



**NON-TITLE V
TECHNICAL SUPPORT DOCUMENT**

PERMIT NUMBER: 160015
BUSINESS NAME: CalPortland
SOURCE TYPE: Cement Batch Plant
PERMIT ENGINEER: Vasanti Deshpande - AQDX

App. ID(s):	411782
Revision(s):	0.0.0.0
Revision Type(s):	New Permit
Date Prepared:	06/15/2016

BACT: No **MACT:** Yes **NSPS:** No **SYNTH MINOR:** No **AIRS:** No
DUST PLAN REQUIRED: Yes **DUST PLAN RECEIVED:** Yes
O&M PLAN REQUIRED: Yes **O&M PLAN RECEIVED:** Yes
PORTABLE SOURCE: Yes **SITE VISIT:** Waived

PROCESS DESCRIPTION:

The facility has applied for a portable ready-mix batch plant to be located at 31805 W. Southern Avenue, in Buckeye, Arizona. The equipment to be used was formerly permitted to Fort McDowell Yavapai Materials. The facility has an approved Dust Control Plan and an Operation and Maintenance Plan.

Sand, aggregate, cement and supplements are combined at this ready-mix concrete plant, which has a reported capacity of 280

tons/hr, based on the application. This mixture is then discharged into a ready mix truck, water is added and the resulting concrete is mixed during transport to the Site. The cement and flyash silos are both connected to a dust collector. Each silo loading line is equipped with a pressure control valve and an overflow control valve. Particulate emissions (PM10, PM2.5, PM) are released from storage piles, silo loading, truck mixing and unpaved roads. They have three baghouses and a Dust Collector/Filter for control of particulates.

A propane-fueled water heater emits products of combustion (CO, NOx, SOx, PM10, PM2.5, VOC).

A non-emergency diesel-fueled generator is added to this site. The annual use is 2400 hours. The primary function engine is to provide power. The generator is subject to Rule 324 and 40 CFR 63, Subpart ZZZZ. When the engine is operated, it emits uncontrolled products of combustion including carbon monoxide (CO), nitrogen oxides (NOx), sulfur oxides (SOx), Volatile Organic Compounds (VOC), and Particulate Matter (PM). The engine has no associated emissions controls. The operating hours are limited to 2400 in 12 consecutive months. The resulting emissions are below the BACT threshold.

PERMIT HISTORY:

Date Received	Revision Number	Description
02/23/2016	0.0.0.0	Submitted application for new permit for Concrete Production, Ready-mix batch plant in Buckeye, AZ

PURPOSE FOR APPLICATION:

New Permit

A. APPLICABLE COUNTY REGULATIONS:

- Rule 100: General Provisions and Definitions
- Rule 200: Permit Requirements
- Rule 220: Non-Title V Permit Provisions
- Rule 280: Fees: Table G (Cement batch plant)
- Rule 300: Visible Emissions
- Rule 316: Non-mineral processing
- Rule 324: Internal Combustion Engines

Rule 323 is not applicable because the water heater is rated below 10 MMBtu/hr.

B. APPLICABLE FEDERAL REGULATIONS:

This a Rule 316 facility that is not subject to 40 CFR 63 Subpart OOO. If the facility commenced construction, modification, or reconstruction after 8/31/83 and has above-ground crushers or grinding mills (excluding wet plants) with a capacity exceeding 25 tons/hr for a fixed plant or 150 tons/hr for a portable plant, it is subject to 40 CFR 60 Subpart OOO. "Portable Plant" is defined in 40 CFR §60.671.

40 CFR 63 Subpart ZZZZ applies to owners and operators of stationary compression ignition (CI) Internal Combustion Engines (ICE) that were manufactured on or before April 1st, 2006. Non-emergency generator Caterpillar KVA 456 uses diesel fuel and it was manufactured in January 2006. Hence it is subject to 40 CFR 60 Subpart ZZZZ.

C. AIR POLLUTION CONTROL EQUIPMENT/EMISSION CONTROL SYSTEM(s):

The facility uses bag houses and a dust collector to control the particulates emissions.

System description	Quantity	Comments:
Water Trucks	1	Approved Dust control Plan is on file.
Baghouses and dust collector	3+1	Approved O &M Plan is on file.
Truck loading shroud	1	Approved Dust control Plan is on file.

D. EMISSIONS:

The emissions are due to the concrete batch plant, the non-emergency generator and the water heater.

