State of Arizona Air Monitoring Network Plan

For the Year 2022

Arizona Department of Environmental Quality

Air Quality Division

Air Monitoring and Assessment Section

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Final

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INTRODUCTION

This document fulfills the obligation, under the Code of Federal Regulations (CFR), Title 40, § 58.10(a), requiring the Arizona Department of Environmental Quality (ADEQ) to complete and submit to the United States Environmental Protection Agency (EPA) Regional Administrator an annual monitoring network plan for the year 2021.

This plan informs EPA Region 9 of the monitoring activities ADEQ has implemented since July 2020, as well as activities ADEQ will undertake through December 2021. However, some changes may occur after the plan is published and approved due to unforeseen events at monitoring sites, funding changes, or changes in EPA monitoring requirements. Data from ADEQ's monitors are reported to EPA's Air Quality System (AQS) database and to EPA's public air quality information website, AirNow. In 40 CFR Part 51, EPA requires states to create, submit, and adopt State Implementation Plans (SIPs) to address the various issues and responsibilities involved with creating and implementing air quality programs. 40 CFR Part 51 Subpart J specifies that 40 CFR Part 58 Appendix C contains the requirements for establishing air quality surveillance systems to monitor ambient air quality.

Air quality surveillance systems consist of networks of monitors located at carefully selected physical locations referred to as sites or stations. The annual network review and planning are performed for the purpose of improving the monitoring networks and ensuring that they provide adequate, representative, and regulatory compliant air quality data. The results of this annual network review and planning are used to determine how well the networks are achieving their required air monitoring objectives, how well they meet data users' needs, and how they should be modified to continue meeting their objectives and data needs. Modifications can include the termination of existing stations, relocation of stations, establishment of new stations, monitoring of additional parameters, and/or changes to the sampling schedule.

Table 1.0-1 Network Names and Descriptions

Network Name	Network Description
NAAQS (National Ambient Air Quality Standards)	Compliance network or the State and Local Air Monitoring Stations Network (SLAMS) – measures the criteria pollutants for demonstrating compliance to their standards
State Implementation Plan (SIP) specific network	Tracks compliance in areas that are currently in nonattainment or in areas where on-going demonstration of maintenance is required
Source-Oriented network	Requires several major point sources in the state to conduct ambient monitoring for criteria pollutants as outlined in their permit
NCore (National core multipollutant monitoring stations) Network	A nationwide multipollutant network that integrates several advanced measurement systems for particulates, pollutant gases, and meteorology (MET)
Meteorological Network	Supports the analysis of ambient air quality data
Photochemical Assessment Monitoring Stations Network (PAMS)	Enhanced monitoring of ozone (O_3) to obtain comprehensive and representative O_3 and precursor data
National Air Toxics Trends Station (NATTS) Network	Monitors and records the concentrations of EPA-identified air toxics on a national scale
Chemical Speciation Network (CSN)	Monitor speciated $PM_{2.5}$ (particulate matter < 2.5 microns) to determine the particulate chemical composition on a national scale
The Interagency Monitoring of Protected Visual Environments (IMPROVE) Network	Tracks visual impairment in specified national parks and wilderness areas

Phoenix Urban Haze Network	Provides State and local policy-makers and the public with information regarding the urban haze levels
ADEQ's Smoke Management Network	Provides continuous, real-time particulate concentration data that is useful for making smoke management decisions related to prescribed burns and wildfire monitoring
Arizona / Mexico Border Network	Provides air quality monitoring data and air monitoring networks in rural and urban areas along the border

This Annual Air Monitoring Network Plan identifies the purpose(s) of each monitor and provides evidence that both the siting and the operation of each monitor meets the EPA requirements as follows:

- 40 CFR 50 – National Primary and Secondary Ambient Air Quality Standards
- 40 CFR 58 Appendix A – Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards
- 40 CFR 58 Appendix C – Ambient Air Quality Monitoring Methodology
- 40 CFR 58 Appendix D – Network Design Criteria for Ambient Air Quality Monitoring
- 40 CFR 58 Appendix E – Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring

1.1 Executive Summary

ADEQ continually strives to protect and enhance public health and the environment through ambient air quality monitoring. ADEQ supports or operates many different state and national networks which help improve air quality in Arizona and nationwide. ADEQ's main monitoring objective is to measure criteria pollutants regulated under the Clean Air Act (CAA) for compliance with the National Ambient Air Quality Standards (NAAQS).

ADEQ fulfills all the monitoring requirements as stated in 40 CFR Part 58, in any State or Local laws, and according to the EPA administrator with regards to data quality and assurance, minimum monitoring requirements for all networks, siting and sampling criteria, and annual data certification. Data Certification for 2021 was submitted on April 29, 2022. The data certification sections of AQS were also updated reflecting ADEQ's recommendations for certifying the data. Changes not outlined in this plan will be submitted to EPA Region 9 for approval. ADEQ may change plans according to new rules or direction from ADEQ management or the EPA Administrator, and will include these changes in the subsequent Annual Monitoring Network Plan.

Table 1.1-1 Appendix Titles and Description

Appendix	Title	Appendix Description
A	Definitions and Abbreviations	Definitions and abbreviations for this document
B	Network Maps	Maps of monitoring locations by network type
C	Current Monitors by Program or Network	Meta-data for each monitor showing detailed information about monitors operated by ADEQ or monitors that ADEQ has strong association with (e.g. IMPROVE monitors).
D	Site Information Data Tables	Meta-data for each monitoring location showing detailed information about sites that are fully or partially operated by ADEQ.
E	Letters to EPA	Letters to EPA Region 9 for waivers or network changes that occurred outside of the annual monitoring network plan.
F	ADEQ's Air Quality Monitoring Role in Arizona	A document that outlines the proposed responsibilities delineated to each monitoring agency in Arizona.
G	Annual SO2 Modeling Report	Annual report for areas that were modeled for SO2 designations.

1.2 MONITORING NETWORK EVALUATION

This section provides a summary of changes to ADEQ's monitoring networks completed since the 2019 Network Plan submission, as well as changes planned for July 2022 through December 2023.

1.2.1 Site Closures

None

1.2.2 New Sites Planned

None

1.2.3 Past Network Change

Table 1.2-1 Instrument Changes Made from July 2021 through June 2022

Site Name	Monitors	Date of Change	Description
Humboldt	PM_{10} SPM	January 14th, 2022 to January 31st, 2022	A special purpose monitor was placed at Humboldt while the smelter stack was demolished.
Phoenix Transmissometer Transmitter	Optec LVP-2 Transmissometer Transmitter (Bext)	January 2022	ADEQ removed the instrument from the Urban Haze network.
Phoenix Transmissometer Receiver	Optec LVP-2 Transmissometer Receiver (Bext)	January 2022	ADEQ removed the instrument from the Urban Haze network.
Tonopah	O_3, NO_2 and VOCs	April 2022	An AQS-1 instrument with O_3, NO_2 and VOCs was installed at the Burnt Well Rest Area EB for the Upwind & Higher Elevation Monitoring Project.
Spruce Mountain	O_3 and NO_2	May 2022	An AQS-1 instrument with O_3 and NO_2 was installed at Spruce Mountain for the Upwind & Higher Elevation Monitoring Project.

1.2.4 Planned Network Changes

Table 1.2-2 Instrument Changes Planned for July 2022 to December 2023

Site Name	Monitors	Planned Date of Change	Description
JLG	PM2.5	August 2022	Switching from a Thermo Partisol 2000i to a Thermo Partisol 2025i.
San Luis Rio Colorado Well 10	NOy and CO	Completed by 2023	ADEQ will install additional O_3 precursor analyzers to the site in San Luis, Mexico to better understand regional O_3 surrounding the Yuma planning area. The project currently does not have a set end date, as ADEQ would like it to remain indefinitely.
Alamo Lake, Yuma, JLG, Rillito, and the Nogales PO	PM Instrumentation	Completed by 2023	PM instruments with sub-hourly capacities will be installed at Alamo Lake, Yuma, JLG, Rillito, and the Nogales PO.

ADEQ PROGRAM AND NETWORK DESCRIPTIONS

ADEQ operates ambient air quality monitoring equipment for a variety of Federal and State monitoring programs (see figure 1 & 2). Detailed descriptions of the equipment deployed for each monitoring program are presented in Appendix C of this Network Plan. The equipment is grouped by monitoring program or network to easily compare instrument specifics. Appendix D of this Network Plan lists information on each of ADEQ's current monitoring sites, including those sites which ADEQ shares with other agencies or serves as the local site operator.

The minimum monitoring requirements for each pollutant are described in 40 CFR Part 58 Appendix D and are typically based on the population of urban areas. Current minimum monitoring requirements are only associated with Metropolitan Statistical Areas (MSAs), and there are no minimum monitoring requirements for Micropolitan Statistical Areas. Tables 2.0-1 and 2.0-2 outline metropolitan and micropolitan statistical areas in Arizona as identified by the U.S. Census Bureau.

