



**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
CRUSHING AND SCREENING GENERAL PERMIT**

I. INTRODUCTION

The Crushing and Screening General Permit is a permit for a facility class (crushing and screening plants) that contains 10 or more facilities that are similar in nature, have substantially similar emissions, and would be subject to the same or substantially similar requirements. The General Permit will last for 5 years from the date of its issuance. Equipment that is covered under the General Permit will be required to have an “Authorization to Operate” (ATO). The ATO will identify the piece of equipment by having the name of the manufacturer, date of manufacture, maximum capacity, and serial number or equipment number along with the hours of operation limitation.

This General Permit allows portable crushing and screening plants to move to other locations statewide. This General Permit also allows the Permittee to collocate a crushing and screening plant with a concrete batch plant.

The Department will notify the Permittee and other affected stakeholders if there is a change in attainment status affecting an area.

The Permittee that applies for an ATO under the general permit shall pay the Department a flat application fee of \$500 with the submittal of the permit application. Permit applications and all transactions must be conducted through the web portal, myDEQ. The Permittee must also continue to pay, for each calendar year, the applicable administrative or inspection fees as described in the Arizona Administrative Code Title 18, Chapter 2, Article 5, Section 511 (A.A.C. R18-2-511).

II. PROCESS DESCRIPTION

A. Process Equipment

At most crushing and screening plant, aggregate material is transported from a nearby source of material by sauce truck or front-end loader, and fed into a feed hopper for processing. Material is typically conveyed by belt conveyer through a series of crushers intended to process the aggregate material to product specifications and shaker screens to separate the process material for recirculation or product storage.

At most concrete batch plants, a weigh hopper feeds sand, aggregate, cement, and water from storage silos into mixer trucks. The concrete is typically mixed on the way to the site where concrete is to be poured. At some plants, the concrete may also be manufactured in a central mix drum and transferred to a transport truck. In some cases, concrete is dry batched and prepared at a construction site. Raw material can be obtained for the plant from the collocated crushing and screening plant, or delivery by rail, truck, or barge. The cement is transferred to elevated storage silos pneumatically or by bucket elevator, while sand and aggregate and typically fed into feed hoppers and belt conveyers or by bucket elevator into elevated storage silos.

B. Control Devices

Particulate matter is the primary pollutant at crushing and screening plants. Sources of particulate matter from crushing and screening plants include belt conveyor material transfer points, crushers, and shaker screens. Control methods used to control emission of particulate matter at crushing and screening plants include baghouses, wet scrubbers, water sprays, and enclosures.

Particulate matter is also the primary pollutant at concrete batch plants that are permitted collocated with crushing and screening plants. Storage silos at concrete baghouses may be equipped with baghouses to control emission of particulate matter during silo loading. A significant source of emissions from concrete batch plants is the product loading point. Truck mix concrete batch plants collocated with crushing and screening plants are required to have a baghouse installed at the product loading point to qualify for coverage under the General Permit. Central mix concrete batch plants may also be equipped with baghouses to control emission of particulate matter. However, emissions from product loading points at central mix concrete batch plants have been determined to be sufficiently low enough to qualify for coverage under the General Permit regardless of the presence of a baghouse at the product loading point. All concrete batch plants are required to install a rubber sleeve at the product loading point to control emission of particulate matter.

Sources of fugitive dust emissions include loading/unloading of aggregate material, vehicle traffic, feed hopper loading, and wind erosion from storage piles and open areas. Fugitive dust emissions are controlled by application of water and/or chemical dust suppressants.

III. OPERATING LIMITATIONS

A. Production Throughput Limitation

The Crushing and Screening General Permit allows for statewide production limitations for the operating scenarios in Table 1 below. These throughput limitations are based on the results of a refined air dispersion modeling analysis conducted in order to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) statewide). A detailed description of the modeling analysis is presented in Section VIII.

Table 1: Throughput Limitations

Operating Scenario	Throughput Limitation	
	PM ₁₀ Attainment	PM ₁₀ Nonattainment
Crushing and Screening Plant	5,000 tons per day	4,000 tons per day
Crushing and Screening Plant Collocated with Concrete Batch Plant	C&S: 5,000 tons per day CBP: 1,275 yd ³ per day	C&S: 4,000 tons per day CBP: 1,000 yd ³ per day

B. Truck Mix Concrete Batch Plant Baghouse Requirement

To qualify for coverage under the Crushing and Screening General Permit, the Permittee is required to operate a baghouse at the product loading station for co-located truck mix concrete batch plants.

C. Maricopa County Generator Horsepower Limitation

The Permittee shall not operate a non-certified generator rated cumulatively at 750-horsepower or greater. A non-certified generator is any generator not certified to meet EPA Tier 1 emission standard or better in accordance with 40 CFR 89.112(a).

D. Prohibited Areas

The Permittee is not authorized to operate in areas of Pinal County designated non-attainment for PM_{2.5}. The Prohibited area can be found at <http://gisweb.azdeq.gov/arcgis/emaps/?topic=nonattain> by filtering for PM_{2.5}.

IV. APPLICABLE REGULATIONS

Table 1 identifies applicable regulations and verification as to why that standard applies. The table also contains a discussion of any regulations the emission unit is exempt from.

Table 1: Applicable Regulations

Unit	Control Device	Rule	Discussion
Crushing and Screening Plant	Baghouses, Wet Scrubbers, Spray Bars, Wet Suppressant, and Enclosures	Arizona Administrative Code (A.A.C.) R18-2-722	Crushing and screening plants constructed prior to August 31, 1983 are subject to Standards of Performance for Existing or Crushed Stone Processing Plants.
		40 CFR (Code of Federal Regulations) 60 Subpart OOO	Crushing and screening plants constructed after August 31, 1983 are subject to NSPS Subpart OOO.
Concrete Batch Plant	Baghouses, Sleeves, and Wet Suppressants	A.A.C. R18-2-702.B A.A.C. R18-2-723	Standards of Performance for Concrete Batch Plants and Fugitive Dust Sources.
Boilers < 10MMBtuh	None	A.A.C. R18-2-724	Standards of Performance for Fossil-Fuel Fired Industrial and Commercial Equipment.
		40 CFR 63 Subpart JJJJJ	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers is applicable to oil fired boilers.
Unclassified Sources, Vapor Generators, and Direct Fuel-Fired Equipment	None	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	Standards of Performance for Unclassified Sources. This section is for direct-fired equipment such as vapor generators and other unclassified emission sources.

Unit	Control Device	Rule	Discussion
Internal Combustion Engines	None	A.A.C. R18-2-719	Standards of Performance for Existing Stationary Rotation Machinery is applicable to existing engines. Not applicable to engines subject to 40 CFR 60 Subparts IIII or JJJJ
		40 CFR 60 Subpart IIII	New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines manufactured after April 1, 2006.
		40 CFR 60 Subpart JJJJ	New Source Performance Standards for Stationary Spark Ignition Internal Combustion Engines manufactured after July 1, 2008.
		40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Not applicable to engines subject to 40 CFR 60 Subparts IIII or JJJJ.
Fugitive Dust Sources	Water Trucks, Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.
Abrasive Blasting	Wet blasting; Dust collecting equipment; Other approved methods	A.A.C. R-18-2-702 A.A.C. R-18-2-726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2-727	These standards are applicable to any spray painting operation.
Demolition/renovation Operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

Table 2 identifies applicable regulations when operating within Maricopa County and verification as to why that standard applies.

Table 2: Applicable Regulations for Maricopa County

Unit	Control Device	Rule	Discussion
Facility Wide Requirements	None	Maricopa County Rule 320 Maricopa County Rule 316	Odors and Gaseous Air Contaminants Requirements for Nonmetallic Mineral Processing operations within Maricopa County.
Crushing and Screening Plants	Spray Bars	Maricopa County Rule 316	Requirements for Nonmetallic Mineral Processing operations within Maricopa County.
Concrete Batch Plants	Baghouses, Rubber Sleeves, and Wet Suppressants	Maricopa County Rule 316	Requirements for Nonmetallic Mineral Processing operations within Maricopa County.
Internal Combustion Engines	None	Maricopa County Rule 324	Requirements for Stationary Reciprocating Internal Combustion Engines operating within Maricopa County.
Fugitive Dust	Water Trucks and Wet Suppressants	Maricopa County Rule 300 Maricopa County Rule 316	Visible emissions standards for operations with Maricopa County. Requirements for Nonmetallic Mineral Processing operations within Maricopa County.
Spray Coating Operations	Enclosures, Filtering System	Maricopa County Rule 315	Requirements for Spray Coating Operations within Maricopa County.
Abrasive Blasting	Confined Blasting, Wet Blasting, Vacuum Blasting, Emission Control System	Maricopa County Rule 312	Requirements for Abrasive Blasting operations within Maricopa County.

Table 3 identifies regulations applicable when operating in Pima County and verification as to why the standard applies.

Table 3: Applicable Regulations for Pima County

Unit	Control Device	Rule	Discussion
Crushing and Screening Plant	Spray Bars	Pima County Code (P.C.C.) 17.16.370	The regulations listed are applicable to crushing and screening plants located in Pima County.

Unit	Control Device	Rule	Discussion
Concrete Batch Plants	Emissions from silos are controlled by baghouses. Fugitive sources controlled by water spray and other reasonable precautions.	P.C.C. 17.16.380	The regulations listed are applicable to concrete batch plants located in Pima County.
Internal Combustion Engines	None	P.C.C. 17.16.340 P.C.C. 17.16.490	The regulation listed is applicable to all stationary gas turbines, oil-fired turbines and internal combustion engines. The regulations are identical to A.A.C. R18-2-719 so they have been streamlined into the facilitywide conditions.
Fugitive Dust/Other Specific Requirements	Water trucks, and wet suppressants	P.C.C. 17.16.040 P.C.C. 17.16.050 P.C.C. 17.16.060 P.C.C. 17.16.080 P.C.C. 17.16.090 P.C.C. 17.16.070 P.C.C. 17.16.100	The regulations listed are applicable to emissions produced from fugitive dust producing activities, vacant lots, open spaces, roads, streets, particulate materials and storage piles.

Table 4 identifies regulations applicable when operating in Pinal County and verification as to why that standard applies.

Table 4: Applicable Regulations for Pinal County

Unit	Control Device	Rule	Discussion
Fugitive Dust	Water trucks, and wet suppressants	Pinal Code 4-7-230.N Pinal Code 4-2-040 Pinal Code 4-2-050	The regulations listed are applicable to sources of fugitive dust emissions.

V. PREVIOUS PERMIT CONDITIONS

A. Changes to Current Renewal

Table 6 addresses the changes made to the sections and conditions from the previous Crushing and Screening General Permit.

