CATEGORY: **CONCRETE BATCH PLANT**

BACT Size: Greater than or equal to 5 cubic yards per **Concrete Batch Plant**

BACT Determination Number: 193	**BACT Determination Date:** **7/11/2018**

Equipment Information

Permit Number: N/A -- Generic BACT Determination
Equipment Description: Concrete Batch Plant
Unit Size/Rating/Capacity: Greater than or equal to 5 cubic yards per batch
Equipment Location:

BACT Determination Information

ROCs	**Standard:**	No Stadard
	Technology Description:	
	Basis:	Achieved in Practice
NOx	**Standard:**	No Standard
	Technology Description:	
	Basis:	Achieved in Practice
SOx	**Standard:**	No Standard
	Technology Description:	
	Basis:	Achieved in Practice
PM10	**Standard:**	No Standard
	Technology Description:	See page 8 of 8 of BACT Determination 193
	Basis:	Achieved in Practice
PM2.5	**Standard:**	Equivalent to PM10 controls
	Technology Description:	See page 8 of 8 of Bact Determination 193
	Basis:	Achieved in Practice
CO	**Standard:**	No Standard
	Technology Description:	
	Basis:	Achieved in Practice
LEAD	**Standard:**	No Standard
	Technology Description:	
	Basis:	Achieved in Practice

Comments: The Technology description is too long to fit in the comment section. Please see page 8 of 8 of Bact Determination 193 for the control requirements of PM10/PM2.5.

District Contact:

777 12th Street, Third Floor

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Sacramento, CA 95814

BEST AVAILABLE CONTROL TECHNOLOGY & TOXIC BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

DETERMINATION NO.:	193
DATE:	5/30/2018
ENGINEER:	Venk Reddy
Category/General Equip Description:	Concrete Batch Plant
Equipment Specific Description:	Concrete Batch Plant greater than or equal to 5 Cubic yards per batch
Equipment Size/Rating:	Minor Source BACT
Previous BACT Det. No.:	117

This BACT determination will update determination #117 for concrete batch plants with a throughput greater than or equal to 5 cubic yards per batch

BACT ANALYSIS

A: ACHIEVED IN PRACTICE (Rule 202, §205.1a)

The following control technologies are currently employed as BACT for concrete batch plants with a throughput greater than or equal to 5 cubic yards per batch

District/ Agency	Best Available Control Technology (BACT)/ Requirements
US EPA	**BACT** Source: EPA/ RACT/BACT/LEAR Clearinghouse Concrete Batch Plants **VOC**: No Standard **NOx**: No Standard **SOx**: No Standard **PM10**: 1) Maintain a min 1.5% moisture content, control efficiency of 81.5%. Nellis Air Force Base Concrete Batch Plant 02/26/2008 2) Enclosure, control efficiency of 62%, Aggregate/Cement Mixing 12/11/2006 **PM2.5**: No Standard **CO**: No Standard **Rule Requirements** None From the date of the previous BACT determination (BACT#117 on 5/11/16) to 5/30/2018 there were no new BACT determinations entered into the system or new rules.

District/ Agency	Best Available Control Technology (BACT)/ Requirements
ARB	**BACT** Source: ARB BACT Clearinghouse Santa Barbara County APCD Concrete Batch Plants **VOC**: No Standard **NOx**: No Standard **SOx**: No Standard **PM10**: Aggregate Storage at min 4% moisture. Vent filters for weigh batcher and storage silos **PM2.5**: No Standard **CO**: No Standard This BACT determination was found to be the most stringent Achieved in Practice BACT determination published in the ARB clearinghouse. **Rule Requirements** None From the date of the previous BACT determination (BACT#117 on 5/11/16) to 5/30/2018 there were no new BACT determinations entered into the system or new rules.

District/ Agency	Best Available Control Technology (BACT)/ Requirements

SMAQMD

BACT

From SMAQMD BACT #117 issued on 5/11/16

VOC	No Standard
NOx	No Standard
SOx	No Standard
PM10	1) Enclosed aggregate and cement weigh hoppers, screw conveyors and concrete batcher vented to a 99% efficient fabric filter baghouse, and 2) Flexible shroud which seals to the truck. Shroud vented to 99% efficient fabric baghouse, and 3) Water spray system for sand and aggregate transfer points. Sand and aggregate storage piles adequately wet to maintain a minimum moisture content of 4% by weight, and 4) Open areas maintained adequately wet to prevent fugitive emissions in excess of **<5** percent opacity
PM2.5	No Standard
CO	No Standard

Rule Requirements
None

Update as of 5/30/18
The standards were derived from San Diego APCD BACT. SMAQMD has determined that an enclosed aggregate weigh hopper controlled by a baghouse is not achieved in practice. Dust is controlled by moisture from the aggregate. Since the aggregate is wet a baghouse is not an effective method of controlling additional dust. Per San Diego, the requirement to control the wet aggregate with an enclosure and baghouse is not required and therefore not part of the BACT requirement.