FACILITY WIDE ALLOWABLE EMISSIONS (Generator calculations are based on 2000 hours per year)

Pollutants	Concrete Batch Plant (lb/yr)	Generators (lb/yr)	External fuel burning (lb/yr)	Facility wide Annual Emissions (tons/yr)	Facility wide Daily Emissions(lb/day)
CO:		7522	3311	5.4	34
NOx:		34906	3942	19.4	130
PM10:	11,151	2478	300	7.0	47
PM2.5:	11,151	2478	300	7.0	47
PM	13,645			6.8	46
VOC:		2782	217	1.5	10
SOX:		2309	24	1.2	8
Total HAPs		N/A	N/A	N/A	N/A

E. HAP EMISSION IMPACTS:

Based on the information provided in the permit application, the facility emits insignificant amount of HAPs; therefore, SCREEN modeling was not performed per the Department's HAPs policy.

F. PERFORMANCE TESTING: N/A

G. REGULATORY REQUIREMENTS AND MONITORING:

Based on the application, this cement batch plant is using equipment from another plant. That list was used to create equipment list for this permit. They have added a non-emergency generator which was not present at the old plant. The application lists throughputs for the various steps.

The facility has NO_x emissions that exceed the public notice threshold, set in Rule 100, Sec. 200.71. According to Rule 220, the facility requires public notice.

PC#1-15 apply to the concrete batch plant. This is a dry mix plant, without any crushing or screening operations, hence only the relevant conditions from the template were retained. The emissions are PM₁₀ and PM, and the limits are set based on the allowable production rate (concrete, in cubic yards per day and per 12 consecutive months).

PC#1 sets the throughput limits on the concrete produced.

PC#4-15 are for the control of fugitive dust. Moisture sampling and Fugitive Dust Control Technician are required. The source has submitted a dust control plan and it has been approved.

PC#16 is for the fuel burning operation (water heater) using propane as fuel.

This is a portable plant, based on the application, hence PC#17 is added.

PC#18-28 are for the non-emergency generator that uses diesel fuel. It was manufactured in January 2006, so 40 CFR 63 Subpart ZZZZ is applicable.

PC#18 limits the allowable emissions based on 2000 hours per year.

(The source requested 2400 hours but it will make them subject to minor NSR, hence they were reduced to 2000)

PC#20: Emission limitations are based on limiting the concentration in the stationary RICE to 23 ppmvd at 15 percent O₂.

PC#21 is for performance tests. The initial performance test is to be done for CO using Method 10 of 40 CFR part 60, Appendix A.

PC#22 limits the operating hours of the generator to no more than 2400 hours per any 12 consecutive months time period.

APPENDIX

CONCRETE BATCH PLANT:

The concrete batch plant capacity was given to be 280 tons/hr. It is not a central mix plant and the emissions from the mixer are controlled.

Hours of operation are 8 hours per day, and 6 days per week. 50 weeks per year.

Emission calculations were done using the reported amount of material from the permit application. The Projected amount of annual material usage was used to do the calculations since annual emissions were below any BACT threshold set forth by Rule 241.

Emission Factors used for this facility were taken from AP -42 chapters 11.12 for PM -10. The results of the calculations are reasonably close to those submitted by the source.

PM-10 Emissions: [based on AP-42, Chapter 11.12 emission factors]

	EF (lb/ton) ¹
Concrete Batching:	
Sand delivery to ground storage	0.00099
Sand transfer to conveyor	0.00099
Sand transfer to elevated storage bin	0.00099
Aggregate delivery to ground storage	0.0033
Aggregate transfer to conveyor	0.0033
Aggregate transfer to elevated storage bin	0.0033
Cement unloading to silo:	0.00034
Flyash unloading to silo:	0.0049
Weigh hopper loading (sand + Aggregate):	0.0024
Mixer Loading, Truck Mix (cement + fly ash):	0.016

Emission calculations:



160015-Cement
calcs. xlsx

Concrete Batching Plant Worksheet

Annual Emissions

Company Name: CalPortland- Buckeye plant
 Permit Number: 160015 Rev. 0.0.0.0

Concrete batch plant capacity: 280 tons/hr [Complete from: Permit Application Section K-1. 4](#)
 Central Mix? No yes/no from Section K-1. 1
 Emissions from Mixer Yes yes/no from Section K-1. 1
 Controlled?
 Number of conveyors: 3 Section K-1. 3
 Hours of operation per day: 8 hrs/day Page 1
 Days of operation per year: 300 days/yr Page 1

Maximum Annual Materials Usage:

Sand 241,920 tons/yr Section K-1. 1
 Aggregate 309,120 tons/yr Section K-1. 1
 Cement 80,640 tons/yr Section K-1. 1
 Fly Ash 13,440 tons/yr Section K-1. 1
 Stockpiles 0 acres Section K-1. 9
 Lt-duty @15mph 30,000 VMT/yr Section K-1. 7
 Med-duty @15mph 10,000 VMT/yr Section K-1. 7
 Hvy-duty @15mph 0 VMT/yr Section K-1. 7