Table 5: Previous Permit Conditions

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "A"		X		General Provisions: Revised to represent the most recent template language

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "B" Section II		X		Facility Wide Requirements: Revised to represent the most recent template language
Att. "B" Section III		X		Facility Wide Requirements: Revised to reflect current throughput limitations and operational requirements.
Att. "B" Section IV		X		Internal Combustion Engine (ICE) Non-NSPS Requirements: Revised to reflect the most recent regulatory language
Att. "B" Section VI		X		ICE NSPS Subpart IIII Requirements: Revised to reflect the most recent regulatory language
Att. "B" Section VII		X		ICE NSPS Subpart JJJJ Requirements: Revised to reflect the most recent regulatory language
Att. "B" Section VIII			X	Mobile Source Requirements: Removed from the permit language.
Att. "C"		X		Crushing and Screening Plant Requirements: Revised to reflect the most recent regulatory language
Att. "D"		X		Concrete Batch Plant Requirements: Revised to reflect the most recent regulatory language
Att. "E"		X		Maricopa County Operating Requirements: Revised to reflect the most recent regulatory language
Att. "F"		X		Pima County Operating Requirements: Revised to reflect the most recent regulatory language
Att. "G"		X		Pinal County Operating Requirements: Revised to reflect the most recent regulatory language
Appendix "B"	X			Map of Nonattainment Areas

VI. UPDATES TO PRODUCTION THROUGHPUT LIMITATIONS

The throughput limitations for the Crushing and Screening General Permit were revised to account for varying operating scenarios for product loading at collocated concrete batch plants, a revised approach determination of fugitive emissions from wind erosion, and updates to modeling protocols since the previously issued Crushing and Screening General Permit. The operating scenarios were evaluated for compliance with the NAAQS, and throughput limitations were evaluated to ensure that Class II permit applicability would be maintained. In this General Permit, collocated concrete batch plants are required to be either baghouse-controlled truck mix plants or central mix plants, as emissions of particulate matter from uncontrolled truck mix product loading points far exceed the alternative operating scenarios and led to difficulties ensuring compliance with the NAAQS statewide while providing sufficient throughput for operations.

VII. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table 7 below contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the Permittee is required to demonstrate compliance with the emission limits in the permit.

Table 7: Monitoring, Recordkeeping, and Reporting Requirements

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Statewide				Do not operate the equipment identified in the ATO for more than the number of annual hours limit specified in the ATO.	Maintain records of the operating hours of the equipment with an hourly restriction, records of the total daily throughput of material, records of the total daily production of the concrete batch plant in cubic yards per day. Keep a logbook of the updated emission calculations and make it available to inspectors upon request. Keep a log for each non-road engine, including the dates the engine is brought to and removed from the facility, and the make, model, serial number and capacity.	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
	Internal Combustion Engine(S)-Non-NSPS	PM	1.02Q ^{0.769} , Q is the heat input in million Btu per hour.		Keep records of a current, valid purchase contract, tariff sheet or transportation contract, including fuel lower heating value, and make them available to ADEQ upon request.	
		Opacity	40% (excluding the first 10 minutes from cold start)	Conduct quarterly periodic opacity monitoring for all engines except natural gas or propane engines.		
		SO ₂	1.0 lb/MMBtu		For spark ignition (SI) engines, maintain records of the gas quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel; for diesel engines, keep records of fuel supplier certifications or other documentation listing the sulfur content.	Report to the Director any daily period when the fuel sulfur content exceeds 0.8%.

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					Make the records available to ADEQ upon request.	
		HAPs (Emergency Engines)			Keep records of operation hours of the RICE recorded through the non-resettable hour meter, including the date, start and stop times, hours spent for emergency operation, what classified the operation as emergency and how many hours are spent for non-emergency operation; keep records of the oil analysis parameters and the results, if any, and the oil changes for the engine; and keep records of the maintenance conducted on the engine.	
		HAPs (Non-Emergency Compression)	Limit CO concentration in the engine exhaust to 49 ppmv at	For Engines greater than 500 HP, choose to use CEMS or CPMS for	Keep a copy of each notification and report that was submitted to comply with	Submit all applicable notifications in 40 CFR 63.7(b) and (c), 63.8(e),

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
		n Ignition Engines)	15 percent O ₂ for engines between 300-500 HP, and 23 ppmvd at 15 percent O ₂ for engines greater than 500 HP, or reduce CO emissions by 70%.	<p>monitoring CO emissions.</p> <p>Conduct initial and subsequent performance test.</p>	<p>40 CFR 63 Subpart ZZZZ, records of the occurrence and duration of each malfunction of operation or the air pollution control and monitoring equipment, records of performance tests and performance evaluations, records of all required maintenance, records of actions taken during periods of malfunction, and records of continuous compliance.</p> <p>For each CEMS or CPMS, keep records described in 40 CFR 63.10(b)(2)(vi) through (xi), previous versions of the performance evaluation plan, requests for alternatives to the relative accuracy test</p>	<p>(f)(4) and (f)(6), 63.9(b) through (e), and (g) and (h), a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin; for engines greater than 300 HP required to conduct a performance test or initial compliance demonstration, submit a Notification of Compliance Status.</p> <p>For engines greater than 300 HP and 4 SRB or 4 SLB engines greater than 500 HP, submit semi-annual compliance reports.</p>
		HAPs (Non-Emergency Spark Ignition Engines)		<p>Install and operate a CPMS to continuously monitor catalyst inlet temperature, and install equipment to automatically shut down the engine if the catalyst inlet temperature exceeds 1350 °F for 4SLB engine and/or 1250 °F for 4SRB engine.</p> <p>Conduct initial and subsequent performance test.</p>		

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					<p>for CEMS or CPMS.</p> <p>For engines less than 300 HP, 2SLB engines, 4 SRB (<500 HP) engines, and 4SLB (<500 HP) engines, and subject to management practices, keep records of the maintenance.</p>	
	<p>Internal Combustion Engine(S) Subject to NSPS Subpart III</p>		<p>For non-emergency engines: depending on model year, displacement, and engine power, comply with the applicable emission standards.</p>	<p>For non-emergency engines: if an engine is equipped with a diesel particulate filter, install a backpressure monitor on the diesel particulate filter that notifies the Permittee when the high backpressure limit of the engine is approached.</p>	<p>For non-emergency engines: if an engine is equipped with a diesel particulate filter, shall keep records of any corrective action taken after the backpressure monitor has notified the Permittee that the high backpressure limit of the engine is approached.</p> <p>For an engine that is a pre-2007 model year > 175 hp and not certified, keep records of all</p>	<p>For non-emergency engines: for an engine that is a pre-2007 model year > 175 hp and not certified, submit an initial notification as required in 40 CFR 60.7(a)(1).</p>

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					<p>notifications submitted, maintenance conducted on the engine. If the engine is certified, keep documentation from the manufacturer, or if the engine is not certified, keep documentation that the engine meets the emission standards.</p>	
			<p>For fire pump engines, and emergency engines depending on the model year, displacement, brake horsepower, and modified or reconstructed emergency engines, comply with the applicable emission standards.</p>	<p>Depending on model year, conduct performance tests and/or purchase certified engines.</p>	<p>Keep performance test results, records of engine manufacturer data and certification, and records of control device vendor data, as applicable.</p> <p>For an engine that is a pre-2007 model year > 175 hp and not certified, keep records of all notifications submitted, maintenance conducted on the engine. If the engine is certified, keep documentation</p>	<p>For pre-2007 model year engines that are greater than 175 HP and are not certified, submit an initial notification as required in 40 CFR 60.7(a)(1).</p>

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					<p>from the manufacturer, or if the engine is not certified, keep documentation that the engine meets the emission standards.</p> <p>If the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter, and records of the operation time of the engine and the reason the engine was in operation during that time.</p> <p>If the stationary CI internal</p>	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					<p>combustion engine is equipped with a diesel particulate filter, keep records of any corrective action taken after the backpressure monitor has notified the Permittee that the high backpressure limit of the engine is approached.</p> <p>Maintain monthly records of engine operation.</p>	
	<p>Internal Combustion Spark Ignition Engines Subject to 40 CFR 60 Subpart JJJJ</p>		<p>For stationary engines with a maximum engine power less than or equal to 19 KW (25 HP) manufactured on or after July 1, 2008, comply with the emission standards in 40 CFR 60.4231(a); stationary gasoline engines with a maximum</p>	<p>Purchase an engine certified to the emission standards as applicable and control device according to the manufacturer's instructions. If not operate and maintain according to the manufacturer's instructions, comply with</p>	<p>Keep records of all notifications and all documentation supporting any notification, maintenance conducted on the engine. For certified engine, keep documentation from the manufacturer; for non-certified engine or a certified engine operating in a</p>	<p>If operating a non-certified stationary SI ICE \geq 500 HP to meet the emission standards in 40 CFR 60.4231, submit an initial notification as required in 40 CFR 60.7(a)(1).</p> <p>If operating an emergency stationary CI ICE > 100 HP or is</p>

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			<p>engine power greater than 19 KW (25 HP) manufactured on or after January 1, 2009 comply with the emission standards in 40 CFR 60.4231(b); stationary rich burn engines with a maximum engine power greater than 19 KW (25 HP) manufactured on or after January 1, 2009 that use LPG comply with the emission standards in 40 CFR 60.4231(c).</p>	<p>Condition VI.E.1.b.</p>	<p>non-certified manner and subject to 40 CFR 60.4243(a)(2), keep documentation that the engine meets the emission standards.</p> <p>If the emergency stationary SI ICE \geq 500 HP after July 1, 2010, or if 130 HP \leq the emergency stationary SI ICE \leq 500 HP on or after July 1, 2011, or if the 25 HP \leq the emergency stationary SI ICE \leq 130 HP manufactured on or after July 1, 2008, that do not meet the applicable non-emergency engines standards, keep records of the hours of engine operation recorded through the non-resettable hour meter.</p>	<p>contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in Conditions VI.E.4.a(2)(b) and (c), submit an annual report according to the requirements in Conditions VI.F.6.</p>
			<p>Non-emergency engines greater than 19 KW (25 HP) and less than 75 KW (100 HP) (except gasoline and rich burn engines that</p>	<p>Purchase a certified engine; if not, demonstrate compliance according to the performance testing requirements in 40 CFR 60.4244, as</p>		

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			<p>use LPG), comply with the emission standards for field testing in 40 CFR 1048.101(c); for the other stationary engines, comply with the emission standards listed in Condition VI.D.12.</p>	<p>applicable, and according to Conditions VI.E.2.b.</p>		
			<p>For modified or reconstructed stationary engines, comply with Condition VI.D.10.</p>	<p>Purchase a certified engine, or demonstrate compliance according to the performance testing requirements in 40 CFR 60.4244, as applicable.</p>		
	<p>Fugitive Dust</p>	<p>PM</p>	<p>40% Opacity</p>		<p>A Method 9 observer is required to conduct a weekly survey of visible emissions. Maintain records of the dates when any of the reasonable precautions and control measures were</p>	<p>Record of the dates and types of dust control measures employed, and if applicable, the results of any Method 9 observations, and any corrective action taken to lower the</p>