Table 2.0-1 Metropolitan Statistical Areas (2020 Population Estimate)

Metropolitan Statistical Area	County	Population
Flagstaff	Coconino	145,101
Lake Havasu City – Kingman	Mohave	213,267
Phoenix – Mesa – Chandler	Maricopa & Pinal	4,845,832
Prescott Valley – Prescott	Yavapai	236,209
Sierra Vista – Douglas	Cochise	125,447
Tucson	Pima	1,043,433
Yuma	Yuma	203,881

Table 2.0-2 Micropolitan Statistical Areas (2020 Population Estimate)

Micropolitan Statistical Area	County	Population
Nogales	Santa Cruz	47,669
Payson	Gila	53,272
Safford	Graham	38,533
Show Low	Navajo	106,717

Figure 1 An overview of the networks that are operated by ADEQ

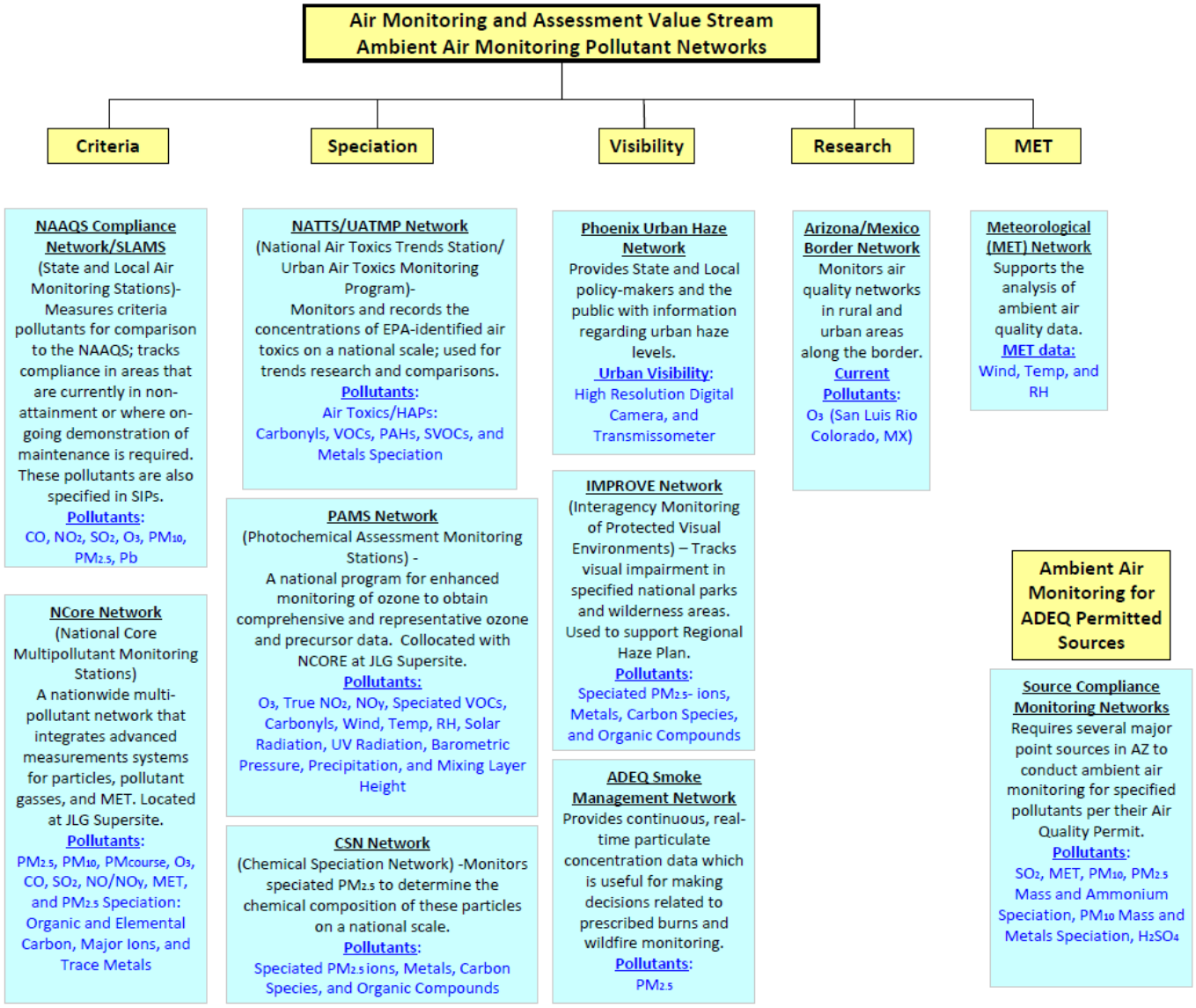


Figure 2 Air Monitoring Instrumentation Operating by Site in 2021

SITE NAME	AQS Site ID	COUNTY	CO	NO2	SO2	O3	PM10	PM2.5	Pb	EBAM	URBHAZE/ Visibility	IMPROVE	WS/WD	Temp/RH	UV Rad	Solar Rad	Precip	Baro Press	VOC/SVOC	Mixing Layer Height	PM Speciation	Active Parameters
ADEQ Building	None	MARICOPA									1											1
Ajo	04-019-0001	PIMA					1						1	1								3
Alamo Lake	04-012-8000	LA PAZ				1	1	1					1	1								5
Banner Mesa Medical Center	None	MARICOPA									1											1
Bullhead City	04-015-1003	MOHAVE					1															1
Douglas Red Cross	04-003-1005	COCHISE					1	1					1	1								4
Estrella Mountain Community College	None	MARICOPA									1											1
Flagstaff Middle School	04-005-1008	COCONINO				1				1												2
Globe Highway	04-007-1002	GILA							1				1	1								3
Hayden Old Jail	04-007-1001	GILA			1		1						1	1								4
Hillcrest	04-007-1003	GILA							2													2
JLG Supersite	04-013-9997	MARICOPA	1	1	1	1	1	2			1	2	1	1	1	1	1	1	3	1	3	23
Miami Golf Course	04-007-8000	GILA					1		1				1	1								4
Miami Jones Ranch	04-007-0011	GILA			1																	1
Miami Town Site	04-007-0012	GILA			1																	1
Nogales Mexico ITN	80-02-6006	SENORA					1	1					1	1			1	1				6
Nogales Post Office	04-023-0004	SANTA CRUZ					1	2				1	1	1								6
Nogales World Radio Network Inc.	None	SANTA CRUZ									1											1
North Mountain Summit	None	MARICOPA									2											2
Organ Pipe National Monument	04-019-0005	PIMA										1										1
Paul Spur Chemical Lime Plant	04-003-0011	COCHISE					1						1	1								3
Payson Well Site	04-007-0008	GILA					1			1			1	1								4
Phoenix Transmissometer Receiver	None	MARICOPA									1											1
Phoenix Transmissometer Transmitter	None	MARICOPA									1											1
Prescott Pioneer Park	04-025-8034	YAVAPAI				1				1												2
Queen Valley	04-021-8001	PINAL				1							1	1								3
Rillito	04-019-0020	PIMA					1						1	1								3
Saguaro National Park West	04-019-9000	PIMA										1										1
San Luis Rio Colorado Well 10	80-026-8012	SENORA				1							1	1								3
Sedona Fire Station	None	COCONINO								1												1
Show Low	None	NAVAJO								1												1
South Phoenix	04-013-4003	MARICOPA																	1			1
Tonto NM	04-007-0010	GILA				1						1										2
Verde Ranger Station	None	YAVAPAI								1												1
Yuma Mountain Camera	None	YUMA									1											1
Yuma Supersite	04-027-8011	YUMA				1	1	1					1	1								5
Active Parameters			1	1	4	8	13	8	4	6	10	6	15	15	1	1	2	2	4	1	3	105

Total # of Criteria Pollutant Monitors	39
Total # of Active Parameters	105
Total # of Active Sites	36

2.1 NAAQS Compliance Network

ADEQ's National Ambient Air Quality Standards (NAAQS) compliance network, also called State and Local Air Monitoring Stations (SLAMS), consists of monitoring sites operated for the purpose of demonstrating compliance with the NAAQS for the criteria pollutants carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). For each of these pollutants, EPA has established national air quality standards to protect public health (see figure 2.1-1). The criteria pollutants are measured using instruments designated by EPA as Federal Reference Methods (FRM) or Federal Equivalent Methods (FEM). 40 CFR Part 58 specifies the minimum requirements for determining NAAQS compliance, including the following network and site criteria:

- Number and types of monitors required per Metropolitan Statistical Area (MSA) by pollutant
- Objectives and spatial scales
- Sampling frequency
- Collocation
- Special NCore-related requirements
- Meteorology
- Probe location and other restrictions within a site
- Periodic performance evaluations (PE)
- Quality Assurance
- Data reporting

Table 2.1-1 Current NAAQS (Source: USEPA TTN NAAQS)

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		Primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month average	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide (NO_2)		Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb	Annual Mean
Ozone (O_3)		primary and secondary	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	**$PM_{2.5}$**	Primary	Annual	12 µg/m^3	annual mean, averaged over 3 years
		Secondary	Annual	15 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

2.1.1 $PM_{2.5}$ Monitoring Network Requirements

ADEQ currently operates EPA-approved FEM monitors at four $PM_{2.5}$ monitoring sites. One was deployed to the Alamo Lake site and designated as the $PM_{2.5}$ monitoring network's Background site. Yuma Supersite is designated as the required $PM_{2.5}$ Transport site. The other two sites are to meet minimum monitoring requirements. The annual primary $PM_{2.5}$ NAAQS of 12.0 µg/m^3 and 24-hour primary $PM_{2.5}$ NAAQS of 35.0 µg/m^3 was met in 2020 by all four sites operated by ADEQ.