<table>
<tr><th>District/ Agency</th><th>Best Available Control Technology (BACT)/ Requirements</th></tr>
<tr><td>South Coast AQMD</td><td>
<u>BACT</u>
<table>
<tr><td colspan="2">From SCAQMD BACT Guidelines for Non Major Polluting Facilities</td></tr>
<tr><td>VOC</td><td>No Standard</td></tr>
<tr><td>NOx</td><td>No Standard</td></tr>
<tr><td>SOx</td><td>No Standard</td></tr>
<tr><td>PM10</td><td>Baghouse venting the cement weigh hopper and mixer truck loading station and adequate aggregate moisture (07-11-97)</td></tr>
<tr><td>PM2.5</td><td>No Standard</td></tr>
<tr><td>CO</td><td>No Standard</td></tr>
</table>
<u>Rule Requirements</u>
None

From the date of the previous BACT determination (BACT#117 on 5/11/16) to 5/30/2018 there were no new BACT determinations entered into the system or new rules.
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</table>

<table>
<tr><th>District/ Agency</th><th>Best Available Control Technology (BACT)/ Requirements</th></tr>
<tr><td>San Diego County APCD</td><td>
<u>BACT</u>
<table>
<tr><td colspan="2">From SDCAPCD NSR Requirements for BACT, Page 3-9</td></tr>
<tr><td>VOC</td><td>No Standard</td></tr>
<tr><td>NOx</td><td>No Standard</td></tr>
<tr><td>SOx</td><td>No Standard</td></tr>
<tr><td>PM10</td><td>1) Enclosed cement weigh hoppers, screw conveyors and concrete batcher vented to a 99% efficient fabric filter baghouse.
2) Flexible shroud which seals to the truck. Shroud vented to 99% efficient fabric baghouse
3) Water spray system for sand and aggregate transfer points. Sand and aggregate storage piles adequately wet to maintain a minimum moisture content of 4% by weight
4) Open areas maintained adequately wet to prevent fugitive emissions in excess of 20 percent opacity or Ringlemann 1</td></tr>
<tr><td>PM2.5</td><td>No Standard</td></tr>
<tr><td>CO</td><td>No Standard</td></tr>
</table>
<u>Rule Requirements</u>
None

From the date of the previous BACT determination (BACT#117 on 5/11/16) to 5/30/2018 there were no new rules. However, San Diego has revised their previous BACT determination to remove the control by baghouse requirement of the
</td></tr>
</table>

	aggregate weigh hoppers when they determined that it was not appropriate due to the moisture content of the aggregate.

District/ Agency	Best Available Control Technology (BACT)/ Requirements
Bay Area AQMD	**BACT** From BAAQMD BACT Guideline – Greater than or equal to 5 cubic yards per batch **VOC**: No Standard **NOx**: No Standard **SOx**: No Standard **PM10**: Water spray for aggregate handling, aggregate storage piles and site road surfaces; and enclosure and venting of cement handling and storage to a baghouse (9/4/91) **PM2.5**: No Standard **CO**: No Standard **Rule Requirements** None From the date of the previous BACT determination (BACT#117 on 5/11/16) to 5/30/2018 there were no new BACT determinations entered into the system or new rules.

District/ Agency	Best Available Control Technology (BACT)/ Requirements
San Joaquin Valley APCD	**BACT** From SJVAPCD BACT Guidelines – Greater than or equal to 5 cubic yards per batch (6.2.2 - 3/10/2008) **VOC**: No Standard **NOx**: No Standard **SOx**: No Standard **PM10**: 1) Sand and Aggregate storage: outdoor storage piles adequately wetted to prevent visible emissions > 5% opacity 2) Sand and aggregate handling (all transfer points): water sprays on all transfer points 3) Sand and aggregate weigh batcher: material adequately wetted to prevent visible emissions > 5% opacity 4) Storage silos for cement, fly ash and other supplements: enclosed silo vented to a control device with 99% efficiency (baghouse, bin vent or equivalent) 5) Cement weigh batcher: enclosed weigh batcher vented to a control device with 99% efficiency (baghouse or equivalent) 6) Transit-mixed truck loading: loading operation enclosed by a flexible shroud which seals to the truck and is vented to a control device with 99% efficiency (baghouse or equivalent) 7) Central mixer loading: Enclosed mixer vented to a control device with 99% efficiency (baghouse or equivalent) **PM2.5**: No Standard **CO**: No Standard

	Rule Requirements None From the date of the previous BACT determination (BACT#117 on 5/11/16) to 5/30/2018 there were no rules.

The following control technologies have been identified and are ranked based on stringency:

SUMMARY OF ACHIEVED IN PRACTICE CONTROL TECHNOLOGIES	
VOC	No Standard
NOx	No Standard
SOx	No Standard
PM10	1. Control strategy as defined by SJVAPCD 2. Control strategy as defined by SMAQMD* 3. Control strategy as defined by SDAPCD 4. Aggregate Storage at min 4% moisture. Vent filters for weigh batcher and storage silos - ARB. 5. Fugitive emissions vented to a baghouse and opacity of the uncaptured emissions not to exceed 20% for a period or periods aggregating more than three minutes during any one hour - BAAQMD, SCAQMD. 6. Enclosure only, Federal Clearinghouse 7. Water spray only, Federal Clearinghouse
PM2.5	No Standard
CO	No Standard

* The enclosed aggregate weigh hopper was shown to be not achieved in practice and the opacity limit for open areas was reworded for clarity and better enforceability.

