxic air pollutants
Tier II/T2	Tier II operating permit
PTC/Tier II	permit to construct and Tier II operating permit
T/yr	tons per year
VOC	volatile organic compound

FACILITY INFORMATION

Description

Oldcastle Infrastructure - Nampa (Oldcastle) is a concrete precast facility. Oldcastle manufactures concrete pipe and vaults.

Aggregate (sand and gravel), cement, and fly ash are delivered to the facility by truck. Aggregate is dumped into a ground level receiving hopper which mechanically conveys these materials into storage bins inside the process building. Cement and fly ash are pneumatically transferred from trucks to storage silos. Each silo vents to its respective filter. Other recipe admixtures are delivered in smaller amounts (supersacks, etc.) and stored in the process building.

The aggregate, cement, and fly ash, may with admixtures according to recipe specifications, are dropped into a weigh hopper and then to a mixer. The concrete is mixed and then poured into pour buckets, which are emptied into molds. The molds are moved to the curing station, then outside for storage. The entire precast product manufacturing process is conducted inside a building.

The M1 1.2 MMBtu/hr water heater is used to heat water. The 1.5 MMBtu/hr Kraft Cure Vapor Generator provide steam for product curing.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

May 29, 2003	T2-020011, initial Tier II operating permit (Tier II) and permit to construct (PTC) for the facility constructed without a permit, permit status (S)
November 24, 2003	T2-030045, PTC revision for installing a baghouse for fly ash silo and for correcting typographical errors, permit status (S)
August 29, 2008	T2-2008.0051, Tier II renewal, permit status (A, but will become S upon issuance of this permit)
May 28, 2015	P-2015.0012 PROJ 61488, renewing the PTC/Tier II and converting it to a PTC, permit status (S)
April 2, 2019	P-2015.0012 PROJ 62206, a name change from Oldcastle Precast, Inc. to Oldcastle Infrastructure - Nampa, permit status (A, but will become S upon issuance of this permit)

Application Scope

This is a modified PTC for an already installed new concrete batch plant that has replaced the existing old concrete batch plant. The existing batch plant is disabled and is not operating. The proposed throughput of the new plant is lower than that of the old concrete batch plant.

Application Chronology

April 14, 2021	DEQ received an application.
April 19, 2021	DEQ received an application fee.
May 5, 2021	DEQ determined that the application was incomplete.
June 22 and July 22, 2021	DEQ received additional information
August 20, 2021	DEQ determined that the application was complete.
October 13, 2021	DEQ made available the draft permit and statement of basis for peer and regional office review.
October 19, 2021	DEQ made available the draft permit and statement of basis for applicant review.

November 22, 2021	DEQ made available the 2nd draft permit and statement of basis for applicant review.
November 29, 2021	DEQ received the permit processing fee.
December 3, 2021	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSION UNIT AND CONTROL DEVICE INFORMATION

Sources	Control Equipment	Emission Point ID No.
<u>Material Transfer Points:</u> Sand and gravel are dropped from truck into a ground level receiving hopper which mechanically conveys these materials into storage bins inside the process building.	For emissions points inside the building, emissions are assumed to be 'controlled' by 50% because of being trapped by building before venting through wall vent.	<u>Stack ID: 03</u> For emissions transfer points inside the building, this 'stack' is a building vent opening. Exit Height: 45 feet (12.8 m) Exit Diameter: 2 feet (0.61 m) Exit flow rate: 6,000 acfm Exit Temperature: 70°F Horizontal release
<u>Concrete Batch Plant –Central Mix:</u> Manufacturer: Haarup Model: 2250 Installation Date: 05/2020 Max. production rate: 34 yd ³ /hr Proposed annual rate: 60,000 yd ³ /yr		
<u>Cement Silo</u> Manufacturer: Belgrade Steel Tank Model: 700 BBL Installed Date: 05/2020 Size: 145 yd ³	<u>Cement Silo Filter ^(a)</u> Manufacturer: WAM Model: Silotop Zero Type: Cartridge PM ₁₀ control efficiency: 99.98%	<u>Stack ID: 01</u> Exit Height: 52 feet (15.8 m) Exit Diameter: 2 feet (0.61 m) Exit flow rate: 1,000 acfm Exit Temperature: 70 °F
<u>Fly Ash Silo</u> Manufacturer: Belgrade Steel Tank Model: 700 BBL Split Installed Date: 05/2020 Size: split internally to hold two materials, cement and fly ash. each 72.5 yd ³ and total 145 yd ³	<u>Fly Ash Silo Filter ^(a)</u> Manufacturer: WAM Model: Silotop Zero Type: Cartridge PM ₁₀ control efficiency: 99.98 %	<u>Stack ID: 02</u> Exit Height: 52 feet (15.8 m) Exit Diameter: 2 feet (0.61 m) Exit flow rate: 1,000 acfm Exit Temperature: 70 °F
<u>Batch Weigh Hopper</u> Manufacturer: Haarup Model: N/A Installation Date: 05/2020 Size: 0.75 yd ³	Emissions are assumed to be 'controlled' by 50% because of being trapped by building before venting through wall vent.	<u>Stack ID: 03</u> This 'stack' is a building vent opening Exit Height: 45 feet (12.8 m) Exit Diameter: 2 feet (0.61 m) Exit flow rate: 6,000 acfm Exit Temperature: 70°F Horizontal release
<u>Mixer</u> Manufacturer: Haarup Model: 2250 Installation Date: 05/2020 Size: 2 yd ³	Emissions are assumed to be 'controlled' by 50% because of being trapped by building before venting through wall vent.	<u>Stack ID: 03</u> This 'stack' is a building vent opening Exit Height: 45 feet (12.8 m) Exit Diameter: 2 feet (0.61 m) Exit flow rate: 6,000 acfm Exit Temperature: 70°F Horizontal release

Sources	Control Equipment	Emission Point ID No.
<u>M1 Water Heater</u> Manufacturer: Sioux Model: M1 Manufacture Date: 2020 Heat input rating: 1.2036 MMBtu/hr Max Production: 1,180 ft ³ /hr Fuel: natural gas	None	Water heater exhaust stack
<u>Kraft Cure Vapor Generator</u> Manufacturer: Kraft Model: KC 15-1S Burner Model: NA Manufacture Date: 2020 Heat input rating: 1.5 MMBtu/hr Max Production: 1,500 ft ³ /hr Fuel: natural gas	None	There is no actual stack vent for these combustion emissions. Exhaust gases are released with steam into precast curing area and then through the building vent.

a) process equipment

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit, an emission inventory was developed for the operations of the new concrete batch plant, the new water heater, and the Kraft Cure Vapor Generator at the facility (see Appendix A) associated with this proposed project. Emissions estimates of criteria pollutants and HAP PTE were based on emission factors from AP-42, operation of 8,760 hours per year for the two new combustion sources, the maximum production rate of 34 yd³/hr and the proposed annual production rate of 60,000 yd³/yr for the new concrete batch plant, and process information specific to the facility for this proposed project.

Uncontrolled Potential to Emit

Using the definition of Potential to Emit, uncontrolled Potential to Emit is then defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall **not** be treated as part of its design **since** the limitation or the effect it would have on emissions **is not** state or federally enforceable.

The uncontrolled Potential to Emit is used to determine if a facility is a “Synthetic Minor” source of emissions. Synthetic Minor sources are facilities that have an uncontrolled Potential to Emit for regulated air pollutants or HAP above the applicable Major Source threshold without permit limits.

The following table presents the uncontrolled Potential to Emit for regulated air pollutants using the EI spreadsheet submitted by Applicant and using the maximum annual throughput of 34 yd³/hr *8,760 hr/yr = 297,840 yd³/yr and without using building control efficiency of 50%. Since the filters of the cement silo and fly ash silo are process equipment and because the control efficiency of silos’ filters is 99.98% according to the manufacturer’s data, the uncontrolled emissions of cement silo and fly ash silo are calculated as: uncontrolled EF * (1-99.98%) * maximum production rates.

Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions Unit	PM _{2.5}		PM ₁₀		SO ₂		NO _x		CO		VOC		HAP
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	T/yr
Total from the plant	0.071	0.310	0.202	0.884	0.002	0.007	0.268	1.174	0.225	0.986	0.015	0.065	<0.318

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria pollutants from all emissions units at the facility as submitted by Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions Unit	PM _{2.5}		PM ₁₀		SO ₂		NO _x		CO		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Cement storage silo baghouse ^a	0.0032	0.0028	0.0032	0.0028	---	---	---	---	---	---	---	---
Fly ash storage silo baghouse ^a	0.0017	0.103	0.0017	0.0103	---	---	---	---	---	---	---	---
Aggregate delivery to pile ^a	0.00372	0.0033	0.0246	0.0217	---	---	---	---	---	---	---	---
Sand delivery to pile ^a	0.00081	0.00071	0.0053	0.0047	---	---	---	---	---	---	---	---
Aggregate from pile to conveyor ^a	0.00372	0.0033	0.0246	0.0217	---	---	---	---	---	---	---	---
Sand from pile to conveyor ^a	0.00081	0.00071	0.0053	0.0047	---	---	---	---	---	---	---	---
Weigh hopper loading ^{a, b}	0.0165	0.0146	0.0834	0.0736	---	---	---	---	---	---	---	---
Central Mixing loading ^{a, b}	0.0100	0.0088	0.0235	0.0207	---	---	---	---	---	---	---	---
M1 water heater and Kraft Curing Vapor System ^c	0.020	0.089	0.020	0.089	0.0016	0.007	0.27	1.17	0.23	0.99	0.015	0.065
Total, Point Sources	0.070	0.134	0.202	0.249	0.002	0.007	0.268	1.174	0.225	0.986	0.015	0.065

a) Emissions rates are based on AP-42 emissions factors (EF), 34 yd³/hr, 60,000 yd³/yr, and material components specific to the plant.

b) In the building

c) Emissions rates based on rated heat input rate and 8,760 hr/yr for the combustion sources

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. Because the new concrete batch plant that replaced the existing old concrete batch plant has lower proposed production rates, the change in PTE is negative.

TAP Emissions

Because the new concrete batch plant that has replaced the existing old concrete batch plant has lower production rates, there is no emissions increase for toxic air pollutants (TAP).

Post Project HAP Emissions

The following table presents the post project potential to emit for HAP pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 4 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Emissions Unit	HAP
	T/yr
Total from the plant	<0.138

Ambient Air Quality Impact Analyses

The facility-wide emissions are below regulatory concern. Emission netting as per Idaho Air Rules Section 210.09 was used to demonstrate compliance with TAP rules. Because the new concrete batch plant that has replaced the existing old concrete batch plant has lower production rates, there is no emissions increase for TAP. Therefore, modeling is not required for this project.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Canyon County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

Oldcastle is defined as a minor facility because without permit limits on the potential to emit, Oldcastle would not exceed any major source thresholds for any regulated air pollutants. The facility classification is “B”.

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

- A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.
- SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.
- SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.
- B = Use when the potential to emit (i.e., uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.
- UNK = Class is unknown.

For All Other Pollutants:

- A = Use when permitted emissions of a pollutant are > 100 T/yr.
- SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.
- SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.
- B = Use when the potential to emit (i.e., uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.
- UNK = Class is unknown.

Table 3 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM ₁₀	<100	<100	100	B
PM _{2.5}	<100	<100	100	B
SO ₂	<100	<100	100	B
NO _x	<100	<100	100	B
CO	<100	<100	100	B
VOC	<100	<100	100	B
HAP (single)	<10	<10	10	B
Total HAPs	<25	<25	25	B

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the new concrete batch plant that has replaced the existing old batch plant. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.7, 3.3, and 4.4.

Standards for New Sources (IDAPA 58.01.01.677)

IDAPA 58.01.01.677 Standards for Minor and Existing Sources

The fuel burning equipment located at this facility, with a maximum rated input of less than ten (10) million BTU per hour, is subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This requirement is assured by Permit Condition 3.3.

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

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for criterial air pollutants or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical

change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore, in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

This facility is not subject to 40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units because the maximum design heat input rate of each combustion source is less than 10 MMBtu/hr, the minimum heat input trigger level as specified in the subpart.

NESHAP Applicability (40 CFR 61)

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

GACT Applicability (40 CFR 63)

The facility is a minor source for HAP and is not subject to any GACT standards in 40 CFR Part 63, such as Subpart JJJJJ as all combustion sources are natural gas fired.

Permit Conditions Review

This section describes only those permit conditions that have been added, revised, modified, or deleted as a result of this permitting action.

Permit Conditions 1.1 to 1.3

Permit Condition 1.1 states the purpose of this permitting action. Permit Condition 1.2 states that those permit conditions that have been modified or revised by this permitting action are identified by the permit issue date citation located directly under the permit condition and on the right-hand margin. Permit Condition 1.3 states that this PTC replaces PTC No. P-2015.0012 issued on April 2, 2019.

Table 1.1 is updated to reflect the operation of the new concrete batch plant. Cleaver Brooks natural gas-fired boiler rated at 6.28 MMBtu/hr is removed from the permit because according to the plant manager through the phone conversation on October 15, 2021, the boiler has decommissioned.

Permit Conditions 3.1, 3.2, and Table 3.1 are revised to reflect the addition of M1 water heater and Kraft Cure Vapor Generator and their controls.

Permit Condition 3.3 is revised to add “(e.g., M1 water heater)”. Kraft Cure Vapor Generator is not subject to this standard as it does not use indirect heat transfer and does not meet the definition of fuel-burning equipment in Air Rules.

Permit Condition 3.4 includes the emissions limits that are for demonstrating that the facility-wide PTE are BRC and therefore, ambient impact analysis (modeling) is not required for the project. As long as the combustion sources are used as designed and used as proposed in the application, they will be in compliance with the limits. The emissions limits in the permit are developed using the emission factors in AP-42, maximum heat input rate of each combustion unit, and operating hours of 8,760 hr/yr.

Permit Condition 3.5 ensure that only natural gas will be burned in these combustion sources.

Permit Condition 4.1 and 4.2 are revised to reflect the operation and emissions control of the new concrete batch plant.

Permit Condition 4.3 is revised to reflect the operation of the new concrete batch plant. The emissions limits are calculated based on AP-42 emissions factors, production rate of 34 yd³/hr and 60,000 yd³/yr, material components specific to the plant, and the concrete batch plant being in the building. The limits are for demonstrating that the facility-wide PTE are BRC and therefore, ambient impact analysis (modeling) is not required for this project.

“/filter” is added to Permit Condition 4.4 as the new silos are using integrated filters.

Permit Condition 4.5 is revised to reflect the new concrete batch plant maximum capacity (i.e., 34 yd³/hr) and the proposed annual production rate (i.e., 60,000 yd³/yr). These operation limits are used for facility's emissions calculation, such as PTE.

Permit Condition 4.7 is revised to reflect the new plant cement silo and fly ash silos each has its own integrated filter. "in accordance with manufacturer's specifications and recommendations" is added to PC 4.7 to emphasize that the silos and filters need to be installed and operated according to manufacturer's specifications and recommendations.

Old Permit Conditions 4.8 and 4.9 regarding baghouse pressure drop are removed as they are no longer applicable due to the configuration of the silos and filters of the new plant.

Old Permit Condition 4.10 is re-numbered as Permit Condition 4.8. The second bullet about baghouse pressure drop is removed as it is no longer applicable.

Old Permit Condition 4.11 is re-numbered as Permit Condition 4.9.

New Permit Condition 4.10 is a standard permit condition taken from DEQ's internal guidance for baghouse/filters. It requires the permittee to develop a Baghouse/Filter System Procedures document for the inspection and operation of the baghouses/filter system which controls emissions from the cement silo and fly ash silo.

Old Permit Condition 4.12 is no longer applicable and is removed.

PUBLIC REVIEW

Public Comment Opportunity

Because this permitting action does not authorize an increase in emissions, an opportunity for public comment period was not required or provided in accordance with IDAPA 58.01.01.209.04.