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					adopted. Keep records of the explosive blasting information.	opacity of any excess emissions.
	Abrasive Blasting	PM	20% Opacity			Record the date, duration and pollution control measures of any abrasive blasting project.
	Spray Painting	VOC	20% Opacity Control 96% of the overspray			Maintain records of the date, duration, quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.
	Demolition/ Renovation	Asbestos				Maintain records of all asbestos related demolition or renovation projects including the "NESHAP Notification for Renovation and Demolition Activities" form and all

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
						supporting documents
	Crushing and Screening Plant Subject to NSPS	PM and Opacity	<p>Crushers without capture systems: $\leq 15\%$ (fugitive emissions, after August 31, 1983 and before April 22, 2008) $\leq 12\%$ (fugitive emissions, on or after April 22, 2008)</p> <p>Crusher with capture systems: $\leq 10\%$ (fugitive emissions), $\leq 7\%$ (dry control device stack emissions), and $\leq 0.05 \text{ g/dsm}^3$ (stack emissions), after August 31, 1983 and before April 22, 2008 $\leq 7\%$ (fugitive emissions, dry control device stack emissions)</p>	<p>Conduct monthly opacity monitoring.</p> <p>Monitor the daily process weight of sand, gravel or crushed stone produced.</p> <p>If a wet scrubber is used, monitor the scrubber accordingly and conduct initial performance test. If wet suppression is used perform monthly periodic inspections. If a baghouse is used for facilities on or after April 22, 2008, conduct quarterly 30-minute visible emissions inspections.</p> <p>Conduct initial performance test for all the</p>	<p>For facilities on or after April 22, 2008, record each periodic inspection required in a logbook and keep the logbook onsite and make it available to the Director upon request.</p>	<p>For all new facilities, submit a notification of the date construction or reconstruction no later than 30 days after; submit a notification of the actual initial startup date within 15 days after.</p> <p>For existing facilities, submit a notification of any physical or operational change which may increase the emission rate of any air pollutant; a notification of the actual date of initial startup; for a combination of affected facilities begin actual initial startup on the same day, submit a single notification of startup</p>

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			<p>and 0.032 g/dsm³ (stack emissions), on or after April 22, 2008</p> <p>Operations enclosed in a building:</p> <p>≤ 7% (fugitive emissions)</p> <p>≤ 7% or ≤ 0.05 g/dsm³ (stack emissions), after August 31, 1983 and before April 22, 2008</p> <p>≤ 0.032 g/dsm³ (stack emissions), on or after April 22, 2008</p>	<p>applicable opacity and PM limits.</p>		<p>within 15 days after.</p> <p>If a facility operates any wet and saturated material processing operation and subsequently processes unsaturated materials, submit a report of this change within 30 days.</p> <p>Submit written reports of the results of all performance tests.</p>
	<p>Crushing and Screening Plant Subject to Existing Source Requirements</p>	<p>PM</p>	<p>≤ 4.10P^{0.67} (for process weight rate ≤ 60,000 lbs/hr)</p> <p>≤ 55.0P^{0.11} - 40 (for process weight rate > 60,000 lbs/hr)</p> <p>P = process weight rate in tons/hr</p>	<p>Conduct monthly opacity monitoring.</p> <p>Install, calibrate, maintain, and operate monitoring devices to determine daily the process weight of</p>	<p>Maintain records of the daily production rate of gravel or crushed stone produced.</p> <p>Maintain logs of all maintenance activities performed on the baghouse.</p>	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements	
		Opacity	20%	sand, gravel or crushed stone produced. Monitor and record once per day the pressure drop (in inches of H ₂ O) across the baghouse.			
	Concrete Batch Plants	Opacity	20%	Conduct monthly opacity monitoring. Monitor and record once per day the pressure drop (in inches of H ₂ O) across the baghouse.	Maintain logs of all maintenance activities performed on the baghouse.		
	Boilers				Burn only natural gas, liquefied petroleum gas (butane or propane), on-specification used oil, or ultra-low sulfur diesel fuel in the boiler(s).	Maintain copies of the fuel analysis.	
		PM	$\leq 1.02Q^{0.769}$, Q = the heat input in MMBtu/hr			Keep records of fuel supplier certifications.	
		Opacity	15%		Conduct monthly opacity monitoring of		

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
				visible emissions.		
		SO ₂	≤ 1.0 lb/MMBtu.	Burn only ultralow sulfur fuel.		
		HAPs			Keep a copy of each notification and report that was submitted to comply with this 40 CFR 63 Subpart JJJJJ and all documentation supporting any Initial Notification or Notification of Compliance Status, and records to document conformance with the work practices, and management practices.	Prepare by March 1 and submit upon request, a biennial compliance certification report.
	Direct-fired Equipment	PM	$\leq 4.10P^{0.67}$ (for process weight rate $\leq 60,000$ lbs/hr) $\leq 55.0P^{0.11} - 40$ (for process weight rate $> 60,000$ lbs/hr) P = process weight rate in tons/hr			

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
		Opacity	20%			
Maricopa County	Facility Wide	Opacity	20% for a period aggregating more than three minutes in any 60 minute period	Conduct a weekly monitoring of visible emissions	Keep for 5 years records of process and operational information required; maintain all the records in accordance with the approved O&M Plan; maintain a copy of all earth moving permits; and maintain a copy of the most recently approved Dust Control Plan on-site.	
	Crushing and Screening Plants	PM	Stack: 7% or .014 grains per dry standard cubic foot Fugitive: Transfer Point: 7% Crusher: 15% (or 12% for plants manufactured on or after April 22, 2008) Truck Dumping: 20%	Conduct soil moisture testing at the applicable frequency.	Maintain all records in accordance with soil moisture testing, the approved O&M Plan, and the Dust Control Plan.	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			Other Process Source: 10% (or 7% for plants manufactured on or after April 22, 2008)			
	Concrete Batch Plants	PM	Stack: 5% (or .01 gr/dscf for Silos installed after June 8, 2005) Fugitive: 10% (from process source, excluding truck dumping)		Maintain all records in accordance with the approved Dust Control Plan.	
	Internal Combustion Engines	Opacity	20%		Maintain a list of stationary RICE including: combustion type; manufacturer; model designation, rated bhp, serial number, and the location of each engine. Maintain records of the monthly and 12-month rolling total hours of operation for	
			For non-emergency engines rated 250 bhp or greater: comply with the emission standards in Table 1 or Table 2 of Attachment "E" as applicable			

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					<p>each stationary RICE, and monthly and annual hours of operation for reliability related activities and the number of operating hours for emergency use and an explanation for the emergency use. Maintain records of all stationary RICE maintenance (including the date when maintenance was performed and the maintenance procedures that were performed). Make one of the following where the stationary RICE is located: a. The manufacturer's written instructions for operations and maintenance of each stationary RICE; b. A written</p>	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					<p>maintenance schedule; or c. A written maintenance plan.</p> <p>Maintain records of the type and amount of fuel purchased for use in the stationary RICE; and maintain records of the sulfur content of any fuel that is used in the stationary RICE, excluding gasoline. For gasoline, maintain records that the fuel was purchased in the United States.</p> <p>If applicable, keep manufacturer's written instructions for operation and maintenance.</p> <p>If the manufacturer's written instructions are not available, keep a preventative</p>	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					<p>maintenance plan.</p> <p>For each non-road engine, keep the make, model, serial number, and rated capacity (bhp hours); and the Date of each instance in which the engine is moved from its existing location, and the reason why the engine was moved; and the fuel type and sulfur content.</p> <p>Retain all records for 5 years.</p>	
	Fugitive Dust	Opacity	20%	<p>Conduct a monthly visual survey of visible emissions.</p> <p>Conduct performance tests for soil stabilization and moisture content as required.</p>	<p>Keep records of the name of observer, date, time, and result of the visible emissions survey and observation.</p> <p>Maintain written records of all self-inspections of fugitive dust control measures implemented.</p>	<p>Submit a Dust Control Plan that includes all the information required in the permit, and submit a revised Dust Control Plan if applicable according to the permit.</p> <p>For visible emissions survey, if opacity \geq</p>

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					<p>Maintain records of all Basic Dust Control Training Class certifications on site.</p> <p>For visible emissions survey, if opacity < 20%, make a record of the location, date, and time of the observation, and the results of the Method 9 observation.</p>	<p>20%, report it as an excess emission.</p>
	Abrasive Blasting	Opacity	<p>20% (aggregating more than three minutes in any sixty-minute period)</p>	<p>Conduct visible emissions observations with Method 9 and other provisions in the permit.</p>	<p>Keep the records onsite that are applicable to all abrasive blasting operations, and reports, logs, and supporting documentation required.</p> <p>Maintain records of the Operation and Maintenance Plan for each emission control system used to control emissions.</p>	
	Painting Operations	VOCs	<p>Surface coating and architectural coating operations: comply with all the applicable requirements</p>			

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			<p>in Maricopa County rules 335 and 336.</p> <p>Spray Coating Operations: meet all the requirements in the permit.</p>			
Pima County	Crushing and Screening Plant	PM	$\leq 3.59P^{0.62}$ (for process weight rate $\leq 60,000$ lbs/hr) $\leq 17.31P^{0.16}$ (for process weight rate $> 60,000$ lbs/hr) P = process weight rate in tons/hr			
		Opacity	Comply with Table 1 of this Attachment			
	Concrete Batch Plant	Fugitive Emissions	Same as Fugitive Dust			
	Fugitive Dust	Opacity (point sources)	60% (Cold Diesel Engines the first 10 consecutive minutes after starting up; Loaded Diesel Engines being accelerated under load); 0 (Asbestos-Containing Operation);	Conduct weekly visible emissions observations by Method 9	Maintain the records of weekly visible emissions observations	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			20% (Other sources)			
		Opacity (non-point sources)	20% (Eastern Pima County, east of the eastern boundary of the Tohono O'Odham Reservations) 40% (all other areas of Pima County)	Conduct visible emissions observations by Reference Method 9	Maintain the records of weekly visible emissions observations.	
Pinal County	Fugitive Dust	Opacity	20% (from open areas/vacant lots, or unpaved lots greater than 5000 square feet)	Conduct visible emissions observations by Method 9.	Make a record of the control measures applied.	

VIII. AMBIENT AIR IMPACT ANALYSIS

A. Overview of Modeling Methodology

The Department performed a modeling analysis to determine throughput limits for Crushing & Screening (C&S) facilities under which compliance with the National Ambient Air Quality Standards (NAAQS) can be demonstrated using regulatory air quality models. Because particulate matter (PM) is the primary pollutant emitted from a C&S, the Department has established the maximum daily throughputs for C&S to protect the 24-hour standards for PM₁₀ and PM_{2.5}.

In the modeling analysis, the Department estimated the emissions rates for individual operating processes based on the maximum daily throughputs in the previous C&S general permit (GP). These emission rates, along with other model inputs such as meteorology and source release parameters, were input into a regulatory air dispersion model. Representative background concentrations were added to modeled concentrations and the total concentrations were then compared to the NAAQS. If the total concentrations are below the NAAQS, the Department would retain the existing maximum daily throughputs. However, if the total concentrations are

higher than the NAAQS, the Department would reduce the daily throughput limits until the total concentrations are below the NAAQS. Figure 1 shows the procedures.