Six non-FEM continuous $PM_{2.5}$ monitors are also in operation throughout the state, most of which are associated with the Smoke Management E-BAM network. See Section 2.11 for additional details regarding the E-BAM network.

The number of $PM_{2.5}$ samplers required in urban areas is based on population and design values. Maricopa, Pinal, Pima Counties, and the tribes in Arizona have delegated authority for their monitoring networks and AQS

reporting. ADEQ's $PM_{2.5}$ monitoring network includes the MSAs and nonattainment areas in all other Arizona counties.

Table 2.1-2 Minimum Number of $PM_{2.5}$ Monitors Required (40 CFR Part 58 Appendix D)

Population (MSA)	Most Recent 3-Yr Design Value ≥ 85% of any $PM_{2.5}$ NAAQS *	Most Recent 3-Yr Design Value <85% any $PM_{2.5}$ NAAQS * or no Design Value Available
>1,000,000	3 monitors	2 monitors
500,000 – <1,000,000	2 monitors	1 monitor
50,000 – <500,000	1 monitor	0 monitors

Table 2.1-3 ADEQ Responsible Minimum Monitoring Requirements for $PM_{2.5}$ SLAMS

(FRM/FEM/ARM, see 40 CFR Part 58 App D Section 4.7.1 and Table D-5)

MSA	County	2020 Census Population Estimates	2019-2021 $PM_{2.5}$ Annual Design Value (µg/m³)	Annual Design Value Site	2019-2021 Daily Design Value (µg/m³)	Daily Design Value Site	# of Required Monitors	# of Required Continuous Monitors	# of Active Continuous Monitors	# of Additional Monitors Needed
Flagstaff	Coconino	145,101	N/A	N/A	N/A	N/A	0	0	1*	0
Prescott Valley-Prescott	Yavapai	236,209	N/A	N/A	N/A	N/A	0	0	1*	0
Yuma	Yuma	203,881	8.8	Yuma Supersite	19	Yuma Supersite	0	0	1	0
Lake Havasu-Kingman	Mohave	213,267	N/A	N/A	N/A	N/A	0	0	0	0
Sierra Vista – Douglas	Cochise	125,447	N/A	Douglas Red Cross	N/A	Douglas Red Cross	0	0	1	0

* Continuous monitors are not FRMs, FEMs, or ARMs

Monitors required for SIP or Maintenance Plan: Nogales Post Office.

Table 2.1-4 $PM_{2.5}$ Design Values and Sampling Frequencies at ADEQ Sites

AQS Site ID	Site Name	2019-2021 24-Hour Design Value (µg/m³)	2019-2021 Annual Design Value (µg/m³)	Sample Frequency
04-012-8000	Alamo Lake[1]	9	3.8	Continuous
04-013-9997	JLG Supersite	21	8.6	Continuous
04-023-0004	Nogales Post Office	29	10.0	Continuous
04-027-8011	Yuma Supersite[2]	19	8.8	Continuous

[1] Alamo Lake is designated as the Background site for the $PM_{2.5}$ Network

[2] Yuma Supersite is designated as the Transport site in the $PM_{2.5}$ Network

2.1.2 $PM_{2.5}$ Collocation Requirements

The ADEQ $PM_{2.5}$ network is required to have collocated monitoring at one site. The Nogales Post Office site has the highest $PM_{2.5}$ design value in ADEQ's $PM_{2.5}$ network and is therefore a $PM_{2.5}$ collocated site.

Additionally, ADEQ collocates $PM_{2.5}$ instruments at the JLG Supersite for NCore requirements.

Table 2.1-5 $PM_{2.5}$ FRM/FEM Collocation Details

Method Code (Instrument Type)	# of Sites	# of Primary Monitors	# of Required Collocated Monitors	# of Active Collocated Monitors
143 (Partisol 2000i)	2	0	0	0
170 (Met One BAM 1020)	4	5	1	2

2.1.3 Relocating Any Violating $PM_{2.5}$ Monitors

ADEQ does not have any violating $PM_{2.5}$ monitors that are being considered for relocation as described in 40 CFR Part 58.10 (c). It requires the annual monitoring network plan to document how state and local agencies provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor. The analysis includes a description of the proposed use of spatial averaging for purposes of making comparisons to the annual $PM_{2.5}$ NAAQS as set forth in Appendix N to CFR Part 50. The affected agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan. ADEQ does not intend to establish community monitoring zones as described in the rule or utilize spatial averaging for comparison to the $PM_{2.5}$ NAAQS. A public comment procedure is required prior to relocation of a violating monitor and ADEQ will utilize the following procedure:

1. Evaluation of the potential replacement site will include review and comparison of available pollutant data, meteorology, climatology, terrain, and siting characteristics.
2. Make notice of such a change in the annual monitoring network plan.
3. If the change must be accomplished prior to annual monitoring network plan submittal, ADEQ will make appropriate notice via the agency Web page and invite participation from the public prior to relocation.
4. Relocation of the monitor.

2.1.4 PM_{10} Monitoring Network Requirements

ADEQ operates a network of twelve PM_{10} monitors throughout Arizona. The 24-hour primary PM_{10} NAAQS of 150 $\mu g/m^3$ has been exceeded at Rillito and Yuma Supersite in the 2019 to 2021 time period.

The number of PM_{10} monitors required in urban areas is based on the population of the area and design values. Maricopa, Pinal, and Pima Counties have delegated authority for their monitoring networks and AQS reporting. ADEQ's PM_{10} monitoring network includes the MSAs in all other Arizona counties, as well as nonattainment areas in those counties.

Table 2.1-6 Minimum Number of PM_{10} Monitors Required (40 CFR Part 58 Appendix D)

MSA Population	High Concentration Exceeds 24-Hour NAAQS by 20% or more (>180µg/m³)	Medium Concentration Exceeds 80% of 24-Hour NAAQS (>120µg/m³)	Low Concentration Less than 80% of 24-Hour NAAQS (<120 µg/m³) or no Design Value Available
>1,000,000	6-10 monitors	4-8 monitors	2-4 monitors
500,000 – <1,000,000	4-8 monitors	2-4 monitors	1-2 monitors
250,000 – <500,000	3-4 monitors	1-2 monitors	0-1 monitors
100,000 – <250,000	1-2 monitors	0-1 monitors	0 monitors

Table 2.1-7 ADEQ Responsible Minimum Monitoring Requirements for PM_{10}

MSA	County	2020 Census Population Estimates	2021 PM_{10} Max Concentration [µg/m³]	Max Concentration Site	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
Flagstaff	Coconino	145,101	N/A	N/A	0	0	0
Prescott Valley-Prescott	Yavapai	236,209	N/A	N/A	0	0	0
Yuma	Yuma	203,881	294	Yuma Supersite	1-2	1	0
Lake Havasu-Kingman	Mohave	213,267	265	Bullhead City	0	1	0
Sierra Vista - Douglas	Cochise	125,447	107	Douglas Red Cross	1-2	2	0

Monitors required for SIP or Maintenance Plan: Bullhead City, Douglas Red Cross, Hayden Old Jail, JLG Supersite, Miami Golf Course, Nogales Post Office, Paul Spur Chemical Lime Plant, Payson Well Site, Rillito, and Yuma Supersite.

Table 2.1-8 PM_{10} Design Values (Estimated Exceedances) and Annual Means for ADEQ Sites

AQS Site ID	Site Name	2019-2021 Average Estimated Days PM_{10}>150 µg/m³ Excluding Concurred Events	2021 Annual Mean Concentration (µg/m³)
04-003-0011	Paul Spur Chemical Lime Plant	0.3	21.3
04-003-1005	Douglas Red Cross	0	31.9
04-007-0008	Payson Well Site	0	18.4
04-007-1001	Hayden Old Jail	1	21.2
04-007-8000	Miami Golf Course[1]	0.4	25.0
04-012-8000	Alamo Lake[2]	0.7	14.9
04-013-9997	JLG Supersite	0	30.2
04-015-1003	Bullhead City	0.7	22.0
04-019-0001	Ajo	0	19.6
04-019-0020	Rillito	**6.1**	51.7
04-023-0004	Nogales Post Office	0	44.7
04-027-8011	Yuma Supersite	**2.7**	40.1

[1] Design value does not meet validity criteria due to not meeting annual data completeness requirements in 2019.
[2] Design value does not meet validity criteria due to not meeting annual data completeness requirements in 2021.
Bold denotes exceedances and sites in violation of the 2012 NAAQS of 150 µg/m³.