As part of the BACT determination, SMAQMD identified the use of an enclosed aggregate and cement weigh hoppers, screw conveyors and concrete batcher vented to a 99% efficient fabric filter baghouse. This was originally identified from SDAPCD as more stringent than the use of water spray alone. Industry could not meet this requirement in the case of the aggregate feed hopper. The aggregate is already wet from being watered in the pile and additional water added as a part of the cement making process. A baghouse is not an effective way to control dust from a wet source, since the baghouse will get entrapped with water and reduce efficiency. SDAPCD was contacted and they concurred that the aggregate system is controlled by water spray not by a baghouse. For this reason this portion of the SMAQMD determination is not considered achieved in practice or technologically feasible. SDAPCD has also removed this requirement from their BACT requirement.

To restrict the opacity limits from open areas, SMAQMD used the contradictory term of “excess of **<5** percent opacity” whereas the SJVAPCD uses the term “prevent visible emissions > 5% opacity”. Both of these terms are essentially equivalent due to the fact that it is difficult to visually distinguish any gradients of opacity at less than or equal to 5%. Therefore, for clarity and better enforceability, the language of SJVAPCD will be adopted as the standard.

The following control technologies have been identified as the most stringent, achieved in practice control technologies:

BEST CONTROL TECHNOLOGIES ACHIEVED		
Pollutant	**Standard**	**Source**
VOC	No Standard	
NOx	No Standard	
SOx	No Standard	
PM10	1) Sand and Aggregate storage: outdoor storage piles adequately wetted to prevent visible emissions > 5% opacity 2) Sand and aggregate handling (all transfer points): water sprays on all transfer points 3) Sand and aggregate weigh batcher: material adequately wetted to prevent visible emissions > 5% opacity 4) Storage silos for cement, flyash and other supplements: enclosed silo vented to a control device with 99% efficiency (baghouse, bin vent or equivalent) 5) Cement weigh batcher: enclosed weigh batcher vented to a control device with 99% efficiency (baghouse or equivalent) 6) Transit-mixed truck loading: loading operation enclosed by a flexible shroud which seals to the truck and is vented to a control device with 99% efficiency (baghouse or equivalent) 7) Central mixer loading: Enclosed mixer vented to a control device with 99% efficiency (baghouse or equivalent)	SJVAPCD (BACT)
PM2.5	No Standard	
CO	No Standard	

B. TECHNOLOGICALLY FEASIBLE AND COST EFFECTIVE (Rule 202, §205.1.b.):

Technologically Feasible Alternatives:

Any alternative basic equipment, fuel, process, emission control device or technique, singly or in combination, determined to be technologically feasible by the Air Pollution Control Officer. As fabric filters are generally considered to achieve the highest level of particulate control for processes that they may be applied to, and since the achieved in practice BACT determination has been determined to be the use of a 99% efficient fabric filter, no additional technologies were analyzed as technologically feasible.

C. SELECTION OF BACT:

Based on the fact that no other technologically feasible control technologies were identified as being more appropriate with a higher level of control efficiency than a fabric filter for particulate control for this application, BACT for PM10 will be the highest level of control that has been achieved in practice that used this technology. As PM2.5 is a subset of PM10, BACT for PM2.5 will be set to the same standard as is set for PM10.

BACT For Concrete Batch Plants Greater than or equal to 5 cubic yard per batch.		
Pollutant	**Standard**	**Source**
VOC	No Standard	
NOx	No Standard	
SOx	No Standard	
PM10	1) Sand and Aggregate storage: outdoor storage piles adequately wetted to prevent visible emissions > 5% opacity 2) Sand and aggregate handling (all transfer points): water sprays on all transfer points 3) Sand and aggregate weigh batcher: material adequately wetted to prevent visible emissions > 5% opacity 4) Storage silos for cement, flyash and other supplements: enclosed silo vented to a control device with 99% efficiency (baghouse, bin vent or equivalent) 5) Cement weigh batcher: enclosed weigh batcher vented to a control device with 99% efficiency (baghouse or equivalent) 6) Transit-mixed truck loading: loading operation enclosed by a flexible shroud which seals to the truck and is vented to a control device with 99% efficiency (baghouse or equivalent) 7) Central mixer loading: Enclosed mixer vented to a control device with 99% efficiency (baghouse or equivalent)	SJVAPCD
PM2.5 (A)	Equivalent to PM10 control standards	SMAQMD
CO	No Standard	

(A) The control of PM2.5 is considered equivalent to the control of PM10.

D. SELECTION OF T-BACT:

Toxics are in the form of PM. The control of particulate matter through meeting the BACT standard will also control toxics found in the PM. Therefore meeting the BACT controls for the control of PM will be considered equivalent to meeting T-BACT requirements.

REVIEWED BY: _____ **DATE:** 7-11-18

APPROVED BY: _____ **DATE:** 7/11/18