The Department’s analysis focused on three criteria pollutants – PM₁₀, PM_{2.5} and NO₂. The Department does not present the modeling analysis for SO₂ and CO in this document because the modeled concentrations for the two pollutants were well below the NAAQS and they were not used to establish any permitting conditions for the C&S GP.

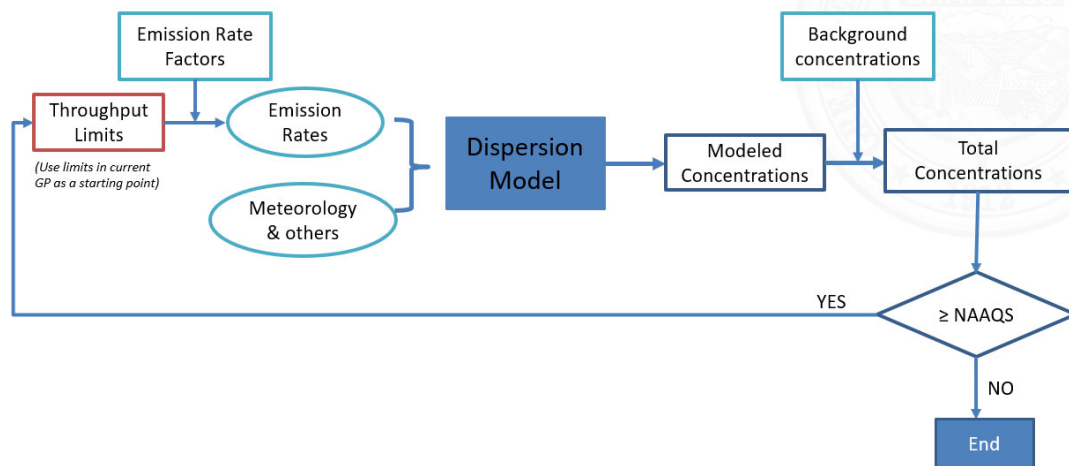


Figure 1 Flowchart for Determining Throughput Limits Using a Regulatory Dispersion Model

B. Updates in Comparison with the Previous GP Modeling

Compared to the previous modeling efforts for GP (dated April 24, 2017), this modeling analysis has made the following updates:

- Used the latest version of the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) modeling system;
- Used the most recent 5 years of meteorological data;
- Updated the emission rates for wind erosion; and
- Re-estimated background concentrations aligning with the EPA’s Guideline on Air Quality Models (40 CFR Part 51 Appendix W).

Based on the modeled results, the Department is proposing the following daily throughput limits as presented in Table 6.

Table 6 Throughput limits for Crushing & Screening Plants

Facility	Throughput Limits for Demonstrating the Compliance with NAAQS	
	PM ₁₀ Attainment Area	PM ₁₀ Non-attainment Area
Stand-alone C&S	5,000 tons per day (tpd)	4,000 tpd

C&S with concrete batch plant (CBP)	<u>C&S:</u> 5,000 tpd <u>CBP:</u> 1,275 cubic yard (yd ³) per day	<u>C&S:</u> 4,000 tpd <u>CBP:</u> 1,000 yd ³ per day
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Additionally, the Department requires that the following permitting conditions must be met:

- The applicable operating area shall exclude the West Central Pinal PM_{2.5} nonattainment area (NAA);
- If operating in Maricopa County, the size of non-certified generator shall not exceed 750 horsepower (HP). A non-certified engine is any engine that does not meet at least a Tier 1 emission standard in accordance with 40 CFR 89.112(a);
- If a CBP is collocated with a C&S and the CBP has truck mixing operations, the truck loading point must be controlled by a dust capture system and baghouse. The use of a boot or skirt that surrounds the opening at the loading point only does not fall into the category of “Controlled”.

C. Model Selection

The Department used the most recent version of AERMOD (version 21112) for this modeling analysis. AERMOD is the EPA’s preferred near-field dispersion modeling system for a wide range of regulatory applications. The AERMOD modeling system includes four regulatory components:

- AERMOD: the dispersion model;
- AERMAP: the terrain processor for AERMOD;
- AERMET: the meteorological data processor for AERMOD; and
- BRIPPRIME: the building input processor

The Department did not use the terrain processor (AERMAP) and the building input processor (BRIPPRIME) for this modeling analysis because both of them require site-specific information. Moreover, the Department determined that an assumption of “Flat Terrain” was reasonable, since the emission sources of a C&S are mainly ground level sources or near ground sources and the worst-case impacts are expected to occur in or near the ambient area boundary.

The Department used AERMET (version 21112) to process the meteorological data collected from 11 Automated Surface Observing Stations (ASOS) across the State of Arizona and one station in California. For details, please see Section E.

D. Source Inputs

1. Emission Rates

Particulate Matter (PM) is the primary pollutant emitted from both a C&S and a CBP. If there are internal combustion engines (generators) or boilers within the facility, gaseous pollutants such as SO₂, NO_x, and CO are also generated.

a. Emission Rate Factor

In general, the emissions were estimated according to latest AP-42 emission factors for concrete batching, crushing & screening, internal combustion engines, boilers, wind erosion, and unpaved roads. In particular, a consistent approach was developed for estimating PM_{2.5} and PM₁₀ emissions for batch drop operations and material transfer operations. This approach was based on AP-42 Section 13.2.4 Equation 1:

$$E = k(0.032) \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

E = emission factor (lb/ton);

k = particle size multiplier (dimensionless), 0.35 for PM₁₀ and 0.053 for PM_{2.5};

U = mean wind speed (miles per hour); and

M = material moisture content (%)

State-wide meteorological data sets were reviewed and a mean wind speed of 7.5 miles per hour was determined. Due to very limited data available for the parameter M, the moisture content was arbitrary set as 5% for controlled emissions.

b. Emission Inventory

The Department has developed an emission inventory for a C&S with an operating capacity of 325 tons per hour (tph) (Table 2). Note that this capacity was used for the convenience of emission estimation only, and it is not the maximum allowable throughput for the C&S GP. To model the operating capacity other than 325 tph, the emission rates listed in Table 2 were adjusted as discussed later (D.1.c). Table 3 lists the emission rates for all sources in the CBP, assuming an operating capacity of 1,275 yd³ per day. Besides the sources above, emissions from unpaved roads and a large internal combustion engine (generator) were also modeled. The emission rates of pollutants from these sources are summarized in Table 4.

c. Modeled Emission Rates

24-hour PM_{2.5} and PM₁₀ standards

As indicated above, the Department estimated maximum hourly emission rates for C&S sources based on an operating capacity of 325 tph. If a C&S was modeled to run at a specific capacity (tons/day), the modeled hourly emission rates for applicable sources were adjusted by using Emission Rate Flag HROFDY in AERMOD:

$$HROFY = \frac{\text{modeled operating capacity (tons per day)}}{325 \text{ tons per hour} \times 24 \text{ hours}}$$

Many batch drop and material transfer operations in a C&S are not continuous and the emission sources are typically characterized as intermittent sources. The Emission Rate Flag approach substitutes an intermittent source with a continuous source that emits an identical amount of PM₁₀ or PM_{2.5} over a 24-hour time period. Such treatment should provide a reasonable approximation of 24-hour average impact.

1-hour standard for NO₂

Maximum hourly emission rates were modeled for comparisons to 1-hour standard for NO₂.

Annual standards

Conservatively, the Department used 24-hour average emission rates to model annual standards for PM_{2.5}, and the maximum hourly emission rates to model annual NO₂.

2. Sources Layout

The layout of C&S plants generally differs from one site to another. To simplify the modeling analysis, the Department developed a generic site plan for a C&S, stand-alone or collocated with a CBP, as shown in Figure 2 and Figure 3, respectively. The Department developed the layout of sources according to the site plans of several existing plants with necessary simplifications for modeling purposes.

3. Source Release Parameters

The emission sources, categorized by source type (release characteristics), are as follows:

- a. Point Sources: cement silo, boiler, and generator;
- b. Area Sources: aggregate storage pile wind erosion, sand storage pile wind erosion, combined transfer points in crushing & screening plants;
- c. Volume Sources: crushing & screening operations, batch drop operations, material transfer operations, trucks/front-end loaders traveling on unpaved roads.

Tables 10-12 summarize the source release parameters used in the modeling analysis. The Department determined these parameters following the ADEQ air modeling guidelines as well as the methodology for modeling fugitive dust sources developed by National Stone, Sand & Gravel Association. The representative physical dimensions for stacks, crushers, screens, storage piles, hoppers, bins, silos, trucks, and front-end loaders were determined on the basis of actual measurements or testing data from three facilities in Maricopa County.

Table 7 Maximum Hourly Emission Rates for Crushing & Screening¹

Area Source			
<i>Source ID</i>	<i>Source Description</i>	<i>PM_{2.5} (g/s)</i>	<i>PM₁₀ (g/s)</i>
CS_WEAS	Aggregate Storage Pile	5.55E-04	3.70E-03
CS_WEFS	Fines Storage Pile	1.25E-03	8.32E-03
CS_TRANS	Transfer and Drop points	1.51E-02	7.34E-02
Volume Sources			
<i>Source ID</i>	<i>Source Description</i>	<i>PM_{2.5} (g/s)</i>	<i>PM₁₀ (g/s)</i>
CS_PCRSH	Primary Crusher-Jaw	4.10E-03	2.22E-02
CS_SCR1	Screen #1	2.05E-03	3.03E-02
CS_SCR2	Screen #2	2.05E-03	3.03E-02
CS_FSCR	Fine Screen	4.55E-03	9.03E-02
CS_SCRSH	Secondary Crusher -Core	4.10E-03	2.22E-02
CS_TCRSH	Tertiary Crusher	4.10E-03	2.22E-02
CSLT01-28	C&S Loader Traffic	5.35E-03	5.35E-02

 Table 8 Maximum Hourly Emission Rates for Concrete Batch Plant²

Point Sources				
<i>Source ID</i>	<i>Source Description</i>	<i>PM_{2.5} (g/s)</i>	<i>PM₁₀ (g/s)</i>	<i>NO_x (g/s)</i>
CBP_CSTS	Cement Supplement Transfer to Cement Silo	1.84E-04	1.20E-03	-
CBP_CTS	Cement Transfer to Cement Silo	8.40E-05	5.60E-04	-
CBP_BOIL	Boiler	1.17E-02	1.17E-02	1.80E-01
Area Sources				
<i>Source ID</i>	<i>Source Description</i>	<i>PM_{2.5} (g/s)</i>	<i>PM₁₀ (g/s)</i>	
CBP_WEA	Aggregate Storage Pile	5.55E-04	3.70E-03	
CBP_WES	Sand Storage Pile	3.12E-04	2.08E-03	
Volume Sources				
<i>Source ID</i>	<i>Source Description</i>	<i>PM_{2.5} (g/s)</i>	<i>PM₁₀ (g/s)</i>	
CBP_ADG	Aggregate Delivery to Ground Storage	4.98E-04	3.29E-03	
CBP_SDG	Sand Delivery to Ground Storage	3.81E-04	2.52E-03	
CBP_ATC	Aggregate Transfer to Conveyor	4.98E-04	3.29E-03	
CBP_STC	Sand Transfer to Conveyor	3.81E-04	2.52E-03	
CBP_ATE	Aggregate Transfer to	4.98E-04	3.29E-03	

¹ Emission rates were estimated based on an operating capacity of 325 tph.