2.1.5 PM_{10} Collocation Requirements

There are no collocation requirements for EPA-approved PM_{10} FEM monitors.

Table 2.1-9 PM_{10} FRM/FEM Collocation Details

Method Code	# of Sites	# of Primary Monitors	# of Required Collocated Monitors	# of Active Collocated Monitors
122 (BAM)	12	12	0	0

2.1.6 O_3 Monitoring Network Requirements

ADEQ operates a network of seven O_3 monitors throughout Arizona, and one in San Luis, Mexico. Tonto National Monument, JLG Supersite, and Queen Valley are sites in violation of the current 0.070 ppm O_3 NAAQS.

The minimum monitoring requirements for O_3 are based on population of the area and design values. Maricopa, Pinal, and Pima Counties have delegated authority for their monitoring networks and AQS reporting. ADEQ's O_3 monitoring network includes the MSAs and other areas in all other Arizona counties.

Table 2.1-10 Minimum Number of O_3 Monitors Required (40 CFR Part 58 Appendix D)

Population (MSA)	Most recent 3 year 8-hour Design Value ≥ 85% of NAAQS (0.0595 ppm)	Most recent 3 year 8-hour Design Value <85% NAAQS (0.0595 ppm) or no Design Value available
>10 Million	4 monitors	2 monitors
4 – <10 Million	3 monitors	1 monitor
350,000 – <4 Million	2 monitors	1 monitor
50,000 – <350,000	1 monitor	0 monitors

Table 2.1-11 ADEQ Responsible Minimum Monitoring Requirements for O_3

(Note: Refer to section 4.1 and Table D-2 of Appendix D to 40 CFR Part 58)

MSA	County	2020 Census Population Estimates	2019-2021 O_3 8-hr Design Value (ppb)	Design Value Site	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
Flagstaff	Coconino	145,101	62	Flagstaff Middle School	1	1	0
Prescott Valley-Prescott	Yavapai	236,209	62	Prescott Pioneer Park	1	1	0
Yuma	Yuma	203,881	67	Yuma Supersite	1	1	0
Lake Havasu-Kingman	Mohave	213,267	N/A	N/A	0	0	0
Sierra Vista - Douglas	Cochise	125,447	66	Chiricahua National Monument	1	1	0

Monitors required for SIP or Maintenance Plan: Alamo Lake, JLG Supersite, Queen Valley, and Tonto National Monument.

Table 2.1-12 ADEQ O_3 Sites and Design Values

AQS Site ID	Site	Current Operating Schedule	2019-2021 Design Value (ppm)
04-005-1008	Flagstaff Middle School	January – December	0.062
04-007-0010	Tonto National Monument	January – December	**0.077**
04-012-8000	Alamo Lake	January – December	0.064
04-013-9997	JLG Supersite	January – December	**0.076**
04-021-8001	Queen Valley	January – December	**0.075**
04-025-8034	Prescott Pioneer Park	January – December	0.062
04-027-8011	Yuma Supersite	January – December	0.067
80-026-8012	San Luis Rio Colorado Well 10[1]	January – December	0.065[2]

[1] Site does not require data certification

[2]Design value does not meet validity criteria due to not meeting annual data completeness requirements in 2020 (40 %) and 2021 (28%).

Bold denotes exceedances and sites in violation of the 2015 NAAQS of 0.070 ppm.

2.1.7 Pb Monitoring Network Requirements

ADEQ operates three source-oriented total suspended particulates (TSP) Hi-Vol Pb monitors throughout Arizona. Globe Highway did not meet the 2016 NAAQS of 0.15 µg/m^3.

40 CFR Part 58 Appendix D states that at a minimum, there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each non-airport source which emits 0.50 or more tons per year and each airport source which emits 1.0 or more tons per year. Per the National Emissions Inventory (NEI) 2017, there are two non-airport sources above the 0.5 ton per year threshold. There is no longer an NCore requirement for Pb, but ADEQ will continue to report Pb data using the same PM_{10} metals speciation sample that is used for the NATTS program.

Table 2.1-13 ADEQ Responsible Minimum Source-Oriented Pb Monitoring above 0.5 Tons per Year (including airports)

(Note: Refer to section 4.5 of Appendix D to 40 CFR Part 58)

Source Name	Address	Pb Emissions (tons per year)[1]	Max 3-Month Design Value [µg/m^3]	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
ASARCO LLC	--	4.15	0.10	1	2	0
Freeport McMoRan Copper and Gold Inc.	--	3.51	0.04	1	1	0

[1] data taken from the 2017 NEI

Table 2.1-14 Pb Design Values at ADEQ Sites

AQS Site ID	Site Name	2019-2021 Design Value (µg/m^3)
04-007-1002	Globe Highway	**0.16**
04-007-1003	Hillcrest	0.10[1]
04-007-8000	Miami Golf Course	0.04[1]

[1]Design value does not meet validity criteria due to not meeting annual data completeness requirements in 2019.
Bold denotes value above the standard of the 2016 NAAQS of 0.15 ug/m^3.

2.1.8 Pb Collocation Requirements

ADEQ's Pb network requires only one collocated site. The Hillcrest site located in Hayden, AZ is the current collocated site.

Table 2.1-15 Pb FRM/FEM Collocation Details

Method Code	# of Sites	# of Primary Monitors	# of Required Collocated Monitors	# of Active Collocated Monitors
191 (Pb-TSP ICP/MS)	3	3	1	1

2.1.9 SO_2 Monitoring Network Requirements

ADEQ operates a network of four SO_2 monitors throughout Arizona. Miami Jones Ranch site is in violation of the 2019 NAAQS of 75 ppb. Additionally, **A**merican **S**melting **A**nd **R**efining **CO**mpany (ASARCO) operates an SO_2 monitoring network in Gila County for permit compliance and to support SIP rule requirements.

The SO_2 monitoring requirements in 40 CFR Part 58 Appendix D are based on a Population Weighted Emissions Index (PWEI) calculated for each core-based statistical area (CBSA). CBSAs with PWEIs greater than 5,000 require at least one SO_2 monitor, PWEIs greater than 100,000 require a minimum of two SO_2 monitors, and PWEIs greater than 1,000,000 require three SO_2 monitors. The Phoenix-Mesa-Chandler CBSA has a PWEI greater than 5,000 while the Tucson CBSA has a PWEI less than 5,000. The two required SO_2 monitors in Phoenix-Mesa-Chandler are operated by Maricopa County and there is one SO_2 monitor in Tucson operated by Pima County.

Table 2.1-16 ADEQ Responsible Minimum Monitoring Requirements for SO_2

(Note: Refer to section 4.4 of Appendix D to 40 CFR Part 58)

CBSA	County	2020 Census Population Estimates	2017 Total SO_2[1] [tons/year]	Population Weighted Emissions Index[2] [million persons-tons per year]	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
Flagstaff	Coconino	145,101	1,197	173.7	0	0	0
Prescott Valley-Prescott	Yavapai	236,209	1,934	456.8	0	0	0
Yuma	Yuma	203,881	102	20.8	0	0	0
Lake Havasu City – Kingman	Mohave	213,267	81	17.3	0	0	0
Sierra Vista - Douglas	Cochise	125,447	660	82.8	0	0	0
Show Low	Navajo	106,717	1,862	198.7	0	0	0
Payson	Gila	53,272	24,740	1318	0	0	0
Nogales	Santa Cruz	47,669	23	1.1	0	0	0
Safford	Graham	38,533	1385	53.4	0	0	0

[1]Using 2017 NEI data

[2]Calculated by multiplying CBSA population and total SO_2 and dividing product by one million

Monitors required for SIP or Maintenance Plan: Hayden and Miami Planning Areas

EPA Regional Administrator-required monitors per 40 CFR 58, App. D 4.4.3: None

Table 2.1-17 ADEQ Responsible Minimum Monitoring Requirements for Source SO_2 Monitoring

Source Name	SO_2 2017 Emissions (tons per year)	Emission Inventory Source & Data Year	Monitoring or Modeling	SO_2 Maximum Design Value (in ppb)	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
ASARCO LLC	20,499	ADEQ 2017	Monitoring	282	1	1	0
TEP CO – Springerville	6,195	ADEQ 2017	Modeling	N/A	0	0	0
AEPCO – Apache	311	ADEQ 2017	Modeling	N/A	0	0	0
FMMI Inc.	3,930	ADEQ 2017	Monitoring	175	1	2	0
APS – Cholla	1,755	ADEQ 2017	Modeling	N/A	0	0	0

Table 2.1-18 SO_2 Design Values at ADEQ Sites

AQS Site ID	Site Name	2019-2021 1-Hour Design Value (ppb)
04-007-0011	Miami Jones Ranch	**90**
04-007-0012	Miami Townsite	56
04-007-1001	Hayden Old Jail	65
04-013-9997	JLG Supersite	4

Bold denotes exceedances and sites in violation of the 2019 NAAQS of 75 ppb.