PM-10 Emissions: [based on AP-42, Chapter 11.12 emission factors (June 2006)]

	PM10 EF (lb/ton) ¹	PM EF (lb/ton) ¹	Controlled Emission Factor?	Control Efficiency	PM 10 Emissions (lbs/day)	PM 10 Emissions (lbs/yr)	PM Emissions (lbs/day)	PM Emissions (lbs/yr)
Concrete Batching (Process Emissions):								
Cement unloading to silo:	0.00034	0.00099	Yes	0%	0.1	27	0.3	80
Flyash unloading to silo:	0.0049	0.0089	Yes	0%	0.2	66	0.4	120
Concrete Batching (Fugitive Emissions):								
Aggregate transfer to conveyor	0.0033	0.0069	No	70%	3.2	918	6.7	1,920

Sand transfer to conveyor	0.00099	0.0021	No	70%	0.7	216	1.6	457
Mixer Loading, Truck Mix (cement + fly ash):	0.0263	0.098	Yes	0%	8.6	2,474	32.1	9,220
Sand transfer to elevated storage bin	0.00099	0.0021	No	70%	0.2	72	0.5	152
Aggregate delivery to ground storage	0.0033	0.0069	No	70%	1.1	306	2.2	640
Aggregate transfer to elevated storage bin	0.0033	0.0069	No	70%	1.1	306	2.2	640
Sand delivery to ground storage	0.00099	0.0021	No	70%	0.2	72	0.5	152
Weigh hopper loading (sand + Aggregate):	0.0028	0.0048	No	90%	0.5	154	0.9	264

Fugitive Stockpile Emissions (PM-10)		EF (lb/acre/yr) ²					
Storage Piles	630	No	70%	0.00	0.00		
Fugitive Emissions From Vehicle Traffic		EF (lb/VMT) ³					
Light Duty Vehicles @15 mph	0.44	No	70%	3,960	3,960		
Medium Duty Vehicles @15 mph	0.86	No	70%	2,580	2,580		
Heavy Duty Vehicles @15 mph	3.2	No	70%	0	0		
Total (excluding fugitive emissions)				0.30	4,611	0.66	13,645
Total Fugitives					6,540		19,986
Total					11,151		20,185

Mass of a cubic yard of concrete ²:

Coarse	1,865 lbs
Aggregate:	
Sand:	1,428 lbs
Cement:	491 lbs
Cement	73 lbs
Supplement:	
Water: (20 gals):	lbs
Total	3,857 lbs/yd³

Emissions Summary (excluding fugitive emissions)			
PM10:	0.30 lbs/day	4,611 lbs/yr	2.31 tons/yr
PM:	0.66 lbs/day	13,645 lbs/yr	6.82 tons/yr

Emissions Summary (including fugitive emissions)			
PM10:	11,151 lbs/yr	5.58 tons/yr	
PM:	20,185 lbs/yr	10.09 tons/yr	

Material Limitation**Concrete
Production:****1,162 yd³/day****334,519 yd³/yr**

NOTES:

¹ Emission factors for concrete batching were obtained from AP-42, Chapter 11.12 (June 2006).

² Reference: WebFire, SCC = 30502507. The stockpile emission factor above assumes 90% control, assuming regular watering or use of a chemical palliative (dust suppressant)

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Emissions due to the generator:



160015 generator
calcs.xls

Uncontrolled Small Diesel Industrial Engines (Emergency Generators < 600 HP)

Company: CalPortland

Permit: 160015 Rev. 0.0.0.0

This generator uses Propane for fuel and operates for 2400 hours annually
Emissions factors taken from AP-42, Table 3.3-1
Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines

	HP Rating	Annual Operating Hours	Daily Operating Hours	Reduced Daily Operating Hours
1.)	563	2,000		
2.)				
3.)				
4.)				
5.)				
6.)				
TOTAL HP	563	2,000		

Exempt: **No** **8,727** lbs of NOx at 500 hours
Yes **1,881** lbs of CO at 500 hours

Emission factors for diesel:

CO: 6.68E-03 lb/hp-hr
NOx: 3.10E-02 lb/hp-hr
SOx: 2.05E-03 lb/hp-hr
PM10: 2.20E-03 lb/hp-hr
VOC: 2.47E-03 lb/hp-hr

Constants:

1 HP = 2,547 BTU/hr
Heating Value = 137,000 BTU/gallon of diesel fuel
500 hours to determine Exempt Status
1 kW = 1.34 hp

Emissions:

	<u>Daily Emissions^a</u>	<u>Daily Emissions^b</u>	<u>Yearly Emissions^c</u>
CO:	0 lbs	0 lbs	7522 lbs
NOx:	0 lbs	0 lbs	34906 lbs
SOx:	0 lbs	0 lbs	2309 lbs
PM10:	0 lbs	0 lbs	2478 lbs
VOC:	0 lbs	0 lbs	2782 lbs

NOTES:

^a Based on 24 hours per day for each piece of equipment that operates over 24 hours per year.