APPENDIX A – EMISSIONS INVENTORIES

Oldcastle
Nampa, ID

Criteria Pollutants

CONTROLLED

Pollutant	Concrete Batch Plant		Natural Gas		TOTAL	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
PM	0.34	0.30	0.020	0.089	0.36	0.39
PM10	0.18	0.16	0.020	0.089	0.20	0.25
PM2.5	0.05	0.04	0.020	0.089	0.07	0.13
NOX	--	--	0.27	1.17	0.27	1.17
CO	--	--	0.23	0.99	0.23	0.99
SO2	--	--	0.0016	0.0070	0.002	0.007
VOC	0.00	0.00	0.015	0.065	0.01	0.06
Lead	1.67E-06	1.47E-06	1.34E-06	5.87E-06	3.01E-06	7.34E-06

PTE

	PM-2.5		PM-10		SO2		NOx			CO		VOC		HAP	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr		lb/hr	T/yr	lb/hr	T/yr	T/yr	
Total from this project/plant	0.071	0.134	0.202	0.249	0.002	0.007		0.268		1.174	0.225	0.986	0.015	0.065	0.138

UNCONTROLLED PTE

	PM-2.5		PM-10		SO2		NOx			CO		VOC		HAP	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr		lb/hr	T/yr	lb/hr	T/yr	T/yr	
Total from this project/plant (based on 34 yd ³ /hr *8,760 hr/yr)	0.071	0.310	0.202	0.884	0.002	0.007		0.268		1.174	0.225	0.986	0.015	0.065	0.138

Filters of cement and flyash silos are process equipment.

TAPs

CONTROLLED

Pollutant	Concrete Batch Plant		Natural Gas		TOTAL	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Metals						
Arsenic	9.60E-06	8.47E-06	5.36E-07	5.36E-07	1.01E-05	9.01E-06
Barium	--	--	1.18E-05	5.16E-05	1.18E-05	5.16E-05
Beryllium	2.20E-07	1.94E-07	3.22E-08	3.22E-08	2.52E-07	2.26E-07
Cadmium	1.51E-08	1.33E-08	2.95E-06	2.95E-06	2.96E-06	2.96E-06
Cobalt	--	--	2.25E-07	9.86E-07	2.25E-07	9.86E-07
Copper	--	--	2.28E-06	9.98E-06	2.28E-06	9.98E-06
Chromium	4.39E-06	3.87E-06	3.75E-06	1.64E-05	8.14E-06	2.03E-05
Manganese	5.41E-05	4.78E-05	1.02E-06	4.46E-06	5.52E-05	5.22E-05
Mercury	--	--	6.97E-07	3.05E-06	6.97E-07	3.05E-06
Molybdenum (soluble)	--	--	2.95E-06	1.29E-05	2.95E-06	1.29E-05
Nickel	8.63E-06	7.61E-06	5.63E-06	1.43E-05	1.32E-05	1.23E-05
Phosphorus	2.74E-05	2.41E-05	--	--	2.74E-05	2.41E-05
Selenium	1.72E-07	1.52E-07	6.43E-08	2.82E-07	2.37E-07	4.34E-07
Vanadium	--	--	6.16E-06	2.70E-05	6.16E-06	2.70E-05
Zinc	--	--	7.77E-05	3.40E-04	7.77E-05	3.40E-04
Non PAH Organic Compounds						
Butane	--	--	5.63E-03	2.47E-02	5.63E-03	2.47E-02
Ethane	--	--	8.31E-03	3.64E-02	8.31E-03	3.64E-02
Pentane	--	--	6.97E-03	3.05E-02	6.97E-03	3.05E-02
Propane	--	--	4.29E-03	1.88E-02	4.29E-03	1.88E-02
Non-PAH HAPs						
Benzene	--	--	5.63E-06	5.63E-06	5.63E-06	5.63E-06
Formaldehyde	--	--	2.01E-04	2.01E-04	2.01E-04	2.01E-04
Hexane	--	--	4.82E-03	2.11E-02	4.82E-03	2.11E-02
Toluene	--	--	9.11E-06	3.99E-05	9.11E-06	3.99E-05
PAH HAPs						
2-Methylnaphthalene	--	--	6.43E-08	6.43E-08	6.43E-08	6.43E-08
3-Methylcholanthrene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
7,12-Dimethylbenz(a)anthracene	--	--	4.29E-08	1.88E-07	4.29E-08	1.88E-07
Acenaphthene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Acenaphthylene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Anthracene	--	--	6.43E-09	6.43E-09	6.43E-09	6.43E-09
Benzo(a)anthracene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Benzo(a)pyrene	--	--	3.22E-09	3.22E-09	3.22E-09	3.22E-09
Benzo(b)fluoranthene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Benzo(g,h,i)perylene	--	--	3.22E-09	3.22E-09	3.22E-09	3.22E-09
Benzo(k)fluoranthene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Chrysene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Dibenzo(a,h)anthracene	--	--	3.22E-09	3.22E-09	3.22E-09	3.22E-09
Dichlorobenzene	--	--	3.22E-06	3.22E-06	3.22E-06	3.22E-06
Fluoranthene	--	--	8.04E-09	8.04E-09	8.04E-09	8.04E-09
Fluorene	--	--	7.50E-09	7.50E-09	7.50E-09	7.50E-09
Indeno(1,2,3-cd)pyrene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Naphthalene (24-hour)	--	--	5.97E-04	2.61E-03	5.97E-04	2.61E-03
Naphthalene (Annual)	--	--	1.63E-06	1.63E-06	1.63E-06	1.63E-06
Phenanthrene	--	--	4.56E-08	4.56E-08	4.56E-08	4.56E-08
Pyrene	--	--	1.34E-08	1.34E-08	1.34E-08	1.34E-08
PAH HAPs Total	--	--	6.02E-04	2.62E-03	6.02E-04	2.62E-03
Polycyclic Organic Matter (POM)	--	--	3.06E-08	3.06E-08	3.06E-08	3.06E-08
TOTAL 1.38E-01						

TAPs

UNCONTROLLED

Pollutant	Concrete Batch Plant		Natural Gas		TOTAL	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Metals						
Arsenic	5.64E-04	4.98E-04	5.36E-07	5.36E-07	5.65E-04	4.98E-04
Barium	--	--	1.18E-05	5.16E-05	1.18E-05	5.16E-05
Beryllium	4.85E-05	4.28E-05	3.22E-08	3.22E-08	4.85E-05	4.28E-05
Cadmium	2.31E-06	2.03E-06	2.95E-06	2.95E-06	5.26E-06	4.98E-06
Cobalt	--	--	2.25E-07	9.86E-07	2.25E-07	9.86E-07
Copper	--	--	2.28E-06	9.98E-06	2.28E-06	9.98E-06
Chromium	6.57E-04	5.79E-04	3.75E-06	1.64E-05	6.60E-04	5.96E-04
Manganese	2.13E-03	1.88E-03	1.02E-06	4.46E-06	2.13E-03	1.88E-03
Mercury	--	--	6.97E-07	3.05E-06	6.97E-07	3.05E-06
Molybdenum (soluble)	--	--	2.95E-06	1.29E-05	2.95E-06	1.29E-05
Nickel	1.39E-03	1.23E-03	5.63E-06	5.63E-06	1.39E-03	1.23E-03
Phosphorus	2.04E-03	1.80E-03	--	--	2.04E-03	1.80E-03
Selenium	3.87E-05	3.41E-05	6.43E-08	2.82E-07	3.87E-05	3.44E-05
Vanadium	--	--	6.16E-06	2.70E-05	6.16E-06	2.70E-05
Zinc	--	--	7.77E-05	3.40E-04	7.77E-05	3.40E-04
Non PAH Organic Compounds						
Butane	--	--	5.63E-03	2.47E-02	5.63E-03	2.47E-02
Ethane	--	--	8.31E-03	3.64E-02	8.31E-03	3.64E-02
Pentane	--	--	6.97E-03	3.05E-02	6.97E-03	3.05E-02
Propane	--	--	4.29E-03	1.88E-02	4.29E-03	1.88E-02
Non-PAH HAPs						
Benzene	--	--	5.63E-06	5.63E-06	5.63E-06	5.63E-06
Formaldehyde	--	--	2.01E-04	2.01E-04	2.01E-04	2.01E-04
Hexane	--	--	4.82E-03	2.11E-02	4.82E-03	2.11E-02
Toluene	--	--	9.11E-06	3.99E-05	9.11E-06	3.99E-05
PAH HAPs						
2-Methylnaphthalene	--	--	6.43E-08	6.43E-08	6.43E-08	6.43E-08
3-Methylcholanthrene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
7,12-Dimethylbenz(a)anthracene	--	--	4.29E-08	1.88E-07	4.29E-08	1.88E-07
Acenaphthene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Acenaphthylene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Anthracene	--	--	6.43E-09	6.43E-09	6.43E-09	6.43E-09
Benzo(a)anthracene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Benzo(a)pyrene	--	--	3.22E-09	3.22E-09	3.22E-09	3.22E-09
Benzo(b)fluoranthene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Benzo(g,h,i)perylene	--	--	3.22E-09	3.22E-09	3.22E-09	3.22E-09
Benzo(k)fluoranthene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Chrysene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Dibenzo(a,h)anthracene	--	--	3.22E-09	3.22E-09	3.22E-09	3.22E-09
Dichlorobenzene	--	--	3.22E-06	3.22E-06	3.22E-06	3.22E-06
Fluoranthene	--	--	8.04E-09	8.04E-09	8.04E-09	8.04E-09
Fluorene	--	--	7.50E-09	7.50E-09	7.50E-09	7.50E-09
Indeno(1,2,3-cd)pyrene	--	--	4.82E-09	4.82E-09	4.82E-09	4.82E-09
Naphthalene (24-hour)	--	--	5.97E-04	2.61E-03	5.97E-04	2.61E-03
Naphthalene (Annual)	--	--	1.63E-06	1.63E-06	1.63E-06	1.63E-06
Phenanthrene	--	--	4.56E-08	4.56E-08	4.56E-08	4.56E-08
Pyrene	--	--	1.34E-08	1.34E-08	1.34E-08	1.34E-08
PAH HAPs Total	--	--	6.02E-04	2.62E-03	6.02E-04	2.62E-03
Polycyclic Organic Matter (POM)	--	--	3.06E-08	3.06E-08	3.06E-08	3.06E-08
TOTAL 1.38E-01						