2.1.10 NO_2 Monitoring Network Requirements

ADEQ currently operates one NO_2 monitor in Arizona located at the JLG Supersite to fulfill a PAM's requirement and this monitor is also classified as an ambient area-wide monitor. The annual NO_2 mean at JLG Supersite complies with the NAAQS of 53 ppb. The NO_2 three-year average of the one-hour averages at the 98th percentile was approximately half of the 100 ppb standard at JLG Supersite and complies with the NAAQS.

The NO_2 monitoring requirements set forth in 40 CFR Part 58 Appendix D are based on a combination of CBSA population and Annual Average Daily Traffic (AADT) counts. Two CBSAs within Arizona (Phoenix and Tucson Metro areas) contain populations requiring ambient and near-road monitoring. Pima and Maricopa Counties will operate the required monitors in Tucson and Phoenix, respectively.

ADEQ will continue to monitor NO_2 at JLG Supersite as required by the PAMS program.

Table 2.1-19 ADEQ Responsible Minimum Monitoring Requirements for NO_2

(Note: Refer to section 4.3 of Appendix D to 40 CFR Part 58)

CBSA	2020 Census Population Estimates	2021Max AADT Counts	# of Required Near-road Monitors	# of Active Near-road Monitors	# of Additional Near-road Monitors Needed	# of Required Area-wide Monitors	# of Active Area-wide Monitors	# of Additional Area-wide Monitors Needed
Flagstaff	145,101	51,999	0	0	0	0	0	0
Prescott Valley- Prescott	236,209	51,975	0	0	0	0	0	0
Yuma	203,881	48,563	0	0	0	0	0	0
Lake Havasu City – Kingman	213,267	42,316	0	0	0	0	0	0
Sierra Vista – Douglas	125,447	26,562	0	0	0	0	0	0

Table 2.1-20 NO_2 Design Values at ADEQ Sites

AQS Site ID	Site Name	2019-2021 1-Hour Design Value (ppb)	2021Annual Mean (ppb)
04-013-9997	JLG Supersite	49	13.30

2.1.11 CO Monitoring Network Requirements

ADEQ currently operates one CO monitor in Arizona. The monitor is located at JLG Supersite and fulfills NCore requirements. No exceedances of the one-hour or eight-hour standards were recorded in 2021.

Table 2.1-21 ADEQ Responsible Minimum Monitoring Requirements for CO

(Note: Refer to section 4.2 of Appendix D to 40 CFR Part 58)

CBSA	2020 Census Population Estimates	# of Required Near-Road Monitors	# of Active Near-Road Monitors	# of Additional Monitors Needed
Flagstaff	145,101	0	0	0
Prescott Valley- Prescott	236,209	0	0	0
Yuma	203,881	0	0	0
Lake Havasu City – Kingman	213,267	0	0	0
Sierra Vista – Douglas	125,447	0	0	0

Table 2.1-22 CO Maximum Values at ADEQ Sites

AQS Site ID	Site Name	2021 CO 1-Hour Max. Value (ppm)	2021 CO 8-Hour Max. Value (ppm)
04-013-9997	JLG Supersite	1.987	1.9

2.2 State Implementation Plan (SIP) and Maintenance Area Network

ADEQ maintains several air monitoring sites for the purpose of tracking compliance in areas that are currently in nonattainment for one or more of the NAAQS, and in areas where the NAAQS have been met but on-going demonstration of maintenance is required. Specific monitoring requirements for each of these areas are described in their respective SIPs and/or Maintenance Plans.

2.2.1 SIP Monitoring Network Requirements

ADEQ, along with other delegated agencies, is responsible for the preparation and submittal of SIPs for nonattainment and maintenance areas in Arizona. ADEQ is responsible for conducting ambient air monitoring for areas not included within Maricopa, Pima, and Pinal Counties, or tribal lands. Permitted sources are also responsible for monitoring air quality, if it is included in their air quality permit. Some monitoring sites are specifically named in the area's SIP; other monitoring sites are not specifically named, but are representative of the air quality in that SIP area. Table 2.2-1 lists the ADEQ and source-operated monitors used to determine SIP compliance.

Table 2.2-1 SIP Network Monitoring Requirements

Area and County	Pollutant	Designation	Classification	ADEQ SIP Sites
Phoenix, Maricopa	CO	Maintenance/Attainment	N/A	JLG Supersite
Tucson, Pima	CO	Maintenance/Attainment	N/A	No network or commitment
Phoenix-Mesa-Scottsdale, Maricopa, Pinal, Gila	O_3 8-hr	Nonattainment for the 2008 and 2015 ozone NAAQS. Attainment for the 1997 8 hour ozone NAAQS (for both Maricopa and Pinal portions)	Marginal for the 2015 ozone NAAQS; Moderate for the 2008 ozone NAAQS	Sites in Maricopa, Pinal, and Gila Counties
Yuma, Yuma	O_3 8-hr	Nonattainment (2008 ozone NAAQS)	Marginal	Yuma Supersite
Ajo, Pima	PM_{10}	Maintenance/Attainment	N/A	Ajo
Bullhead City, Mohave	PM_{10}	Maintenance/Attainment	N/A	Bullhead City (Post Office)
Douglas-Paul Spur, Cochise	PM_{10}	Nonattainment	Moderate	Douglas Red Cross, Paul Spur Chemical Lime Plant
Hayden, Gila and Pinal	PM_{10}	Nonattainment	Moderate	Hayden Old Jail
Miami, Gila	PM_{10}	Nonattainment	Moderate	Miami Golf Course
Nogales, Santa Cruz	PM_{10}	Nonattainment	Moderate	Nogales Post Office
Payson, Gila	PM_{10}	Maintenance/Attainment	N/A	Payson Well Site
Phoenix, Maricopa, and Pinal (Apache Junction portion) Phoenix (Salt River Area)	PM_{10}	Nonattainment	Serious	JLG Supersite
Rillito, Pima	PM_{10}	Nonattainment	Moderate	Rillito
Yuma, Yuma	PM_{10}	Nonattainment	Moderate	Yuma Supersite
Nogales, Santa Cruz	$PM_{2.5}$	Nonattainment (2006 PM2.5 NAAQS)	Moderate	Nogales Post Office
West Central Pinal	$PM_{2.5}$	Nonattainment (2006 PM2.5 NAAQS)	Moderate	No network or commitment
Ajo, Pima	SO_2	Maintenance/Attainment	N/A	No network or commitment
Douglas, Cochise	SO_2	Maintenance/Attainment	N/A	No network or commitment
Hayden, Gila and Pinal	SO_2	Nonattainment – Primary for 1971 NAAQS Nonattainment for 2010 NAAQS	N/A	ADEQ (SO_2, MET): Hayden Old Jail ASARCO (5 SO_2, 3 MET [no MET at Jail or Garfield]): Globe Hwy, Garfield Ave., Montgomery Ranch, Hayden Old Jail, Hayden Junction
Miami, Gila	SO_2	Maintenance/Attainment for 1971 NAAQS Nonattainment for 2010 NAAQS	N/A	ADEQ: Miami Jones Ranch, Miami Ridgeline, Miami Townsite FMMI (SO_2, MET) Miami Jones Ranch, Miami Townsite
Morenci, Greenlee	SO_2	Maintenance/Attainment	N/A	No network or commitment

Area and County	Pollutant	Designation	Classification	ADEQ SIP Sites
San Manuel, Pima and Pinal	SO_2	Maintenance/Attainment	N/A	No network or commitment
Hayden (Gila and Pinal)	Pb	Nonattainment	N/A	No network or commitment
Regional Haze, 12 Class 1 areas	Visibility Impairing pollutants, PM_{10}, $PM_{2.5}$, $PM_{2.5}$ species)	Statewide – IMPROVE monitors	N/A	**ADEQ Protocol sites:** Nogales Post Office, Organ Pipe National Monument, JLG Supersite, Saguaro National Park West **NPS / USFS sites:** Chiricahua Entrance Station, Greer Water Treatment Plant, Grand Canyon - Hance Camp, Ike's Backbone, Petrified Forest National Park, Saguaro National Park-East, Sycamore Canyon, Tonto National Monument

Note: *Sites in italics are specifically required in SIPs*; others meet the general SIP requirement that representative monitoring be conducted (no specific monitoring sites are named in SIP).