For equipment that operates less than 24 hours per year, its annual operating hours were used.

^b Based on reduce daily operating hours to keep max NOx emissions less than BACT threshold (150 lbs/day).

^c Based on annual operating hours for each piece of equipment.

Emissions due to the fuel burning equipment:



160015 Boiler
calcs.xls

Natural Gas Fuel Burning Equipment Calculation Worksheet (Small Boiler < 100 MMBtu/hr)

Company: CalPortland

Permit: 160015

Input rating of equipment, Btu/hr

- 1) 4,500,000 Btu/hr
- 2)
- 3)
- 4)
- 5)

Totals 4,500,000 Btu/hr

Emission factors (AP-42 Chapter 1.4: Natural Gas Combustion)

Table 1.4-1: Emission factors for nitrogen oxides (NOx) and carbon monoxide (CO) from natural gas combustion

Table 1.4-2: Emission factors for criteria pollutants and greenhouse gases from natural gas combustion

CO:	84 lb/1E6 ft3	<u>Constants</u>	0.001 ft3/Btu for Natural Gas
NOx:	100 lb/1E6 ft3		
SOx	0.6 lb/1E6 ft3		24 hr/day
PM10:	7.6 lb/1E6 ft3		365 day/yr
VOC:	5.5 lb/1E6 ft3		

Emissions

	<u>Daily Emissions^a</u>	<u>Annual Emissions^b</u>
CO:	10.0 lbs/day	3,311 lbs/yr
NOx:	11.0 lbs/day	3,942 lbs/yr
SOx	1.0 lbs/day	24 lbs/yr
PM10:	1.0 lbs/day	300 lbs/yr
VOC:	1.0 lbs/day	217 lbs/yr

NOTES:

^a Based on 24 hours per day for each piece of equipment.

^b Based on 24 hours a day, 365 days a year.

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NON-TITLE V COMPLETENESS DETERMINATION CHECKLIST

Items 1-15 Front page: Items 1 to 15 (14 for Renewals) must be completed.

Notes to engineer:

- *For renewal applications the source must either answer 'No' to questions 2-5 or submit an application for a permit modification.*
- *Item 8: Many applicants do not know the SIC code or NAICS code for their industry. For a new application the code can be obtained by doing an on-line search. <http://www.osha.gov/pls/imis/sicsearch.html>*
- *Items 5, 7 and 14: These may be the same for many applicants.*

Complete: Incomplete:

Item 16: A simple site diagram has been included, preferably on a standard size paper. Detailed blueprints or construction drawings are not required.

Complete: Incomplete: N/A:

Item 17: A simple process flow diagram on a standard size paper is preferred. A process flow diagram may not be needed for some small businesses.

Complete: Incomplete: N/A:

Item 18: An O&M plan is required only for a control device. An O&M plan is not required for a spray booth. Instead of including the O&M plan with the application, an applicant may submit it after receiving the permit.

Complete: Incomplete: N/A:

Item 19: A dust control plan, if required, must accompany the permit application. The plan will be reviewed and approved by the dust compliance group.

Complete: Incomplete: N/A:

Item 20: The applicant needs to complete only those sections of the permit application that are applicable.

Complete: Incomplete: N/A:

Notes to engineer:

- *Concerning Section Z: Many applicants will not be able to perform these engineering calculations. We will accept the permit application with a blank Section Z.*

Instructions for completing Sections A, B, C, D, E-1, E-2, F, G, H, I, J, K-1, K-2, K-3, K-4, L, M, X-1, X-2, Y and Z of the permit application are included at the beginning of each section and are self-explanatory.

In general, a material safety data sheet (MSDS) is required for each chemical used, stored or processed at the facility. Exceptions are for very common materials, such as gasoline, diesel, acetone, etc.

Business name: CalPortland

Permit number: 160015

Completeness review completed.

Application determined to be: Complete: Incomplete:

Permit Engineer: Vasanti Deshpande - AQDX Date: 3/24/2016