Concrete Batch Plant - Silo Loading
PRECAST

Oldcastle
Nampa, ID

Inputs

Description	Value	Units	Notes
Annual Operation	8,760	hrs/yr	
Total Project Concrete Requirement	60,000	yd3/yr	1
Maximum Hourly Concrete Production Rate	34	yd3/hr	1
Concrete content:			
Cement, lb/ yd3 concrete	550	lb/ yd3	2
Fly Ash, lb/ yd3 concrete	140	lb/ yd3	2
Aggregate, lb/ yd3 concrete	1,435	lb/ yd3	2
Sand, lb/ yd3 concrete	1,495	lb/ yd3	2

Notes:

1. Bbased on maximum production estimates provided by Plant
2. Based on the composition of average mix at the Nampa facility.

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Emissions Summary (CONTROLLED)

Pollutants	Hourly Emission Rate	Annual Emission Rate
	(lb/hr)	(tpy)
Total PM	0.030	0.0269
Filterable PM	0.030	0.0269
PM ₁₀	0.015	0.0131
PM _{2.5}	0.015	0.0131
Total HAPs	2.49E-05	2.20E-05

Emissions Summary (UNCONTROLLED)

Pollutants	Hourly Emission Rate	Annual Emission Rate
	(lb/hr)	(tpy)
Total PM	14.3	12.6
Filterable PM	14.3	12.6
PM ₁₀	7.0	6.2
PM _{2.5}	7.0	6.2
Total HAPs	6.99E-03	6.17E-03

Emission Calculation Equations

Gaseous and HAP emission calculations based on lb/ton emission factor:

$$\frac{0.00099 \text{ lb PM}}{\text{ton cement}} \times \frac{34 \text{ yd}^3 \text{ concrete}}{\text{hr}} \times \frac{550 \text{ lb cement}}{\text{yd}^3 \text{ concrete}} \times \frac{\text{ton}}{2,000 \text{ lb}} = \frac{0.0093 \text{ lb PM}}{\text{hour}}$$

$$\frac{0.00099 \text{ lb PM}}{\text{ton cement}} \times \frac{60,000 \text{ yd}^3 \text{ concrete}}{\text{yr}} \times \frac{550 \text{ lb cement}}{\text{yd}^3 \text{ concrete}} \times \frac{\text{ton cement}}{2,000 \text{ lb cement}} \times \frac{\text{ton PM}}{2,000 \text{ lb PM}} = \frac{0.0082 \text{ ton PM}}{\text{yr}}$$

Emission Calculations (UNCONTROLLED)

Pollutants	Cement Unloading			Fly Ash Unloading			Notes
	Emission Factor (uncontrolled)	Hourly Emission Rate (uncontrolled)	Annual Emission Rate (uncontrolled)	Emission Factor (uncontrolled)	Hourly Emission Rate (uncontrolled)	Annual Emission Rate (uncontrolled)	
	(lb/ton)	(lb/hr)	(tpy)	(lb/ton)	(lb/hr)	(tpy)	
Total PM	0.73	6.8255	6.0225	3.1400	7.4732	6.5940	3
Filterable PM	0.73	6.8255	6.0225	3.1400	7.4732	6.5940	
PM ₁₀	0.47	4.3945	3.8775	1.1000	2.6180	2.3100	3
PM _{2.5}	0.47	4.3945	3.8775	1.1000	2.6180	2.3100	3
Arsenic	1.68E-06	1.57E-05	1.39E-05	2.24E-04	5.34E-04	4.71E-04	4, 5
Beryllium	1.79E-08	1.67E-07	1.48E-07	2.03E-05	4.83E-05	4.26E-05	4, 5
Cadmium	2.34E-07	2.19E-06	1.93E-06	4.44E-08	1.06E-07	9.33E-08	4, 5
Chromium	2.52E-07	2.36E-06	2.08E-06	2.74E-04	6.52E-04	5.75E-04	4, 5
Lead	7.36E-07	6.88E-06	6.07E-06	1.17E-04	2.78E-04	2.45E-04	4, 5
Manganese	2.02E-04	1.89E-03	1.67E-03	5.75E-05	1.37E-04	1.21E-04	4, 5
Nickel	1.76E-05	1.65E-04	1.45E-04	5.12E-04	1.22E-03	1.07E-03	4, 5
Phosphorus	1.18E-05	1.10E-04	9.74E-05	7.95E-04	1.89E-03	1.67E-03	4, 5
Selenium	0	0	0	1.63E-05	3.87E-05	3.41E-05	4, 5
Total HAPs	-	2.19E-03	1.93E-03	-	4.80E-03	4.23E-03	

Emission Calculations (CONTROLLED)

Pollutants	Cement Unloading			Fly Ash Unloading			Notes
	Emission Factor (controlled)	Hourly Emission Rate (controlled)	Annual Emission Rate (controlled)	Emission Factor (controlled)	Hourly Emission Rate (controlled)	Annual Emission Rate (controlled)	
	(lb/ton)	(lb/hr)	(tpy)	(lb/ton)	(lb/hr)	(tpy)	
Total PM	0.00099	0.0093	0.0082	0.0089	0.0212	0.0187	3, 6
Filterable PM	0.00099	0.0093	0.0082	0.0089	0.0212	0.0187	
PM ₁₀	0.00034	0.0032	0.0028	0.0049	0.0117	0.0103	3, 6
PM _{2.5}	0.00034	0.0032	0.0028	0.0049	0.0117	0.0103	3, 6
Arsenic	4.24E-09	3.96E-08	3.50E-08	1.00E-06	2.38E-06	2.10E-06	4, 5
Beryllium	4.86E-10	4.54E-09	4.01E-09	9.04E-08	2.15E-07	1.90E-07	4, 5
Cadmium	4.86E-10	4.54E-09	4.01E-09	1.98E-10	4.71E-10	4.16E-10	4, 5
Chromium	2.90E-08	2.71E-07	2.39E-07	1.22E-06	2.90E-06	2.56E-06	4, 5
Lead	1.09E-08	1.02E-07	8.99E-08	5.20E-07	1.24E-06	1.09E-06	4, 5
Manganese	1.17E-07	1.09E-06	9.65E-07	2.56E-07	6.09E-07	5.38E-07	4, 5
Nickel	4.18E-08	3.91E-07	3.45E-07	2.28E-06	5.43E-06	4.79E-06	4, 5

(1-99.9%)/(1-99.9%):
1

Phosphorus	1.75E-07	1.63E-06	1.44E-06	3.54E-06	8.43E-06	7.43E-06	4, 5
Selenium	0	0	0	7.24E-08	1.72E-07	1.52E-07	4, 5
Total HAPs	-	3.54E-06	3.12E-06	-	2.14E-05	1.89E-05	

Notes:

3. Emission factors based on controlled cement silo filling from AP-42 Chapter 11.12, Table 11.12-2, June 2006.

4. Emission factors based on controlled cement silo filling from AP-42 Chapter 11.12, Table 11.12-8. Controlled emissions factors for cadmium and phosphorus do not exist, and so these factors are uncontrolled.