2.3 Source Monitoring Network

ADEQ requires select major and minor point sources in the state to conduct ambient monitoring for selected pollutants in and around their sources. Some requirements are for prevention of significant deterioration (PSD) monitoring prior to operation of the facility. Other monitoring requirements are for the duration of the permit or timeframe specified therein. ADEQ serves as the governing body for these sites and performs semi-annual and annual air monitoring performance audits on the sources according to permit requirements. Sources are required to review and validate their data and submit quality assurance documents to ADEQ with the data. Table 2.3-1 lists the monitors operated by ADEQ permitted sources.

Table 2.3-1 Source Compliance Monitoring Network

Site Name	City	Pollutant(s)	AQS Submittal
Globe Highway	Winkelman	SO_2	No
ASARCO – Hayden – Garfield Ave.	Hayden	SO_2	No
ASARCO – Montgomery Ranch	Hayden	SO_2	No
ASARCO – Hayden Junction	Hayden Junction	SO_2	No
Hayden Old Jail [1]	Hayden	SO_2	No
Drake Cement	Sycamore Canyon	PM_{10}, $PM_{2.5}$ mass and ammonium speciation, Meteorology	No
Carlota Mine – Sanctuary	Globe	PM_{10}, H_2SO_4, Meteorology	No
Rosemont Monitoring Site	Vail	PM_{10} Meteorology	No

[1] ADEQ also operates an SO_2 monitor at this site. The ADEQ data are submitted to AQS while the facility data are not.

2.4 NCore Network

EPA describes the nationwide NCore network, which is composed of approximately 70 urban and 20 rural sites, as a multipollutant network that integrates several advanced measurement systems for particulates, pollutant gases, and meteorology. Some objectives of the NCore network include:

- Tracking long-term trends of criteria and non-criteria pollutants;
- Support for long-term health assessments which contribute to ongoing reviews of the NAAQS;
- Support to scientific studies ranging across technological, health, and atmospheric process disciplines; and
- Support to ecosystem assessments recognizing that national air quality networks benefit ecosystem assessments and, in turn, benefit from data specifically designed to address ecosystem analyses.

As required by 40 CFR Part 58.13, ADEQ's NCore site, JLG Supersite, was operational by January 1, 2011. However, JLG Supersite has been a multipollutant monitoring site since its establishment in 1993. In addition to the above missions and the NCore monitoring requirements set forth in 40 CFR Part 58.13, ADEQ will use the JLG Supersite to test new technologies in various ADEQ monitoring networks. Examples include advanced communications and serial data collection, remote zero/span/precision (Z/S/P) checks and calibrations, high sensitivity instruments, and instruments that monitor additional pollutants that may be added to current CFR requirements. Additional NCore information is available from the EPA website: https://www3.epa.gov/ttn/amtic/ncore.html

2.4.1 NCore Monitoring Network Requirements

EPA has identified JLG Supersite as the required NCore site for the Phoenix metropolitan area. The required NCore parameters are listed in Table 2.4-1.

Table 2.4-1 JLG Supersite NCore Requirements

Required Measurement	Frequency/Duration
$PM_{2.5}$ FEM mass	Hourly
$PM_{2.5}$ FRM mass	1-in-3
PM_{10} FEM mass	Hourly
PM_{coarse} FEM mass	Hourly
$PM_{2.5}$ speciation	1-in-3
O_3	Hourly
CO (Trace Level)	Hourly
SO_2 (Trace Level)	Hourly
NO/NOy	Hourly
Surface meteorology	Hourly

2.5 Meteorological Network

ADEQ collects meteorological data at sites throughout the state to support the analysis of ambient air quality data and to provide support for exceptional event reporting (see Table 2.5-1). Meteorological measurements are also required for the NCore and PAMS networks. Some sites were originally established because other meteorological networks (NWS, AZMet, etc.) were not located near ADEQ's ambient air quality sites. ADEQ continues to add meteorological instrumentation (wind speed, wind direction, temperature, and relative humidity) to most of ADEQ's monitoring sites that were not previously equipped, and for which there are adequate facilities to support the meteorological tower and equipment. ADEQ currently meets the meteorological monitoring requirements for the NCore and PAMS networks.

2.5.1 Meteorology Monitoring Network

Except for the items mentioned above, ADEQ does not have any specific plans to make changes to the meteorological network, but may add additional meteorological equipment at existing SLAMS sites as resources permit. At this time, ADEQ plans to only submit meteorological data that are required by 40 CFR Part 58.16 to EPA's AQS database. If future resources allow additional meteorological data submittals to the AQS database, ADEQ may do so on a voluntary basis. A spatial representation of ADEQ's meteorological monitoring network can be found in Appendix B.

Table 2.5-1 Meteorology Monitoring Network

Site	Temp	Relative Humidity	Wind	Total Horizontal Solar Radiation	Ultraviolet Solar Radiation	Atmospheric Pressure	Precipitation	Mixing Layer Height	Report to AQS
Alamo Lake	X	X	X						No
Ajo	X	X	X						No
Douglas Red Cross	X	X	X						No
Globe Highway	X	X	X						No
Hayden Old Jail	X	X	X						No
JLG Supersite	X	X	X	X	X	X	X	X	Yes
Miami Golf Course	X	X	X						No
Nogales Mexico ITN	X	X	X			X	X		No
Nogales Post Office	X	X	X						No
Paul Spur Chemical Lime Plant	X	X	X						No
Payson Well Site	X	X	X						No
Queen Valley	X	X	X						No
Rillito	X	X	X						No
San Luis Rio Colorado	X	X	X						No
Yuma Supersite	X	X	X						No

2.6 Photochemical Assessment Monitoring Stations (PAMS)

Section 182(c)(1) of the 1990 Clean Air Act (CAA) Amendments requires the Administrator to promulgate rules for enhanced monitoring of O_3 that includes concurrent monitoring of O_3, oxides of nitrogen (NO_x), total reactive nitrogen (NO_y), speciated volatile organic compounds (VOC), carbonyls, and meteorology to obtain comprehensive and representative O_3 data. The principal reasons for requiring the collection of additional ambient air pollutants and meteorological data are the widespread nonattainment of the O_3 NAAQS and the need for a more comprehensive air quality database for O_3 and its precursors.

EPA issued a final rule for a reengineering of the PAMS program in October 2015 as part of the 2015 O_3 NAAQS Revision. ADEQ will continue to operate a PAMS program under this new rule at JLG Supersite, which is collocated with the JLG Supersite NCore site as required. Additional monitoring for O_3 precursors may be addressed in an enhanced monitoring plan for the Phoenix-Mesa-Scottsdale MSA.

2.6.1 PAMS Monitoring Network Requirements

On October 26, 2015 EPA promulgated a new O_3 standard along with final changes to the PAMS program. Starting on June 1, 2021, PAMS measurements will be required at all NCore sites in CBSAs with a population of 1,000,000 people or more, irrespective of O_3 attainment status. Required monitoring at this site includes hourly VOC (volatile organic compounds) measurements, three 8-hour carbonyl samples, a direct NO_2 measurement, hourly mixing height, atmospheric pressure, precipitation, solar radiation, UV radiation, wind speed, wind direction, temperature, and relative humidity. Additionally, the EPA is requiring enhanced monitoring plans (EMP) in areas classified as Moderate or above O_3 nonattainment. ADEQ will continue to monitor under the PAMS program at JLG Supersite, which is the NCore site in the Phoenix-Mesa-Scottsdale MSA. Queen Valley was a legacy PAMS type 3 site that is not required under the 2015 PAMS requirements, therefore, the PAMS specific instruments were shut down after the 2016 PAMS season.

Table 2.6-1 Current JLG Supersite PAMS Instrumentation

Parameter	Frequency and Duration
Volatile Organic Compounds (VOC)	Hourly average of speciated VOCs
Carbonyl	• 1 in 3, three - 8 hr. samples of carbonyl samples • 3 sequential 8-hour samples on a 1-in-3 days schedule
O_3	Hourly average
NO	Hourly average
NO_2	Hourly average
NO_y	Hourly average
Ambient Temperature	Hourly average
Wind speed/direction	Hourly average
Atmospheric Pressure	Hourly average
Relative Humidity	Hourly average
Precipitation	Hourly
Mixing Layer Height	Hourly average
Solar Radiation	Hourly average
Ultraviolet Radiation	Hourly average

2.7 National Air Toxics Trend Sites (NATTS)

The NATTS network was designed to monitor and record the concentrations of EPA-identified air toxics on a national scale. Data from EPA's national monitoring activities are used to estimate national average concentrations for these air toxics compounds and to detect trends. Using this information, EPA, states, and local agencies can estimate changes to human exposure from air toxics. Detection of increased human toxicity risk can then be used to support changes in environmental policy. As part of the National Air Toxics Assessment (NATA) process, ambient air quality data are used to assess the national toxics inventory and long-term hazardous air pollutant (HAP) trends. ADEQ's JLG Supersite is the designated NATTS site for the Phoenix-Mesa-Scottsdale MSA, with an additional site at South Phoenix designated as an Urban Air Toxics Monitoring Program (UATMP) site, whose purpose is to characterize the composition and magnitude of air toxics pollution.