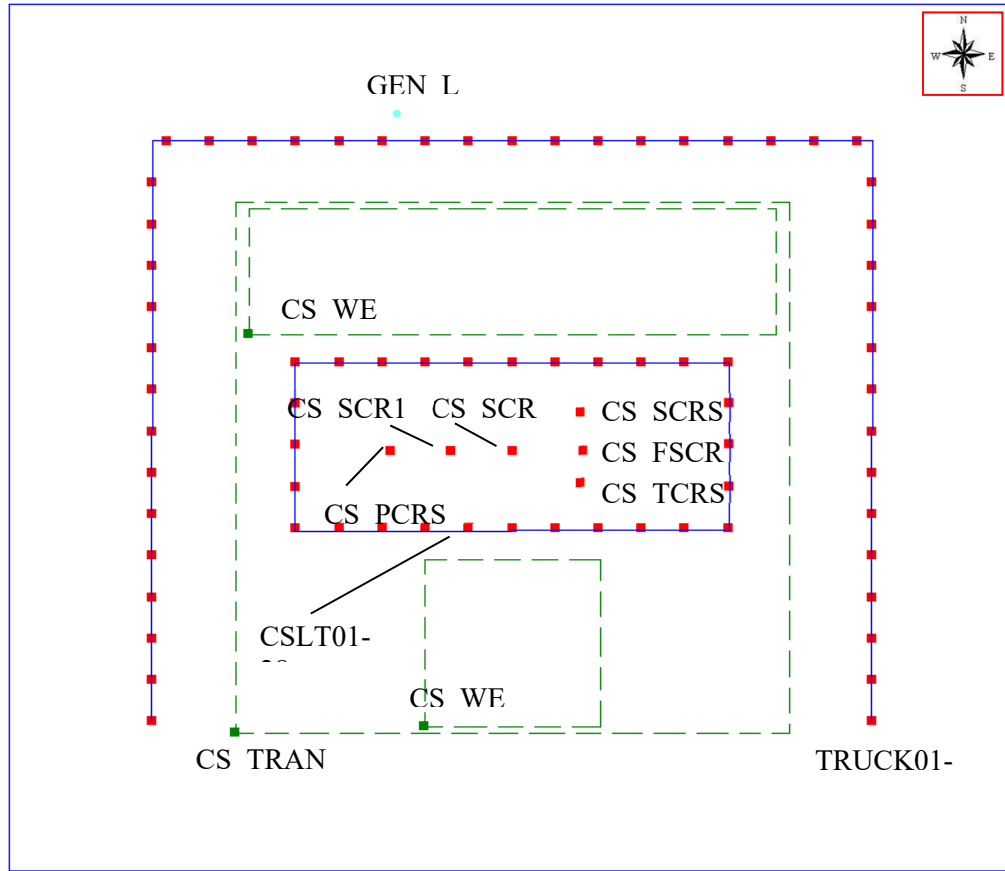
² Emission rates were estimated based on an operating capacity of 1,275 yd³ per day.

B	Elevation Bins		
CBP_STEB	Sand Transfer to Elevation Bins	3.81E-04	2.52E-03
CBP_WHL	Weigh Hopper Loading	3.98E-04	2.65E-03
CBP_TML	Truck Mix Loading (controlled)	1.56E-03	1.04E-02
CBPLT01-03	CBP Loader Traffic	1.76E-03	1.76E-02

Table 9 Emission Rates for Other Sources

Point Sources				
<i>Source ID</i>	<i>Source Description</i>	<i>PM_{2.5} (g/s)</i>	<i>PM₁₀ (g/s)</i>	<i>NO_x (g/s)</i>
GEN_LAR (1000 hp)	Generator >= 600 hp	8.84E-02	8.84E-02	3.03E+00
GEN_LAR (750 hp)	Generator >= 600 hp	6.63E-02	6.63E-02	2.27E+00
Volume Sources				
<i>Source ID</i>	<i>Source Description</i>	<i>PM_{2.5} (g/s)</i>	<i>PM₁₀ (g/s)</i>	
TRUCK01-54	Truck Traffic	1.65E-02	1.65E-01	

Figure 2 Sources Layout of a Generic Crushing & Screening Plant (refer to Table 2 and Table 4 for detailed source descriptions)



50 meters

- **Point Source**
- **Volume Source**
- Area Source**

Figure 3 Sources Layout of a Generic Crushing and Screening Plant with a Concrete Batch Plant (refer to Tables 2-4 for detailed source descriptions)

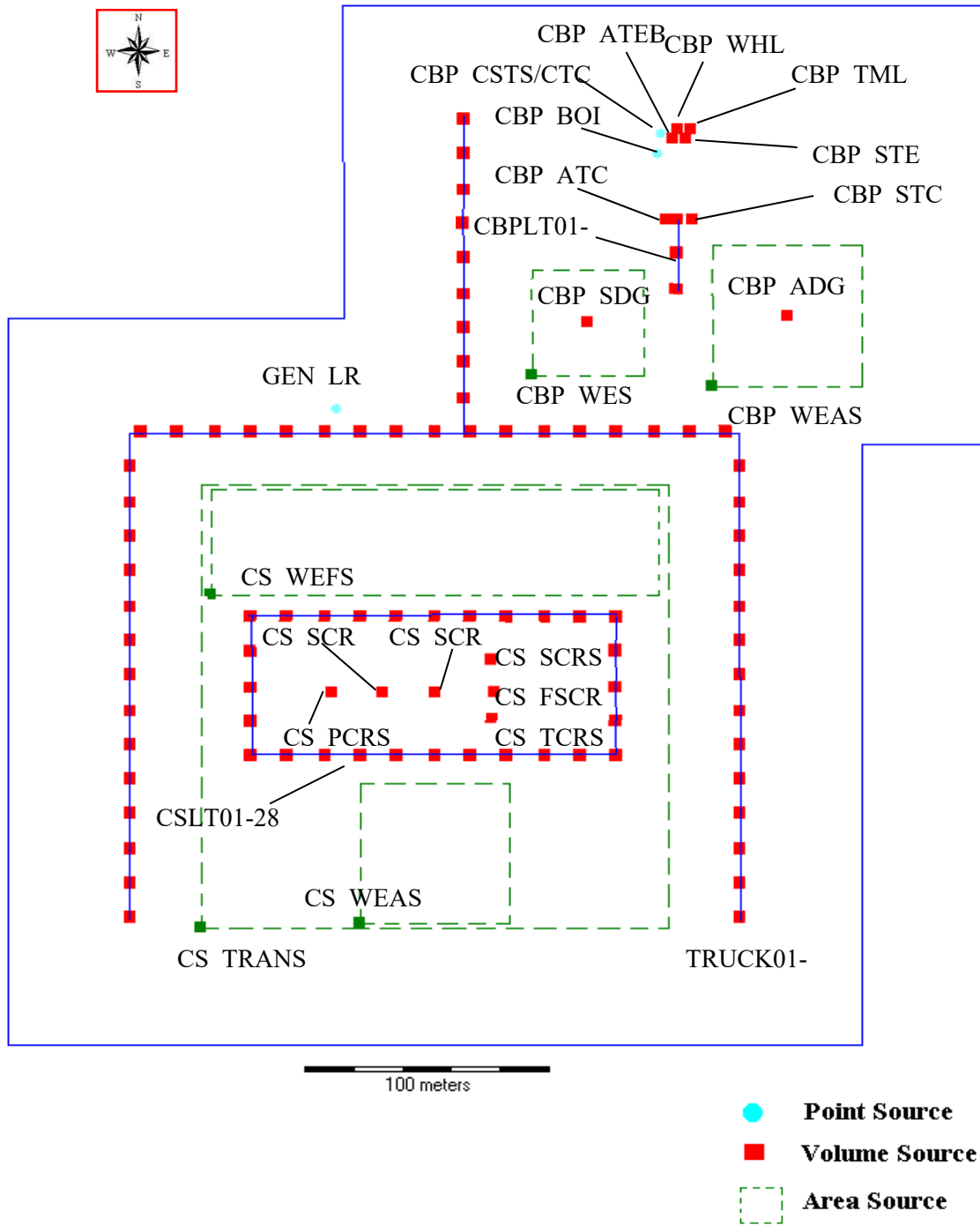


Table 10 Modeling Source Parameters for Crushing and Screening Plant

Area Source					
<i>Source ID</i>	<i>Source Description</i>	<i>Release Height (m)</i>	<i>X-Length (m)</i>	<i>Y-Length (m)</i>	<i>Angel (degree)</i>
CS_WEAS	Aggregate Storage Pile	1.83	60.96	60.96	0.00
CS_WEFS	Fines Storage Pile	1.83	182.88	45.72	0.00
CS_TRANS	Transfer Points	1.52	192.02	192.02	0.00
Volume Sources					
<i>Source ID</i>	<i>Source Description</i>	<i>Release Height (m)</i>	<i>Initial Horizontal Dimensions (m)</i>	<i>Initial Vertical Dimensions (m)</i>	
CS_PCRSH	Primary Crusher-Jaw	5.18	0.43	2.41	
CS_SCR1	Screen #1	7.62	0.85	3.54	
CS_SCR2	Screen #2	7.62	0.85	3.54	
CS_FSCR	Fine Screen	7.62	0.85	3.54	
CS_SCRSH	Secondary Crusher -	7.62	0.37	3.54	
CS_TCRSH	Tertiary Crusher	6.10	0.27	2.83	
CSLT01-28	C&S Loader Traffic	3.00	7.00	2.80	

Table 11 Modeling Source Parameters for Concrete Batch Plant

Point Sources					
<i>Source ID</i>	<i>Source Description</i>	<i>Release Height (m)</i>	<i>Stack Temperature (K)</i>	<i>Stack Velocity (m/s)</i>	<i>Stack Diameter (m)</i>
CBP_CSTS	Cement Supplement Transfer to Cement Silo	12.20	Ambient Temperature	4.00	0.32
CBP_CTCS	Cement Transfer to Cement Silo	12.20	Ambient Temperature	4.00	0.32
CBP_BOIL	Boiler	12.19	533.00	7.62	0.30
Area Sources					
<i>Source ID</i>	<i>Source Description</i>	<i>Release Height (m)</i>	<i>X-length</i>	<i>Y-length</i>	<i>Angel (degree)</i>
CBP_WEAS	Aggregate Storage Pile	1.83	60.96	60.96	0.00
CBP_WESS	Sand Storage Pile	1.83	45.72	45.72	0.00
Volume Sources					
<i>Source ID</i>	<i>Source Description</i>	<i>Release Height (m)</i>	<i>Initial Horizontal Dimensions (m)</i>	<i>Initial Vertical Dimensions (m)</i>	
CBP_ADGS	Aggregate Delivery to Ground Storage	6.17	1.60	2.20	
CBP_SDGS	Sand Delivery to Ground Storage	6.17	1.60	2.20	
CBP_ATC	Aggregate Transfer to Conveyor	3.51	0.85	0.43	
CBP_STC	Sand Transfer to Conveyor	3.51	0.85	0.43	
CBP_ATEB	Aggregate Transfer to Elevation Bins	8.08	0.71	0.43	
CBP_STEB	Sand Transfer to Elevation Bins	8.08	0.71	0.43	
CBP_WHL	Weigh Hopper Loading	4.72	0.85	0.14	
CBP_TML	Truck Mix Loading (controlled)	3.05	0.25	0.50	
CBPLT01-03	CBP Loader Traffic	3.00	7.00	2.80	