5. Cement and fly ash silos operate with fabric filters integral to the process.

Fabric filters are not considered control devices for silos. The uncontrolled emission rate is equal to the controlled emission rate.

Concrete Batch Plant - Material Transfer
PRECAST

Oldcastle
Nampa, ID

Inputs

Description	Value	Units	Notes
Annual Operating Hours	8,760	hrs	
Days of Operation per Year	365	days	
Average Wind Speed	9.5	mph	1
Annual Precast Concrete Production	60,000	yd ³ /yr	2
Maximum Hourly Precast Concrete Production Rate	34	yd ³ /hr	2
Concrete content: [average]			
Cement, lb/yd ³ concrete	575	lb/yd ³	3
Fly Ash, lb/yd ³ concrete	150	lb/yd ³	3
Aggregate, lb/yd ³ concrete	1,450	lb/yd ³	3
Sand, lb/yd ³ concrete	1,325	lb/yd ³	3
other admixtures	3	lb/yd ³	3
added water	283	lb/yd ³	
Total Concrete Content (not incl H2O)	3,503	lb/yd ³	3
Total Concrete Content (incl H2O and admixtures)	3,786	lb/yd ³	3
Aggregate Material Moisture Content	2.1	%	4
Sand Material Moisture Content	5.5	%	4
Weigh Hopper/Mixer Control Efficiency (Trapped by Building)	50%	%	

Notes:

- average windspeed based on data used in dispersion modeling
- Production capacity values provide by Plant
- Based on the composition of average of precast mix components at the Nampa facility.
- Moisture content based on operator knowledge

Emissions Summary

Source Description	Pollutant	CONTROLLED		UNCONTROLLED	
		Hourly Emission Rate (lb/hr)	Annual Emission Rate (tpy)	Hourly Emission Rate (lb/hr)	Annual Emission Rate (tpy)
Aggregate Handling Operations	Filterable PM ⁽⁵⁾	0.1040	0.0917	0.1040	0.0917
	PM ₁₀	0.0492	0.0434	0.0492	0.0434
	PM _{2.5}	0.0074	0.0066	0.0074	0.0066
Sand Handling Operations	Filterable PM ⁽⁵⁾	0.0225	0.0199	0.0225	0.0199
	PM ₁₀	0.0107	0.0094	0.0107	0.0094
	PM _{2.5}	0.0016	0.0014	0.0016	0.0014
Weigh Hopper Loading Operations	Filterable PM ⁽⁵⁾	0.1519	0.1340	0.3037	0.2680
	PM ₁₀	0.0834	0.0736	0.1668	0.1471
	PM _{2.5}	0.0165	0.0146	0.0330	0.0291
Mixing Operations	TAPs				
	Filterable PM ⁽⁵⁾	0.0315	0.0278	1.0547	0.9306
	PM ₁₀	0.0235	0.0207	0.3432	0.3028
	PM _{2.5}	0.0100	0.0088	0.0100	0.0599
Total Batch Concrete Material Handling	TAPs	1.63E-04	7.17E-05	1.63E-04	1.43E-04
	Filterable PM ⁽⁵⁾	0.3099	0.2734	1.4849	1.3102
	PM ₁₀	0.1667	0.1471	0.5698	0.5028
	PM _{2.5}	0.0356	0.0314	0.1100	0.0971
	TAPs	1.63E-04	7.17E-05	1.63E-04	1.43E-04

TAPs are estimated as part of mixing

5. Per AP-42 (Table 13.2.2-2), PM30 is assumed equivalent to total PM.

Calculation Basis:

- A. Calculation methodology derived from Section 11.12.4 "Concrete Batching," AP-42 (11/06).
Operations: Sand/aggregate delivery, weigh hopper loading
B. Calculation methodology derived from Section 13.2.4 "Aggregate Handling and Storage Piles," AP-42 (11/06).
Operations: Aggregate delivery, aggregate from bin to conveyor, and sand from bin to conveyor

For Sand & Aggregate Handling, Emission Factor (lb PM/ton handled) from AP-42, Section 13.2.4

$$Emission\ factor\ \left(\frac{lb}{ton}\right) = k\ (0.0032)\ \left(\frac{U}{5}\right)^{1.3}\ \left(\frac{M}{2}\right)^{1.4}$$

where U = Mean wind speed (mph) for the area ⁽¹⁾
M = Material moisture content (%) ⁽²⁾
k = Particle size multiplier ⁽³⁾

- Note:
- Average windspeed from Boise Met data
 - From AP-42 (11/06), Section 13.2.4.2, Table 13.2.4-1
 - From AP-42 (11/06), Section 13.2.4.3

Aerodynamic Particle Size Multiplier (k)	
< 30 micrometers	0.74
< 15 micrometers	0.48
< 10 micrometers	0.35
< 5 micrometers	0.2
< 2.5 micrometers	0.053

For Central Mix Mixer loading, Emission Factor (lb PM/ton handled) from AP-42, Section 11.12-1

$$Emission\ factor\ \left(\frac{lb}{ton}\right) = k\ (0.0032)\ \frac{(U)^a}{(M)^b} + c$$

where U = Mean wind speed (mph) for the area ⁽¹⁾
M = Material moisture content (%) ⁽²⁾
k = Particle size multiplier ⁽³⁾

- Note:
- Average windspeed from Boise Met data
 - used moisture content of aggregate
 - From AP-42 (6/06), Table 11.12-4

Aerodynamic Particle Size Multiplier (k)	Uncontrolled	Controlled
< 30 micrometers	5.9	0.19
< 10 micrometers	1.92	0.13
< 2.5 micrometers	0.38	0.03
a	0.4	0.45
b	1.3	0.9
c	0	0.0002

Emission Factors

Material	Moisture Content	Particle Size Multiplier (k)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Notes
	%				
Aggregate - PM Factor	2.10	0.74	0.0051	N/A	6, 7
Aggregate - PM ₁₀ Factor	2.10	0.35	0.00241	N/A	7
Aggregate - PM _{2.5} Factor	2.10	0.053	0.00036	N/A	7
Sand - PM Factor	5.50	0.74	0.00132	N/A	6, 7
Sand - PM ₁₀ Factor	5.50	0.35	0.00063	N/A	7
Sand - PM _{2.5} Factor	5.50	0.053	0.00009	N/A	7
Weigh Hopper Loading - PM Factor	--	--	0.0051	0.0051	8
Weigh Hopper Loading - PM ₁₀ Factor	--	--	0.0028	0.0028	8
Weigh Hopper Loading - PM _{2.5} Factor	--	--	0.00055	0.00055	8, 9
Mixer Loading - PM Factor	2.10	--	0.0177	0.00106	10

Weigh Hopper has no controls, other than being trapped by building
Weigh Hopper has no controls, other than being trapped by building
Weigh Hopper has no controls, other than being trapped by building
94% control level for PM in Mixer

Concrete Batch Plant - Material Transfer

Oldcastle
Nampa, ID

PRECAST

Mixer Loading - PM ₁₀ Factor	2.10	--	0.0058	0.00079	10
Mixer Loading - PM _{2.5} Factor	2.10	--	0.0011	0.00034	9.10