2.7.1 NATTS Monitoring Network Requirements

The primary purpose of the NATTS Monitoring Network is to track trends to facilitate measuring progress towards emission and risk reduction goals. EPA designated JLG Supersite to be part of the 27-site national network of air toxics monitoring stations. There are currently 187 hazardous air pollutants (HAPs), or air toxics, regulated under the CAA that have been associated with a wide variety of adverse health effects. The NATTS and UATMP programs were developed by EPA to fulfill the need for long-term HAP monitoring data of consistent quality. The required NATTS and UATMP parameters are listed in Table 2.7-1.

Table 2.7-1 NATTS and UATMP Requirements

Site	Required Measurement	Frequency/Duration	Status
JLG Supersite	Carbonyl	1-in-6	ATEC 8000 multi-port cartridge sampler
JLG Supersite	Volatile Organic Compounds (VOC)	1-in-6	ATEC 2200 canister sampler
JLG Supersite	Polycyclic Aromatic Hydrocarbons (PAH) or Semi-Volatile Organic Compounds (SVOC)	1-in-6	Tisch Polyurethane Foam (PUF) sampler
JLG Supersite	Metals Speciation	1-in-6	Thermo 2000i PM sampler, local conditions
South Phoenix	VOC	1-in-12	ATEC 2200 canister sampler

2.8 Chemical Speciation Network (CSN)

The purpose of the CSN is to identify, over a period of several years, trends in concentration levels of selected ions, metals, carbon species, and organic compounds in the $PM_{2.5}$ samples collected at select sites throughout the country. The CSN was established to meet the regulatory requirements for monitoring speciated $PM_{2.5}$ to determine the chemical composition of these particulates. $PM_{2.5}$ speciation monitoring at JLG Supersite includes two CSN $PM_{2.5}$ speciation samplers

2.8.1 CSN Monitoring Network Requirements

Each state shall conduct chemical speciation monitoring at sites designated to be part of the $PM_{2.5}$ Speciation Trends Network (STN). The selection and modification of these STN sites must be approved by the

Administrator. Samples must be collected using approved monitoring methods and the EPA sampling schedules. ADEQ operates a CSN station at JLG Supersite. The required CSN parameters and frequencies are listed in Table 2.8-1.

Table 2.8-1 CSN Requirements

Required Measurement	Frequency/Duration	Status
$PM_{2.5}$ Speciation, Teflon and Nylon Filters for Metals and Ions	1-in-3	MetOne SuperSASS
$PM_{2.5}$ Speciation, Quartz Filter for Carbon	1-in-3	URG 3000N

2.9 Class 1 Area Network and IMPROVE Program

The rural visibility monitoring network tracks visual impairment in specified national parks and wilderness areas. These parks and wilderness areas are called federally mandatory Class 1 areas and were designated based on an evaluation required by Congress in the 1977 Federal CAA Amendments. The evaluation, performed by the United States Forest Service (USFS) and National Park Service (NPS), included review of selected parks and national forests, which were designated as wilderness before 1977, were larger than 6,000 acres, and to which visibility was an important resource for the visitor experience. Of the 156 Class 1 areas designated across the nation, 12 are located in Arizona. Nine Class 1 areas are located in USFS land and three in NPS land. EPA initiated the nationally-operated IMPROVE monitoring network in 1987, whose purpose is to characterize broad regional trends and visibility conditions using monitoring data collected in or near Class 1 wilderness areas across the United States. Ten Class 1 IMPROVE sites were originally placed in and around these Class 1 areas. Additionally, ADEQ has added four other IMPROVE sites identified as Protocol sites. Refer to the map in Appendix B for additional details regarding ADEQ's Class 1 Visibility and IMPROVE networks. Additional resources can be found at http://vista.cira.colostate.edu/improve/.

2.9.1 Class 1 Visibility Network

Visibility monitoring networks track impairment in specified national parks and wilderness areas called Class 1 areas. For the Class 1 area designations, EPA initiated a nationally operated monitoring network in 1987 called the Interagency Monitoring of PROtected Visual Environments (IMPROVE) program. The purpose of this network is to characterize broad regional trends in visibility conditions using monitoring data collected in or near Class 1 areas across the United States ADEQ, Pima County, and federal land managers at Arizona's Class 1 areas cooperatively operate the visibility monitoring network in Arizona. The current network is listed in Table 2.9-1. Additionally, ADEQ operates protocol IMPROVE monitors at the Nogales Post Office site, two collocated IMPROVE monitors at the JLG Supersite, one at the west side of the Saguaro National Park, and one at the Organ Pipe National Monument. The Douglas Red Cross protocol site was relocated to the Nogales Post Office site in October, 2015. The Queen Valley protocol site was shut down starting January 1, 2016 after an EPA network assessment determined it was not necessary. The Meadview protocol site was shut in February, 2021. The JLG Supersite serves as an urban IMPROVE monitor and has been used to provide comparative analysis with data from the CSN network. Refer to the IMPROVE map in Appendix B for the IMPROVE monitoring network and Class 1 areas within the state of Arizona.

Table 2.9-1 Arizona Class 1 Visibility Monitoring Network

Geographic Area Represented	Monitoring Location
Background	Organ Pipe National Monument
Chiricahua National Monument, Chiricahua Wilderness Area and Galiuro USFS Wilderness	Chiricahua Entrance Station
Grand Canyon National Park	Hance Camp
Mazatzal and Pine Mountain USFS Wilderness	Ike's Backbone
Mount Baldy	Greer Water Treatment Plant
Petrified Forest National Park	Petrified Forest
Saguaro National Park	East District and West District
Superstition USFS Wilderness	Tonto National Monument
Sycamore Canyon USFS Wilderness	Sycamore Canyon (Garland Prairie)
Protocol Sites	JLG Supersite, Nogales Post Office, Organ Pipe National Monument, Saguaro West

2.10 Urban Haze Network

The purpose of the Urban Haze Network is to provide State and Local policy-makers and the public with information regarding urban haze levels, track short-term and long-term trends, assess source contributions, and better evaluate the effectiveness of air pollution control strategies. ADEQ utilizes transmissometers, particulate monitors, and/or digital camera systems to evaluate urban visibility. More than a decade of urban visibility data has been collected for the Phoenix and Tucson area. Currently, only the Phoenix metropolitan area urban visibility is monitored using high resolution cameras.

2.10.1 Urban Haze Monitoring Network

ADEQ began studying the nature and causes of urban haze by conducting studies during the winter of 1989-90 in Phoenix, and during the winter of 1992-93 in Tucson. These studies recommended long-term, year-round monitoring of visibility in both areas. In 1993, ADEQ began deploying visibility monitoring equipment in Phoenix and Tucson. The purpose of Executive Order 2000-3 directed by the Governor's Brown Cloud Summit was to establish options for a visibility standard or other method to track progress in improving visibility in the Phoenix area. The Summit concluded that a daily visibility index for the metropolitan area should have its characteristics defined through a public survey process. This process called for a representative cross-section of residents of Area A (as described in House Bill 2538, roughly the Phoenix metropolitan area), to determine what visual air qualities are desirable, what visual range is acceptable, and how often the combination of acceptable visual range and air quality is preferred. Through a series of meetings in 2002 and early 2003, ADEQ and the Visibility Index Oversight Committee designed the visibility survey, selected a contractor to conduct the survey, oversaw the completion of the field portion of the survey, and defined a recommended visibility index. The Visibility Index Oversight Committee Final Report was issued in early 2003 summarizing the visibility index.

Equipment currently used to evaluate urban visibility includes transmissometers, and digital camera systems. The Phoenix urban haze network consists of a transmissometer for measuring light extinction along a fixed path

length of four and a half kilometers, and five digital camera systems to record visual characteristics of the urban area.

The current Phoenix urban haze sites (and their status) are described in Table 2.10-1. ADEQ continues to evaluate the Urban Haze program. The high-resolution images from these cameras can be viewed online at http://www.phoenixvis.net.

Table 2.10-1 Phoenix Urban Haze Monitoring Network

Site Name	Parameter(s) Measured
ADEQ Building	High Resolution Digital Camera
Banner Mesa Medical Center	High Resolution Digital Camera
Estrella Mountain Community College	High Resolution Digital Camera
JLG Supersite	IMPROVE
North Mountain Summit	2 High Resolution Digital Cameras
Phoenix Transmissometer (Abrazo Central Campus to Ramada by Wyndham Phoenix Midtown Hotel)	Total Light Extinction (Bext) Transmissometer

2.11 E-BAM Network of $PM_{2.5}$ Special Purpose Monitors

Environment-proof beta attenuation monitors (E-BAM) are special purpose monitors (SPM) which provide continuous, real-time particulate $PM_{2.5}$ concentration data that are useful for making informed smoke management decisions related to prescribed burns and wildfire monitoring. The current network is listed in Table 2.11-1. They are not classified as FRMs or FEMs and may not be used to demonstrate NAAQS compliance. ADEQ uses these monitors primarily in populated areas that could be impacted by smoke from prescribed burns and wildfires. Hourly $PM_{2.5}$ data from the E-BAM monitors can be viewed at: http://www.phoenixvis.net/PPMmain.aspx.