Table 12 Modeling Source Parameters for Other Sources

Point Sources					
<i>Source ID</i>	<i>Source Description</i>	<i>Release Height (m)</i>	<i>Stack Temperature (K)</i>	<i>Stack Velocity (m/s)</i>	<i>Stack Diameter (m)</i>
GEN_LAR	Generator >= 600 hp	5.00	750	75	0.22
Volume Sources					
<i>Source ID</i>	<i>Source Description</i>	<i>Release Height (m)</i>	<i>Initial Horizontal Dimensions (m)</i>	<i>Initial Vertical Dimensions (m)</i>	
TRUCK01-54	Truck Traffic	3.00	7.00	2.80	

E. Meteorological Data

The Department obtained meteorological data from the ASOS network. The ASOS station can utilize AERMINUTE to significantly reduce calm or missing hours, which is critical for modeling short-term standards. As shown in Table 8, nine meteorological data sets were used to represent the meteorological conditions for PM₁₀ attainment areas and three meteorological data sets for PM₁₀ NAA, respectively. Data are available for the five-year period of 2016 to 2020.

The Department processed the meteorological data using AERMET version 21112 and AERMINUTE version 15272 and AERSURFACE version 20060. Based on EPA's recommendations, a minimum wind speed threshold of 0.5 m/s was used to treat winds below the threshold as calms. Additionally, the Department has incorporated the ADJ_U* option in the meteorological data processing.

It should be addressed that the EPA overhauled the AERSURFACE tool. The previous version (13016) was limited to the use of the 1992 National Land Cover Database (NLCD) while the new version (20060) has the ability to process more recent NLCD products, including 2001, 2006, 2011, and 2016 land cover data. These updates to AERSURFACE may significantly influence the estimated surface characteristics parameters and thus modeled concentrations. Compared to the version 13016, as the Department found, the 20060 version may yield a lower surface roughness, resulting in a higher modeled concentration for the C&S GP modeling.

F. Receptor Grid

Receptors were spaced 25 meters along ambient air boundary (AAB) and 50 meters from AAB to 500 meters. Since the emission sources modeled are mainly ground level sources, the receptor network beginning at AAB and extending outward to one kilometer (km) is sufficiently large to identify the maximum impacts.

Table 13 Meteorological Data Sets used for AERMOD Modeling Analysis

Data Name	Surface Data	Upper Air Data	Data Period	County	For PM ₁₀ attainment areas or non-attainment areas?
Blythe, California	Blythe Airport	Las Vegas (KVEF)	01/01/2016-12/31/2020	La Paz ³	Attainment
Flagstaff	Flagstaff Pulliam Airport	Flagstaff (KFGZ)	01/01/2016-12/31/2020	Coconino	Attainment
Kingman	Kingman Airport	Las Vegas (KVEF)	01/01/2016-12/31/2020	Mohave	Attainment
Nogales	Nogales International Airport	Tucson (KTUS)	01/01/2016-12/31/2020	Santa Cruz	Non-attainment
Tucson	Tucson International Airport	Tucson (KTUS)	01/01/2016-12/31/2020	Pima	Attainment
Page	Page Municipal Airport	Flagstaff (KFGZ)	01/01/2016-12/31/2020	Coconino	Attainment
Phoenix	Phoenix Sky Harbor International Airport	Tucson (KTUS)	01/01/2016-12/31/2020	Maricopa	Non-attainment
Prescott	Prescott Municipal Airport	Flagstaff (KFGZ)	01/01/2016-12/31/2020	Yavapai	Attainment
Safford	Safford Regional Airport	Tucson (KTUS)	01/01/2016-12/31/2020	Graham	Attainment
St Johns	St. Johns Industrial Air Park	Albuquerque (KABQ)	01/01/2016-12/31/2020	Apache	Attainment
Winslow	Winslow-Lindbergh Regional Airport	Albuquerque (KABQ)	01/01/2016-12/31/2020	Navajo	Attainment
Yuma	Yuma Marine Corps Air Station	Tucson (KTUS)	01/01/2016-12/31/2020	Yuma	Non-attainment

G. Background Concentrations

1. Background Concentration for PM₁₀

In the previous modeling for the C&S GP, the Department estimated the background concentrations for 24-hour average PM₁₀ based on language in Paragraph 8.2.2(b) of 40 CFR Part 51 Appendix W (November 2005). Specifically, the Department determined the meteorological conditions accompanying the concentration of concern (wind over 15 miles per hour, sustained for 3 or more hours) and averaged all 24-hour average PM₁₀ concentrations over the course of the last 3 years for days that were over that wind speed. Based on this approach, the background concentration that used for modeling in PM₁₀ NAA was 58 micrograms per cubic meter (µg/m³). For PM₁₀ attainment areas the concentration was 26 µg/m³. Using these concentrations allowed facilities covered under the C&S GP to operate statewide, including in Maricopa County.

On January 17, 2017, EPA published a final rule that revises 40 CFR Part 51 Appendix W. The final rule removed the language of averaging concentrations for meteorological conditions of concern when determining the background concentrations for shorter averaging periods. Instead, the final rule recommends the use of the current design value for the applicable NAAQS as the best starting point. Therefore, the Department re-examined the background concentrations for 24-hour PM₁₀ to ensure that the

³ Due to the proximity, the Blythe Airport data are used to represent the meteorological conditions in La Paz County.

background determinations for the C&S GP modeling are consistent with Federal regulation.

a. Overview of PM₁₀ Background Concentrations in Arizona

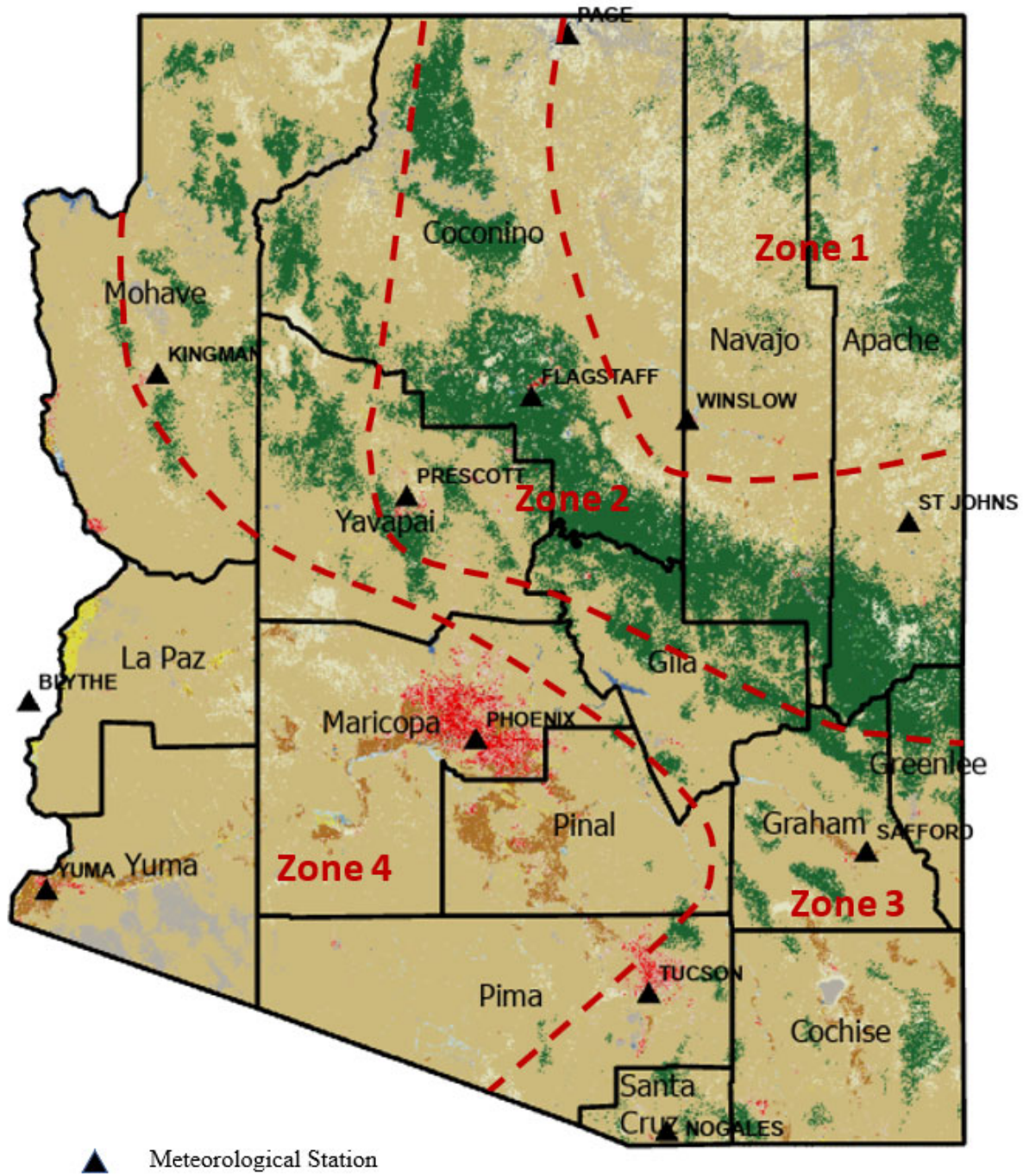
In Arizona, the PM₁₀ monitoring data are strongly influenced by the climate, elevation and precipitation of the area where a monitoring station is located. Arizona has varied topographical areas and climate zones (Figure 3):

- Zone 1: A high plateau in the northeast, with elevations averaging between 5,000 and 7,000 feet above mean sea level. The plateau country receives approximately 10 inches of precipitation annually. Since vegetation on the plateau consists of sagebrush and native grasses, grazing is the primary land use. Higher ridges here are covered with junipers and pinon trees.
- Zone 2: A high mountainous region oriented southeast to northwest with maximum elevations between 9,000 and 12,000 feet. This region of the state averages between 25 and 30 inches of precipitation (rain plus snow water equivalence) annually. Within this region lies an unbroken stand of Ponderosa Pine.
- Zone 3: Low mountain ranges that form a transition zone between the high mountainous region and desert valleys in the southwestern portion of the state.
- Zone 4: Desert valleys in the southwestern portion of the state, with elevations as low as 100 feet above mean sea level. These desert valleys are an extension of the Sonoran Desert of Mexico. Annual precipitation is as low as three or four inches per year.