86% control level for PM₁₀ in Mixer
71% control level for PM_{2.5} in Mixer

- Per AP-42 (Table 13.2.2-2), PM₃₀ is assumed equivalent to total PM.
- Calculated from Equation 1 of AP-42, Section 13.2.4, "Aggregate Handling and Storage Piles"
- Emission factor Table 11.12-2 from AP-42, Section 11.12 "Concrete Batching"
- Adjusted PM₁₀ factor using the ratio of PM_{2.5}/PM₁₀ for Aerodynamic Particle Size Multiplier
- Emission factor Eqn 11.12-1 from AP-42, Section 11.12 "Concrete Batching"

Calculation of Maximum Hourly and Annual Emission Rates

Example Emission Calculations

$$\text{Aggregate PM Emission factor} = 0.74(0.0032) \left(\frac{9.5}{5} \right)^{1.3} \left(\frac{3.0}{2} \right)^{1.4} = 0.0031 \frac{\text{lb PM}}{\text{ton aggregate}}$$

$$\frac{0.0031 \text{ lb PM}}{\text{ton aggregate}} \times \frac{34 \text{ yd}^3 \text{ concrete}}{\text{hr}} \times \frac{1,435 \text{ lb aggregate}}{\text{yd}^3 \text{ concrete}} \times \frac{\text{ton}}{2,000 \text{ lb}} = \frac{0.0186 \text{ lb PM}}{\text{hour}} \text{ aggregate delivery to pile}$$

$$\frac{0.0031 \text{ lb PM}}{\text{ton aggregate}} \times \frac{45,600 \text{ yd}^3 \text{ concrete}}{\text{yr}} \times \frac{1,478 \text{ lb aggregate}}{\text{yd}^3 \text{ concrete}} \times \frac{\text{ton aggregate}}{2,000 \text{ lb aggregate}} \times \frac{\text{ton PM}}{2,000 \text{ lb PM}} = \frac{0.0133 \text{ ton PM}}{\text{year}} \text{ aggregate delivery to pile}$$

Emission Calculations (uncontrolled)

Operation	Hourly Emission Rates			Annual Emission Rates		
	PM (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	PM (ton/yr)	PM ₁₀ (ton/yr)	PM _{2.5} (ton/yr)
Aggregate delivery to pile ⁽¹⁰⁾	0.0520	0.0246	0.00372	0.0459	0.0217	0.0033
Sand delivery to pile ⁽¹⁰⁾	0.0113	0.0053	0.00081	0.0099	0.0047	0.00071
Aggregate from pile to conveyor ⁽¹⁰⁾	0.0520	0.0246	0.00372	0.0459	0.0217	0.0033
Sand from pile to conveyor ⁽¹⁰⁾	0.0113	0.0053	0.00081	0.0099	0.0047	0.00071
Weigh hopper loading ⁽¹¹⁾	0.3037	0.167	0.03300	0.2680	0.147	0.0291
Central Mixing loading ⁽¹¹⁾	1.0547	0.343	0.06793	0.9306	0.303	0.0599
Total Emissions	1.4849	0.57	0.10999	1.3102	0.503	0.0971

Emission Calculations (controlled)

Operation	Hourly Emission Rates			Annual Emission Rates		
	PM (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	PM (ton/yr)	PM ₁₀ (ton/yr)	PM _{2.5} (ton/yr)
Aggregate delivery to pile ⁽¹⁰⁾	0.0520	0.0246	0.00372	0.0459	0.0217	0.0033
Sand delivery to pile ⁽¹⁰⁾	0.0113	0.0053	0.00081	0.0099	0.0047	0.00071
Aggregate from pile to conveyor ⁽¹⁰⁾	0.0520	0.0246	0.00372	0.0459	0.0217	0.0033
Sand from pile to conveyor ⁽¹⁰⁾	0.0113	0.0053	0.00081	0.0099	0.0047	0.00071
Weigh hopper loading ⁽¹¹⁾	0.1519	0.083	0.01650	0.1340	0.074	0.0146
Central Mixing loading ⁽¹¹⁾	0.0315	0.0235	0.0100	0.0278	0.0207	0.0088
Total Emissions	0.3099	0.1667	0.0356	0.2734	0.1471	0.0314

this process has no controls
this process has no controls
this process has no controls
this process has no controls

- No control efficiency applied.
- Added Control efficiency (50%) for weigh hopper/mixing emissions trapped inside building.

Central Mix TAP Emission Calculations (based on combined tons materials)

Pollutants	Uncontrolled Emission Factor	Controlled Emission Factor	Uncontrolled Hourly Emission Rate	Controlled Hourly Emission Rate	Uncontrolled Annual Emission Rate	Controlled Annual Emission Rate	Notes
	(lb/ton)	(lb/ton)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	
Arsenic	8.38E-06	4.19E-06	1.44E-05	7.18E-06	1.27E-05	6.34E-06	12
Cadmium	1.18E-08	5.90E-09	2.02E-08	1.01E-08	1.78E-08	8.92E-09	12
Total Chromium	1.42E-06	7.10E-07	2.43E-06	1.22E-06	2.15E-06	1.07E-06	12
Lead	3.82E-07	1.91E-07	6.55E-07	3.27E-07	5.78E-07	2.89E-07	12
Manganese	6.12E-05	3.06E-05	1.05E-04	5.24E-05	9.25E-05	4.63E-05	12
Nickel	3.28E-06	1.64E-06	5.62E-06	2.81E-06	4.96E-06	2.48E-06	12
Phosphorus	2.02E-05	1.01E-05	3.46E-05	1.73E-05	3.05E-05	1.53E-05	12
Chromium VI							
Total HAPs	-	-	1.63E-04	8.13E-05	1.43E-04	7.17E-05	

controlled annual average
lb/hr

1.45E-06
2.04E-09
2.45E-07
6.59E-08
1.06E-05
5.66E-07
3.49E-06

- Emission factors based on central mix batching from AP-42 Chapter 11.12, Table 11.12-8.

Concrete Batch Plant - Form Release Aid

PRECAST

Oldcastle
Nampa, ID

Material use to let Precast produc to release from form molds

Material: Cokote

VOC Content 0 g/liter SDS Section 9 data

453.5924 g/lb

3.785412 liters/gal

0.00 lb/gallon

MAX USE 1800 gallons/yr

1 gallon/hr

VOC EMISSIONS

VOC 0.00 lb/hr

0.00 lb/year

0.00 tons/year

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

Operating Assumptions: 2.7 MMBtu/hr /

1,020 MMBtu/MMcf =
24 hr/day
8,760 hr/yr

2.7E-03 MMcf/hr

Fuel Use:

0.064 MMscf/day

23.48 MMscf/year

Criteria Air Pollutants	Emission Factor	Emissions			
	lb/MMscf	lb/hr	T/yr		
NO2	100	0.268	1.174		
CO	84	0.225	0.986		
PM10	7.6	0.020	0.089		
PM2.5	7.6	0.020	0.089		
SOx	0.6	0.002	0.007		
VOC	5.5	0.015	0.065		
Lead	0.0005	1.34E-06	5.87E-06		
Lead, continued			2.93E-03	lb/quarter	

Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)					
	lb/MMscf	lb/hr	T/yr		
PAH HAPs					
2-Methylnaphthalene	2.40E-05	6.43E-08	6.43E-08		
3-Methylcholanthrene	1.80E-06	4.82E-09	4.82E-09		
7,12-Dimethylbenz(a)anthracene	1.60E-05	4.29E-08	1.88E-07		
Acenaphthene	1.80E-06	4.82E-09	4.82E-09		
Acenaphthylene	1.80E-06	4.82E-09	4.82E-09		
Anthracene	2.40E-06	6.43E-09	6.43E-09		
Benzo(a)anthracene	1.80E-06	4.82E-09	4.82E-09		
Benzo(a)pyrene	1.20E-06	3.22E-09	3.22E-09		
Benzo(b)fluoranthene	1.80E-06	4.82E-09	4.82E-09		
Benzo(g,h,i)perylene	1.20E-06	3.22E-09	3.22E-09		
Benzo(k)fluoranthene	1.80E-06	4.82E-09	4.82E-09		
Chrysene	1.80E-06	4.82E-09	4.82E-09		
Dibenzo(a,h)anthracene	1.20E-06	3.22E-09	3.22E-09		
Dichlorobenzene	1.20E-03	3.22E-06	3.22E-06		
Fluoranthene	3.00E-06	8.04E-09	8.04E-09		
Fluorene	2.80E-06	7.50E-09	7.50E-09		
Indeno(1,2,3-cd)pyrene	1.80E-06	4.82E-09	4.82E-09		
Naphthalene	6.10E-04	5.97E-04	2.61E-03		
Naphthalene	6.10E-04	1.63E-06	1.63E-06		
Phenanthrene	1.70E-05	4.56E-08	4.56E-08		
Pyrene	5.00E-06	1.34E-08	1.34E-08		
Polycyclic Organic Matter (POM) 7-PAH Group		3.06E-08	3.06E-08		
Non-PAH HAPs					
Benzene	2.10E-03	5.63E-06	5.63E-06		
Formaldehyde	7.50E-02	2.01E-04	2.01E-04		
Hexane	1.80E+00	4.82E-03	2.11E-02		
Toluene	3.40E-03	9.11E-06	3.99E-05		
Non-HAP Organic Compounds					
Butane	2.10E+00	5.63E-03	2.47E-02		
Ethane	3.10E+00	8.31E-03	3.64E-02		
Pentane	2.60E+00	6.97E-03	3.05E-02		
Propane	1.60E+00	4.29E-03	1.88E-02		
Metals (HAPs)					
Arsenic	2.00E-04	5.36E-07	5.36E-07		
Barium	4.40E-03	1.18E-05	5.16E-05		
Beryllium	1.20E-05	3.22E-08	3.22E-08		
Cadmium	1.10E-03	2.95E-06	2.95E-06		
Chromium	1.40E-03	3.75E-06	1.64E-05		
Cobalt	8.40E-05	2.25E-07	9.86E-07		
Copper	8.50E-04	2.28E-06	9.98E-06		
Manganese	3.80E-04	1.02E-06	4.46E-06		
Mercury	2.60E-04	6.97E-07	3.05E-06		
Molybdenum	1.10E-03	2.95E-06	1.29E-05		
Nickel	2.10E-03	5.63E-06	5.63E-06		
Selenium	2.40E-05	6.43E-08	2.82E-07		
Vanadium	2.30E-03	6.16E-06	2.70E-05		
Zinc	2.90E-02	7.77E-05	3.40E-04		

1.35E-01

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: October 13, 2021

TO: Shawnee Chen, Permit Writer, Air Program

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

PROJECT: P-2015.0012 Project 62610 – Modification to Permit to Construct (PTC) for the Oldcastle Infrastructure – Nampa facility in Nampa, Idaho.

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses – Criteria Pollutant Modeling Exemption and TAPs Modeling Exemption

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Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a non-carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality modeling system
CO	Carbon Monoxide
DEQ	Idaho Department of Environmental Quality
EL	Screening Emission Level of a TAP
EPA	United States Environmental Protection Agency
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
lb/hr	Pounds per hour
lb/yr	Pounds per year
NAAQS	National Ambient Air Quality Standards
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
O ₃	Ozone
Oldcastle	Oldcastle Infrastructure – Nampa, ID facility
Pb	Lead
PM ₁₀	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers
PM _{2.5}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers
ppb	parts per billion
PTC	Permit to Construct
PTE	Potential to Emit
SER	Significant Emission Rate
SIL	Significant Impact Level
SO ₂	Sulfur Dioxide
TAP	Toxic Air Pollutant
VOCs	Volatile Organic Compounds
µg/m ³	Micrograms per cubic meter of air

1.0 Summary

Oldcastle Infrastructure (Oldcastle) submitted a Permit to Construct (PTC) application for modifications to their facility, operating under PTC P-2015.0012, located in Nampa, Idaho. Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03) requires that no permit be issued unless it is demonstrated that applicable emissions do not result in violation of a National Ambient Air Quality Standard (NAAQS) or Toxic Air Pollutant (TAP) increment. Facility-wide emissions of all criteria pollutants were below levels defined as Below Regulatory Concern (BRC), so NAAQS compliance demonstrations were not required. TAP impact modeling analyses were not required for permit issuance because there were no TAP net emission increases (as per Idaho Air Rules Section 210.09) exceeding screening emission levels (ELs). This memorandum provides a summary of the applicability assessment for analyses used to demonstrate compliance with applicable NAAQS and TAP increments, as required by Idaho Air Rules Section 203.02 and 203.03.

ERM, on behalf of Oldcastle, prepared the PTC application for this project and evaluated criteria pollutant emissions for applicability of requirements to demonstrate compliance with applicable NAAQS. The DEQ permit writer evaluated TAP net emission increases. DEQ review of submitted data/analyses and DEQ analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that estimated emissions associated with operation of the facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not address/evaluate compliance with other rules or analyses not pertaining to the air impact analyses. Evaluation of emission estimates was the responsibility of the DEQ permit writer and is addressed in the main body of the DEQ Statement of Basis, and emission calculation methods were not evaluated in this modeling review memorandum.

The submitted information and analyses: 1) showed either a) that estimated potential/allowable emissions are at a level defined as BRC and do not require a NAAQS compliance demonstration, or b) that criteria pollutant emissions increases resulting from the proposed project are below site-specific modeling applicability thresholds, developed to assure NAAQS compliance; 2) showed that TAP emissions increases associated with the project are either below applicable emission screening levels (ELs) or are exempt from the requirement to assess impacts.

Table 1 presents key assumptions should be considered in the permit writer's evaluation of the proposed project.

The submitted information and DEQ's analyses demonstrated to the satisfaction of the Department that operation of the proposed project will not cause or significantly contribute to a violation of any applicable ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition. The DEQ permit writer should use Table 1 and other information presented in this memorandum to generate appropriate permit provisions/restrictions to assure emissions do not exceed applicable regulatory thresholds requiring further analyses.

Summary of Submittals and Actions

April 14, 2021	Application received by DEQ.
May 7, 2021	Application determined incomplete by DEQ.
July 22, 2021	Incompleteness response received by DEQ.
August 20, 2021	Application determined complete by DEQ.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	Explanation/Consideration
General Criteria Pollutant Emissions Rates The final emission inventory indicates that facility-wide emissions of all criteria pollutants are at levels considered BRC, and as such, NAAQS compliance demonstrations are not required for permit issuance. Criteria air pollutant emissions rates used in the air permitting analyses, as listed in the permit application, must represent maximum potential emissions as given by design capacity, inherently limited by the nature of the process or configuration of the facility, or as limited by the issued permit for the specific pollutant and averaging period.	Air impact modeling analyses may be required for facility-wide emissions rates greater than BRC thresholds.
TAP Emissions Sources The net emission increase in TAPs associated with the project are below applicable ELs for all non-carcinogenic and carcinogenic TAPs. TAP emissions must be accurately assessed by the analyses submitted with the PTC application or as adjusted by the DEQ permit writer, with the project's net emission increases remaining below ELs.	Emission netting as per Idaho Air Rules Section 210.09 was used to demonstrate compliance with TAPs rules. If applicable net emissions of a TAP exceed ELs, impact modeling must be performed to demonstrate compliance with TAP increments.

2.0 Background Information

Background information on the project and emissions was provided in the application.

2.1 Project Description

The PTC application is for modifications to Oldcastle's existing facility. The modification involves replacing the existing concrete batch plant with a new one. No increase in allowable throughput or emissions was proposed.

2.2 Air Impact Analyses Required for All Permits to Construct

Idaho Air Rules Sections 203.02 and 203.03 state:

No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:

02. NAAQS. *The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*

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

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

02. Estimates of Ambient Concentrations. *All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.3 Significant Impact Level and Cumulative NAAQS Impact Analyses

If specific criteria pollutant emission increases associated with the proposed permitting project cannot qualify for a BRC exemption as per Idaho Air Rules Section 221, then the permit cannot be issued unless the application demonstrates that applicable emission increases will not cause or significantly contribute to a violation of NAAQS, as required by Idaho Air Rules Section 203.02.

The first phase of a NAAQS compliance demonstration is to evaluate whether the proposed facility/project could have a significant impact to ambient air. Section 3.1.1 of this memorandum describes the applicability evaluation of Idaho Air Rules Section 203.02. The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Air impact analyses are required by Idaho Air Rules to be conducted in accordance with methods outlined in Appendix W. Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in Idaho Air Rules Section 006 (referred to as a “significant contribution” in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b. Table 2 lists the applicable SILs.

If modeled maximum pollutant impacts to ambient air from the emission sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from potential/allowable emissions resulting from the project and emissions from any nearby co-contributing sources, including existing emissions from the facility that are unrelated to the project. Then a DEQ-approved background concentration value is added to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. If project-specific impacts are below the SIL, then the project does not have a significant contribution to the specific violations.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) applicable specific criteria pollutant emission increases are at a level defined as BRC, using the criteria established by DEQ regulatory interpretation¹; or b) all modeled impacts of the SIL analysis are below the applicable SIL or

other level determined to be inconsequential to NAAQS compliance; or c) modeled design values of the cumulative NAAQS impact analysis (modeling all emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or d) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Impact Levels ^a (µg/m ³) ^b	Regulatory Limit ^c (µg/m ³)	Modeled Design Value Used ^d
PM ₁₀ ^e	24-hour	5.0	150 ^f	Maximum 6 th highest ^g
PM _{2.5} ^h	24-hour	1.2	35 ⁱ	Mean of maximum 8 th highest ^j
	Annual	0.2	12 ^k	Mean of maximum 1 st highest ^l
Carbon monoxide (CO)	1-hour	2,000	40,000 ^m	Maximum 2 nd highest ⁿ
	8-hour	500	10,000 ^m	Maximum 2 nd highest ⁿ
Sulfur Dioxide (SO ₂)	1-hour	3 ppb ^o (7.8 µg/m ³)	75 ppb ^p (196 µg/m ³)	Mean of maximum 4 th highest ^q
	3-hour	25	1,300 ^m	Maximum 2 nd highest ⁿ
	24-hour	5	365 ^m	Maximum 2 nd highest ⁿ
	Annual	1.0	80 ^r	Maximum 1 st highest ⁿ
Nitrogen Dioxide (NO ₂)	1-hour	4 ppb (7.5 µg/m ³)	100 ppb ^s (188 µg/m ³)	Mean of maximum 8 th highest ^t
	Annual	1.0	100 ^r	Maximum 1 st highest ⁿ
Lead (Pb)	3-month ^u	NA	0.15 ^r	Maximum 1 st highest ⁿ
	Quarterly	NA	1.5 ^r	Maximum 1 st highest ⁿ
Ozone (O ₃)	8-hour	40 TPY VOC ^v	70 ppb ^w	Not typically modeled

- a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
- b. Micrograms per cubic meter.
- c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
- d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
- e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- f. Not to be exceeded more than once per year on average over 3 years.
- g. Concentration at any modeled receptor when using five years of meteorological data.
- h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
- j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
- k. 3-year mean of annual concentration.
- l. 5-year mean of annual averages at the modeled receptor.
- m. Not to be exceeded more than once per year.
- n. Concentration at any modeled receptor.
- o. Interim SIL established by EPA policy memorandum.
- p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
- q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
- r. Not to be exceeded in any calendar year.
- s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
- t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
- u. 3-month rolling average.
- v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O₃.
- w. Annual 4th highest daily maximum 8-hour concentration averaged over three years.

2.4 Toxic Air Pollutant Analyses

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

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

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

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

Per Section 210, if the total project-wide emission increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emission increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP. The DEQ permit writer evaluates the applicability of specific TAPs to the Section 210.20 exclusion.

3.0 Analytical Methods and Data

This section describes the methods and data used in analyses to demonstrate compliance with applicable air quality impact requirements. The DEQ Statement of Basis provides a discussion of the methods and data used to estimate criteria and TAP emission rates.

3.1 Emission Source Data

Emissions increases of criteria pollutants and TAPs resulting from the proposed project were estimated by ERM for the applicable averaging periods. The calculation of potential emissions is the responsibility of the DEQ permit writer, and the representativeness and accuracy of emission estimates is not addressed in this modeling memorandum. DEQ air impact analysts are responsible for assuring that potential emission rates provided in the emission inventory are properly used in the modeling applicability assessment. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emission rates used in the impact modeling applicability analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emission inventory. All

criteria air pollutant and TAP emission rates must be equal to or greater than the facility's potential emissions calculated in the PTC emission inventory or proposed permit allowable emission rates.

3.1.1 Modeling Applicability and Modeled Criteria Pollutant Emissions Rates

If project-specific emission increases for criteria pollutants would qualify for a BRC permit exemption as per Idaho Air Rules Section 221 if it were not for potential emissions of one or more pollutants exceeding the BRC threshold of 10 percent of emissions defined by Idaho Air Rules as significant, then a NAAQS compliance demonstration may not be required for those pollutants with emissions below BRC levels. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant.¹" The interpretation policy also states that the exemption criteria of uncontrolled potential to emit (PTE) not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year. The BRC exemption cannot be used to exempt a project from a pollutant-specific NAAQS compliance demonstration in cases where a PTC is required for the action regardless of emissions quantities, such as the modification of an existing emissions or throughput limit.

The DEQ emission inventory asserts that facility-wide controlled PTE emissions of certain criteria pollutants are below BRC levels, as listed in Table 3.

Table 3. CRITERIA POLLUTANT NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY			
Criteria Pollutant	BRC Level (ton/year)	Applicable Facility Wide PTE Emissions (ton/year)	Air Impact Analyses Required?
PM ₁₀ ^a	1.5	0.760	No
PM _{2.5} ^b	1.0	0.644	No
Carbon Monoxide (CO)	10.0	0.986	No
Sulfur Dioxide (SO ₂)	4.0	0.007	No
Nitrogen Oxides (NO _x)	4.0	1.174	No
Lead (Pb)	0.06	7.34E-06	No
Ozone (as VOC)	4.0	0.065	No

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

^b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emission increases are addressed in the main body of the DEQ Statement of Basis supporting permit issuance. Idaho Air Rules Section 210.09, *Net Emissions*, was used to demonstrate compliance with TAP rules. As determined by the DEQ permit writer, net TAP emission increases associated with the project were below applicable ELs for all TAPs.

4.0 Conclusions

The information submitted with the PTC application demonstrated to DEQ's satisfaction that applicable emissions resulting from the proposed modification of the facility will not cause or significantly contribute to a violation of any ambient air quality standard or TAP increment.

References

1. Memorandum titled “Policy on NAAQS compliance demonstration requirements”, Tiffany Floyd, Administrator, July 11, 2014.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on November 8, 2021:

Facility Comment: need to correct the control effectiveness of the filter systems; the information initially used was determined to be out of date. The correct specification and control effectiveness is provided as an additional attachment to this comment package. We also provide (via electronic mail reply) a new revision to the emission calculation excel file, which reflects the correct filter effectiveness value.

DEQ Response: facility comments are addressed:

Has changed from 96+% to 99.98% in Table 1.1 of the permit, Table 1 and the paragraph above Table 2 of the SOB, removed foot note b of Table 1 of the SOB, revised Table 2 and Table 3 of the SOB. Appendix A of the SOB has been replaced with the revised EI.

APPENDIX D – PROCESSING FEE

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PTC Processing Fee Calculation Worksheet

Instructions:

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

Company: Oldcastle Infrastructure - Nampa
Address: 16419 Ten Lane
City: Nampa
State: ID
Zip Code: 83687
Facility Contact: Kacy Hayes
Title: Plant Manager
AIRS No.: 027-00085

N Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y Did this permit require engineering analysis? Y/N

N Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	0	0.0
SO ₂	0.0	0	0.0
CO	0.0	0	0.0
PM10	0.0	0	0.0
VOC	0.0	0	0.0
Total:	0.0	0	0.0
Fee Due	\$ 1,000.00		

Comments:

The new concrete batch plant that has replaced the existing old concrete batch plant has lower production rates, there is no emissions increase. The emissions decrease is not evaluated as there is no emissions information available of the old plant and as it does not affect the processing fee amount.