In general, Zone 2 has the lowest PM₁₀ background concentration in Arizona, mainly due to high precipitation and heavy vegetation. On the contrary, Zone 4 has the highest background concentrations because of its desert nature. Indeed, many PM₁₀ NAA in Arizona (Phoenix, West Pinal, Rillito and Yuma) are within Zone 4. The PM₁₀ background concentrations in the transition Zone 3 are usually higher than those of Zone 2 but lower than those of Zone 4. Due to the lack of monitoring data, the background concentration for Zone 1 cannot be evaluated. However, the majority of Zone 1 are in tribal lands where the state GPs do not apply.

It should be addressed that an individual monitor is also strongly influenced by the degree of localized emissions of coarse particles. Therefore, even under the same climate zone, the monitoring concentrations from different monitors may vary significantly. Additionally, some areas such as Nogales and Yuma are impacted by international/interstate transport of emissions.

Figure 4 Arizona Climatological Zones



Zone 1: northeast high plateau

Zone 2: high mountains

Zone 3: low mountains and transition zone

Zone 4: southwest desert

b. PM₁₀ NAA

The Department’s analysis focused on Maricopa County as it is the most concentrated area for the C&S GPs, and also has been extensively monitored for PM₁₀. The Department selected a time period of 2017-2019 to estimate the PM₁₀ background concentration. The 2020 data were not used because the lockdowns during 2020 pandemic may result in a biased estimate of air quality.

The Department used the following procedures to estimate the background concentration for Maricopa County:

- Obtained daily concentrations data for Years 2017, 2018 and 2019 from the EPA website: <https://www.epa.gov/outdoor-air-quality-data>;
- Calculated the 24-hour average monitoring concentration for each day by averaging the daily concentrations for 21 monitoring stations across Maricopa County;
- Removed the 24-hour average concentrations for days associated with unusual events or atypical conditions. Due to the arid nature of the state, Arizona is susceptible to both windblown dust events and smoke events from forest fire, both of which may qualify as unusual events or atypical conditions. Air quality monitoring data due to unusual events or atypical conditions must be excluded for the background determinations. The Department has identified the following unusual or atypical days:

Year 2017: 9/7/2017, 10/21/2017;
 Year 2018: 1/9/2018, 4/12/2018, 4/19/2018, 7/8/2018, 7/9/2018, 7/21/2018, 7/30/2018, 8/2/2018, 8/7/2018, 8/8/2018;
 Year 2019: None.

- Selected the 2nd highest daily concentration for each year and then calculated the average concentration of the three years.

The calculated 24-hour average concentration was 86.5 µg/m³. The Department rounded it up to 90 µg/m³, which was used as the background concentration for PM₁₀ NAA for the GP modeling purposes.

c. PM₁₀ Attainment/Maintenance Areas

As previously discussed, the PM₁₀ monitoring concentrations may vary significantly from one region to another. Upon reviewing the PM₁₀ monitoring data across the state, the Department determined that the Pima County monitoring data generally provide a reasonable estimation of the background concentrations for PM₁₀ attainment/maintenance areas except two regions:

- Mohave Valley region; and
- High mountainous region in Coconino County and Yavapai County.

In general, the use of the Pima County monitoring data would underestimate the background concentrations for Mohave Valley region while overestimating the background concentrations in the high mountainous region

(such as Flagstaff and Prescott Valley) in Coconino County and Yavapai County.

Mohave Valley Region

The Mohave Valley region is located in climate Zone 4 and has experienced elevated PM₁₀ concentrations. Historically the Bullhead City, Arizona area was designated as a moderate PM₁₀ nonattainment area, and now the area is a PM₁₀ maintenance area. The PM₁₀ monitoring data collected at the Bullhead City monitoring site between 2017 and 2019 indicate that the average of the 2nd highest 24-hour concentrations over three years was 88 µg/m³. Therefore, the Department used a background concentration of 88 µg/m³ coupled with the Kingman Airport meteorological data to model the GPs in Mohave County.

High Mountainous Region in Coconino County and Yavapai County

The PM₁₀ background concentrations in this region are relatively low as they are located in Zone 2. Currently there is no state operated monitor within this region. The Department reviewed the historical monitoring data (2011-2013) collected from the Prescott Valley PM₁₀ monitor and the Flagstaff PM₁₀ monitor. While both monitors were deactivated, it is expected that these historical data may still represent the current air quality in Prescott Valley and Flagstaff. The average of the 2nd highest 24-hour concentrations over three years was 29 µg/m³ for Prescott Valley and 33 µg/m³ for Flagstaff, respectively. Considering these data were not current, the Department used a background concentration of 40 µg/m³ for this region with a sufficient safety margin.

Pima County and Remaining Areas

There are 9 active monitoring stations in Pima County. Since the Rillito monitor is located within the Rillito PM₁₀ NAA, the Department focused on the monitoring data collected from the other 8 monitoring stations during 2017-2019. The Department calculated the 24-hour average monitoring concentration for each day by averaging the daily concentrations for these stations. The average of the 2nd highest 24-hour concentrations over three years was 59.3 µg/m³. Therefore, the Department used a background concentration of 60 µg/m³ for Pima County and remaining areas.

Table 14 summarizes the PM₁₀ background concentrations used in the GP modeling analysis.

Table 14 PM₁₀ Background Concentrations Used in the GP Modeling Analysis

Regions		PM ₁₀ Background Concentration (µg/m ³)	Notes
PM ₁₀ NAA		90	2017-2019 data from Maricopa County
PM ₁₀ Attainment	Mohave Valley (Bullhead City)	88	2017-2019 data from Bullhead City

/Maintenance Areas	High Mountainous Region in Coconino County and Yavapai County (Flagstaff, Prescott Valley)	40	2011-2013 data from Flagstaff/Prescott Valley with sufficient safety margin
	Remaining Areas	60	2017-2019 data from Pima County

2. Background Concentration for PM_{2.5}

The spatial variations of PM_{2.5} are typically smaller compared to PM₁₀ because the long atmospheric residence time of fine particles allows long-range transport and leads to more uniform mass concentrations. Based on the 2017-2019 monitoring data, the Department classified the state into three different zones.

a. West Central Pinal PM_{2.5} NAA

A portion of the West Central Pinal PM_{2.5} NAA was banned from the previous C&S GP because the monitoring data collected from the Cowtown monitor showed significant violation for PM_{2.5} NAAQS, both annual and 24-hour standards. In 2016, Pinal County Air Quality Control District (PCAQCD) moved the Cowtown monitor to a new location (Hidden Valley) at Stanfield. The 2017-2019 data collected from the Hidden Valley monitor still show violation for both annual and 24-hour PM_{2.5}. Therefore, the Department is proposing to expand the prohibition area to the entire West Central PM_{2.5} NAA.

b. PM₁₀ NAA (Excluding the West Central Pinal PM_{2.5} NAA)

While the 2017-2019 monitoring data in these areas show the compliance with the NAAQS for PM_{2.5}, the PM_{2.5} concentrations in these areas are significantly higher than other areas in the state. The Department estimated the PM_{2.5} background concentration for these areas by averaging the monitoring concentrations obtained from all monitors in Maricopa County, the Casa Grande monitor in Pinal County, the Nogales monitor in Santa Cruz, and the Yuma monitor in Yuma County.

c. Remaining areas

For the remaining areas, the Department estimated the background concentrations for PM_{2.5} by averaging the monitoring concentrations obtained from the monitors in Pima County, Cochise County, and La Paz County.

Table 15 summarizes the PM_{2.5} background concentrations used in the GP modeling analysis.

Table 15 PM_{2.5} Background Concentrations Used in the GP Modeling Analysis

Areas	Averaging Period	Background Concentration (µg/m ³)	Source of Data	Note
West Central Pinal PM _{2.5} NAA	--	--	--	Prohibited
PM ₁₀ NAA (excluding the West Central Pinal PM _{2.5} NAA)	24-hour	21	https://www.epa.gov/ou-door-air-quality-data Monitors including: all monitors in Maricopa; Case Grande in Pinal County; Nogales in Santa Cruz County; and Yuma Supersite in Yuma County.	Average of the 98 th percentile 24-hour values over 2017-2019
	Annual	7.9		Average of the annual values over 2017-2019
Other Areas	24-hour	12	https://www.epa.gov/ou-door-air-quality-data Monitors including: Children's Park and Orange Grove in Pima County; Douglas in Cochise County; Alamo Lake in La Paz County.	Average of the 98 th percentile 24-hour values over 2017-2019
	Annual	5.4		Average of the annual values over 2017-2019

3. Background Concentration for NO₂
 - a. Background Concentration for One-Hour NO₂

There are very limited NO₂ monitoring sites in Arizona and nearly all monitoring sites are located in the Phoenix and Tucson metropolitan areas. To determine representative background concentrations for 1-hour NO₂, the modeling analysis has classified the state of Arizona into three areas: Phoenix metropolitan area; Tucson metropolitan area; and the remaining areas. Based on this classification, background concentrations were determined for the three areas separately.

The monitoring data collected from 6 monitors (Central Phoenix, JLG Supersite, West Phoenix, Diablo, Thirty-Third, Buckeye) during 2017-2019 were used to determine the background concentrations for Phoenix metropolitan area. The monitoring data collected from 2 monitors (Children's Park and 22nd & Craycroft) during 2017-2019 were used to determine the background concentrations for Tucson metropolitan area. The monitoring data collected from Deming, New Mexico were used for the background concentrations for the remaining areas, considering that the data should provide a representative or conservative estimate.

The modeling analysis used hour-of-day monitored background concentrations, which were determined as follows:

- For each of the three years under review, compiled all of the NO₂ concentrations by hour of day (1AM, 2AM, 3AM, etc) and calculated the 98 percentiles of NO₂ concentrations for each hour of the day;
- Calculated the background concentrations as the 3-year average of the 98 percentiles of concentrations for each hour of the day.

Table 16 provides the background concentrations for modeling 1-hour NO₂.

Table 16 One-Hour NO₂ Background Concentrations (µg/m³)

	Phoenix Metropolitan Area	Tucson Metropolitan Area	Remaining Areas
HOURL 1	78.1	47.8	34.6
HOURL 2	72.8	43.4	32.1
HOURL 3	67.9	39.3	31.5
HOURL 4	65.7	38.6	29.6
HOURL 5	64.7	40.3	32.1
HOURL 6	68.0	42.9	34.0
HOURL 7	69.2	48.5	36.5
HOURL 8	71.3	51.0	34.0
HOURL 9	73.8	46.8	29.0
HOURL 10	73.1	39.6	18.3
HOURL 11	68.6	34.5	8.8
HOURL 12	60.4	27.6	5.7
HOURL 13	54.9	21.1	5.0
HOURL 14	52.3	18.1	4.4
HOURL 15	49.8	17.5	4.4
HOURL 16	49.6	20.1	5.0
HOURL 17	54.7	29.4	5.7
HOURL 18	71.1	47.1	16.4
HOURL 19	85.9	58.7	36.5
HOURL 20	87.7	62.6	46.0
HOURL 21	88.3	62.8	46.6
HOURL 22	87.3	61.1	45.4
HOURL 23	86.1	57.3	42.8
HOURL 24	82.7	53.7	38.4

b. Background Concentration for Annual NO₂

The Department selected the JLG Supersite Monitor in Maricopa County for determining the state-wide background concentrations for annual NO₂, considering that the data should provide a representative or conservative estimate. The highest annual concentration of NO₂ during 2017-2019 was approximately 30 µg/m³.

H. NO₂ Modeling Methodology

1. One-Hour NO₂ Modeling

The Department employed the Plume Volume Molar Ratio Method (PVMRM) approach for modeling 1-hour NO₂:

- The in-stack ratios of NO₂/NO_x for a generator and a boiler were assumed to be 10%.
- Hourly background ozone concentrations from the JLG Supersite monitor were used across the State, considering that the Phoenix ozone data should provide conservative estimate for areas other than Phoenix metropolitan Area.
- Because urban heat island affects Phoenix all year-round, the urban dispersion option was used for modeling the Phoenix metropolitan areas. Considering part of the urban area that will contribute to the urban heat island plume affecting the sources, the Department determined a population of 3,000,000 for input to AERMOD. The rural dispersion option is used for other areas.

NO₂ background concentrations as listed in Table 16 were directly input to the model with the HROFDY option.

2. Annual NO₂ Modeling

The Department used the NO₂/NO_x ratio of 0.75 (annual national default) to estimate the annual ambient NO₂ concentrations. A background concentration of 30 µg/m³ was added to the modeled concentration.

I. MODELED RESULTS

1. C&S Collocated with CBP

Tables 17-19 summarize the modeled results for the co-location of a C&S (5,000 tpd for PM₁₀ attainment areas and 4,000 tpd for PM₁₀ NAA) and a CBP (1,275 yd³ per day for PM₁₀ attainment areas and 1,000 yd³ for PM₁₀ NAA). Representative background concentrations were added to modeled impacts and the total concentrations were then compared to the NAAQS. As shown in the tables, emissions from a C&S collocated with a CBP will not cause or contribute to a violation of the NAAQS.

The AERMOD modeling analysis also revealed that the modeled impacts from C&S plants were limited to near-field areas. All modeled maximum concentrations for all pollutants under varied meteorological conditions occurred in ambient area boundary.

Table 17 Modeled Results for PM_{2.5} for C&S Collocated with CBP

Meteorological data sets	Modeled concentration (µg/m ³)		Background concentration (µg/m ³)		Total concentration (µg/m ³)		NAAQS (µg/m ³)
	24-hour	Annual	24-hour	Annual	24-hour	Annual	
Blythe	4.7	2.1	12	5.4	16.7	7.5	24-hour: 35 Annual: 12
Flagstaff	10.2	3.7	12	5.4	22.2	9.1	
Kingman	5.3	2.4	12	5.4	17.3	7.8	
Page	7.9	3.6	12	5.4	19.9	9.0	
Prescott	11.7	5.5	12	5.4	23.7	10.9	
Safford	5.4	2.2	12	5.4	17.4	7.6	
St Johns	7.4	3.4	12	5.4	19.4	8.8	
Tucson	5.7	3.2	12	5.4	17.7	8.6	
Winslow	7.1	3.0	12	5.4	19.1	8.4	
Nogales	6.8	4.0	21	7.9	27.8	11.9	
Phoenix	5.2	2.4	21	7.9	26.2	10.3	
Yuma	5.7	2.0	21	7.9	26.7	9.9	

Table 18 Modeled Results for 24-hour PM₁₀ for C&S Collocated with CBP

Meteorological data sets	Modeled concentration (µg/m ³)	Background concentration (µg/m ³)	Total concentration (µg/m ³)	NAAQS (µg/m ³)
Blythe	48.3	60	108.3	150
Flagstaff	103.2	40	143.2	
Kingman	55.3	88	143.3	
Page	80.8	60	140.8	
Prescott	106.1	40	146.1	
Safford	54.0	60	114.0	
St Johns	75.9	60	135.9	
Tucson	54.3	60	114.3	
Winslow	71.6	60	131.6	
Nogales	59.8	90	149.8	
Phoenix	50.5	90	140.5	
Yuma	50.2	90	140.2	

Table 19 Modeled Results for NO₂ for C&S Collocated with CBP

Meteorologic al data sets	Modeled concentration		Background concentration (µg/m ³)		Total concentration		NAAQS (µg/m ³)
	1-hour ⁴	Annual	1-hour	Annual	1-hour	Annual	
Blythe	186	16.0	See Table	30	186	46.0	1-hour: 189 Annual: 100
Flagstaff	162	25.1	See Table	30	162	55.1	
Kingman	174	24.1	See Table	30	174	54.1	
Page	105	7.5	See Table	30	105	37.5	
Prescott	99	8.3	See Table	30	99	38.3	
Safford	167	26.6	See Table	30	167	56.6	
St Johns	162	20.6	See Table	30	162	50.6	
Tucson	141	9.0	See Table	30	141	39.0	
Winslow	161	18.5	See Table	30	161	48.5	
Nogales	125	11.3	See Table	30	125	41.3	
Phoenix	167	7.7	See Table	30	167	37.7	
Yuma	153	11.7	See Table	30	153	41.7	

2. Stand Alone C&S

Tables 15-17 summarize the modeled results for a C&S with a throughput of 5,000 tpd located in a PM₁₀ attainment areas and a C&S with a throughput of 4,000 tpd in a PM₁₀ non-attainment area. As shown in the tables, emissions from a C&S will not cause or contribute to a violation of the NAAQS.

The AERMOD modeling analysis also revealed that the modeled impacts from C&S plants were limited to near-field areas. All modeled maximum concentrations for all pollutants under varied meteorological conditions occurred in ambient area boundary.

⁴ Background concentrations have been included in the model runs. Therefore, the reported concentrations reflect the total concentrations of modeled concentrations plus background concentrations.

Table 20 Modeled Results for PM_{2.5} for Stand Alone C&S

Meteorological data sets	Modeled concentration (µg/m ³)		Background concentration (µg/m ³)		Total concentration (µg/m ³)		NAAQS (µg/m ³)
	24-hour	Annual	24-hour	Annual	24-hour	Annual	
Blythe	4.4	2.0	12	5.4	16.4	7.4	24-hour: 35 Annual: 12
Flagstaff	9.5	3.4	12	5.4	21.5	8.8	
Kingman	4.8	2.2	12	5.4	16.8	7.6	
Page	7.3	3.1	12	5.4	19.3	8.5	
Prescott	9.3	5.0	12	5.4	21.3	10.4	
Safford	5.1	2.0	12	5.4	17.1	7.4	
St Johns	7.4	3.9	12	5.4	19.4	9.3	
Tucson	5.3	2.8	12	5.4	17.3	8.2	
Winslow	6.2	2.7	12	5.4	18.2	8.1	
Nogales	6.1	2.8	21	7.9	26.1	10.7	
Phoenix	5.0	2.1	21	7.9	25.0	10.0	
Yuma	5.1	1.5	21	7.9	25.1	9.4	

 Table 21 Modeled Results for 24-hour PM₁₀ for Stand Alone C&S

Meteorological data sets	Modeled concentration (µg/m ³)	Background concentration (µg/m ³)	Total concentration (µg/m ³)	NAAQS (µg/m ³)
Blythe	44.3	60	104.3	150
Flagstaff	96.4	40	136.4	
Kingman	49.2	88	137.2	
Page	73.8	60	133.8	
Prescott	84.8	40	124.8	
Safford	50.2	60	110.2	
St Johns	69.0	60	129.0	
Tucson	50.8	60	110.8	
Winslow	64.6	60	124.6	
Nogales	57.8	90	147.8	
Phoenix	46.5	90	136.5	
Yuma	45.3	90	135.3	

Table 22 Modeled Results for NO₂ for Stand Alone C&S

Meteorologic al data sets	Modeled concentration		Background concentratio n (µg/m ³)		Total concentratio		NAAQS (µg/m ³)
	1-hour ⁵	Annual	1-hour	Annual	1-hour	Annual	
Blythe	180	15.5	See Table	30	180	45.5	1-hour: 189 Annual: 100
Flagstaff	156	23.7	See Table	30	156	53.7	
Kingman	164	22.3	See Table	30	164	52.3	
Page	108	6.8	See Table	30	108	36.8	
Prescott	102	8.0	See Table	30	102	38.0	
Safford	159	25.1	See Table	30	159	55.1	
St Johns	150	18.5	See Table	30	150	48.5	
Tucson	144	8.3	See Table	30	144	38.3	
Winslow	153	17.0	See Table	30	153	47.0	
Nogales	118	10.1	See Table	30	118	40.1	
Phoenix	161	7.1	See Table	30	161	37.1	
Yuma	148	11.0	See Table	30	148	41.0	

⁵ Background concentrations have been included in the model runs. Therefore, the reported concentrations reflect the total concentrations of modeled concentrations plus background concentrations.

IX. LIST OF ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AERMOD	AMS/EPA Regulatory Model
AERMET	AERMOD Meteorological Preprocessor
AMS	American Meteorological Society
AQD	Air Quality Division
AQRV	Air Quality Related Values
ARM	Ambient Ratio Method
A.R.S.	Arizona Revised Statutes
BACT	Best Available Control Technology
Btu/ft ³	British Thermal Units per Cubic Foot
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ e	CO ₂ equivalent basis
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FLM	Federal Land Manager
°F	degrees Fahrenheit
ft	Feet
g	Gram
GHG	Greenhouse Gases
HAP	Hazardous Air Pollutant
HHV	Higher Heating Value
hp	Horsepower
hr	Hour
IC	Internal Combustion
kW	Kilowatt
MW	Megawatts



NAAQS.....	National Ambient Air Quality Standard
NO _x	Nitrogen Oxides
NO ₂	Nitrogen Dioxide
N ₂ O	Nitrous Oxide
NSPS.....	New Source Performance Standards
O ₃	Ozone
Pb	Lead
PM.....	Particulate Matter
PM10.....	Particulate Matter less than 10 µm nominal aerodynamic diameter
PM2.5.....	Particulate Matter less than 2.5 µm nominal aerodynamic diameter
PSD	Prevention of Significant Deterioration
psia.....	Pounds per square Inch (absolute)
PTE	Potential to Emit
sec	Seconds
SF ₆	Sulfur Hexafluoride
SIA.....	Significant Impact Area
SIL	Significant Impact Level
SO ₂	Sulfur Dioxide Significant Impact Levels
TPY	Tons per Year
VOC.....	Volatile Organic Compound
yr.....	Year