Table 2.11-1 Current Locations of E-BAM Monitors

Site Name	Address
Flagstaff Middle School	755 N. Bonito, Flagstaff, AZ 86001
Payson Well Site	204 W. Aero Dr., Payson, AZ 85541
Prescott Pioneer Park	1200 Commerce Dr, Prescott, AZ 86035
Sedona Fire Station AQD	310 Forest Road, Sedona, AZ, 86336
Show Low	200 W. McNeil, Show Low, AZ 85901
Verde Ranger Station	300 E. Highway 260, Camp Verde, AZ 86322

2.12 Arizona / Mexico Border Network

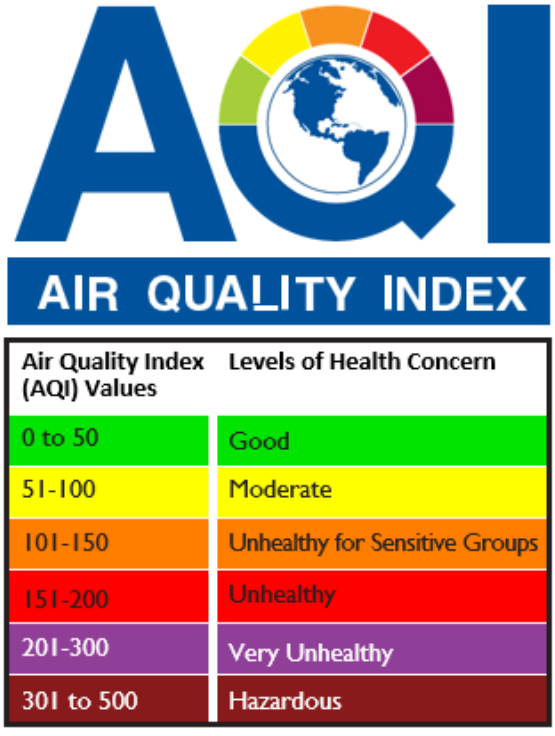
ADEQ works with the EPA Border Program as part of the U.S.–Mexico Border Air Monitoring Working Group. This working group's primary priority is reviewing the air quality monitoring data and air monitoring networks in rural and urban areas along the border, and evaluating the adequacy of these networks. The secondary priority

of this group is to identify operational and maintenance needs, plan for future capabilities, and develop recommendations to resolve any inadequacies. Through this effort, relationships between EPA, ADEQ, Secretariat of Environment and Natural Resources (SEMARNAT), and Commission for Ecology and Sustainable Development (CEDES) are expected to develop, such that data are shared across the border and capacity is built to meet the needs of the air monitoring program objectives. Starting in 2017, ADEQ placed an O_3 monitor in San Luis Rio Colorado, Mexico for the purpose of studying regional O_3.

2.13 AirNow Reporting

ADEQ reports near real-time data from its continuous air quality monitors to the AirNow system. The AirNow system is a set of near real-time public maps which report an Air Quality Index (AQI) for the six major air pollutants regulated by the CAA. These pollutants are: ground-level O_3, PM_{10}, $PM_{2.5}$, CO, SO_2, and NO_2. The purpose of the AQI is to help understand how air quality affects human health. To make it easier to understand, the AQI is divided into six color-coded categories: Good, Moderate, Unhealthy for Sensitive Groups, Unhealthy, Very Unhealthy, and Hazardous in Figure3. The AQI format is used by local weather forecasters, medical facilities, schools, and the general public to make health-related activity decisions based on the reported local AQI.

Figure 3 Chart of AQI Levels



QUALITY ASSURANCE

ADEQ sustains a quality system as required by EPA to ensure high quality data are produced that meet the users' needs. The EPA primarily specifies the quality assurance (QA) requirements for operating SLAMS, SPM, CSN, NCore, NATTS, PAMS, and prevention of significant deterioration (PSD) air monitors in 40 CFR Part 58 Appendix A, the Quality Assurance Handbook for Air Pollution Measurement Systems: Volume II: Ambient Air Quality Monitoring Program, technical assistance documents (TADs), and other supporting guidance documents. In response, ADEQ develops quality assurance project and program plans (QAPP) for air monitoring networks, which provide detailed information regarding the specifics of each air monitoring network and how data will be managed. Components of ADEQ's quality system include, but are not limited to:

- ADEQ being established as the primary quality assurance organization (PQAO) for the criteria and non-criteria pollutant air monitoring data collected and reported to EPA's air quality system (AQS).
- An agency-level Quality Management Plan (QMP), which is an "umbrella" document that details, in broad terms, the strategies used to carry out QA/QC in environmental data collection activities.
- Division-level quality assurance project and program plans (QAPPs) for each major, ongoing air monitoring network. Each QAPP describes:
    - purpose for operating the monitoring station or network;
    - data quality objectives (DQOs) and measurement quality objectives (MQOs) along with data quality indicators (DQIs) that specify the amount of tolerable error in the data using statistical metrics;
    - variety of regularly occurring quality control (QC) checks along with pass/fail criteria;
    - types of QA assessments and reports needed from the network;
    - data validation processes and data reporting requirements.
- Unit-level standard operating procedures (SOPs) that document procedures to assure that work products are reliable, reproducible, and consistent in quality. SOPs also serve to clearly communicate any process customizations in-use, providing a means of attesting that work products are credible, legally defensible, and meet or exceed our customers' and/or stakeholders' needs or requirements.
- A comprehensive quality control (QC) system
    - One point QC checks on all gas analyzers every two weeks submitted to AQS;
    - One point flow rate QC checks on all PM monitors every 30 days submitted to AQS.
- A comprehensive audit and data assessment program.
    - Performance Evaluations on a quarterly, semi-annual, or annual basis submitted to AQS;
    - Technical system audits (TSA) performed every three years by EPA Region 9;
    - Quality Management System - Internal TSAs or Audits of Data Quality;
    - Data quality assessments;
    - Countermeasure processes.

ADEQ uses a multi-tiered approach to data validation to ensure consistent quality. It requires all data to move through different levels of QA by separate reviewers. ADEQ has five different stages at which data may be categorized.

- Raw – Original unchanged data recorded by the sampler or produced by laboratory analysis.
- QA Level 1 – Data are reviewed programmatically using software written to flag data. The data are flagged valid or invalid based on instrumentation parameters.

- QA Level 2 – Data are reviewed manually on a daily to weekly basis by an initial data reviewer to flag any discrepancies found. This gives the data a preliminary verification decision and identifies outliers, anomalous data and instrumentation/laboratory problems.
- QA Level 3 – Data are reviewed manually on a monthly to quarterly basis by the final data reviewer by looking at the data spatially and temporally. QC measures are incorporated, environmental events are identified, and a final determination on the validity of data is made.
- Certified – Data are uploaded to AQS and are certified annually by ADEQ.

3.1 EPA QA Reports and Network Performance

Periodically, EPA publishes reports for some of the criteria pollutant networks, and potentially non-criteria pollutant networks, that rate and/or rank monitoring organizations' performance over a three-year period. ADEQ's air monitoring and assessment value stream personnel review these reports to gauge how well our networks are performing with those across the nation. If needed, corrective actions are taken to ensure data of the highest quality possible are collected.

3.2 EPA Data Reports

The 2021 Data Certification was submitted on April 29, 2022. Precision and Accuracy reports were submitted to the EPA as the AMP600 report during annual data certification. The data certification sections of AQS were also updated reflecting ADEQ's recommendations for certifying the data.

Appendix A – Definitions and Abbreviations

AADT	Annual Average Daily Traffic
ADEQ	Arizona Department of Environmental Quality
AQI	Air Quality Index
ARM	Approved Regional Methods
ASARCO	American Smelting and Refining Company, LLC
ATEC	Atmospheric Technologies, Inc.
AQS	Air Quality System (EPA database)
BAM	Beta Attenuation Monitor
Bext	Total Light Extinction
Bscat	Light Scattering
CAA	Clean Air Act
CBSA	Core Based Statistical Area
CEDES	Commission for Ecology and Sustainable Development
CFR	Code of Federal Regulations
CO	Carbon Monoxide
COTL	Carbon Monoxide Trace Level
CSN	Chemical Speciation Network
DQO	Data Quality Objective
E-BAM	Environment Proof - Beta Attenuation Monitor
EPA	Environmental Protection Agency
ERG	Eastern Research Group, Inc.
FEM	Federal Equivalent Method
FMMI	Freeport McMoRan Copper and Gold Inc.
FRM	Federal Reference Method
HAP	Hazardous Air Pollutant
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
IMPROVE	Interagency Monitoring of PROtected Visual Environments

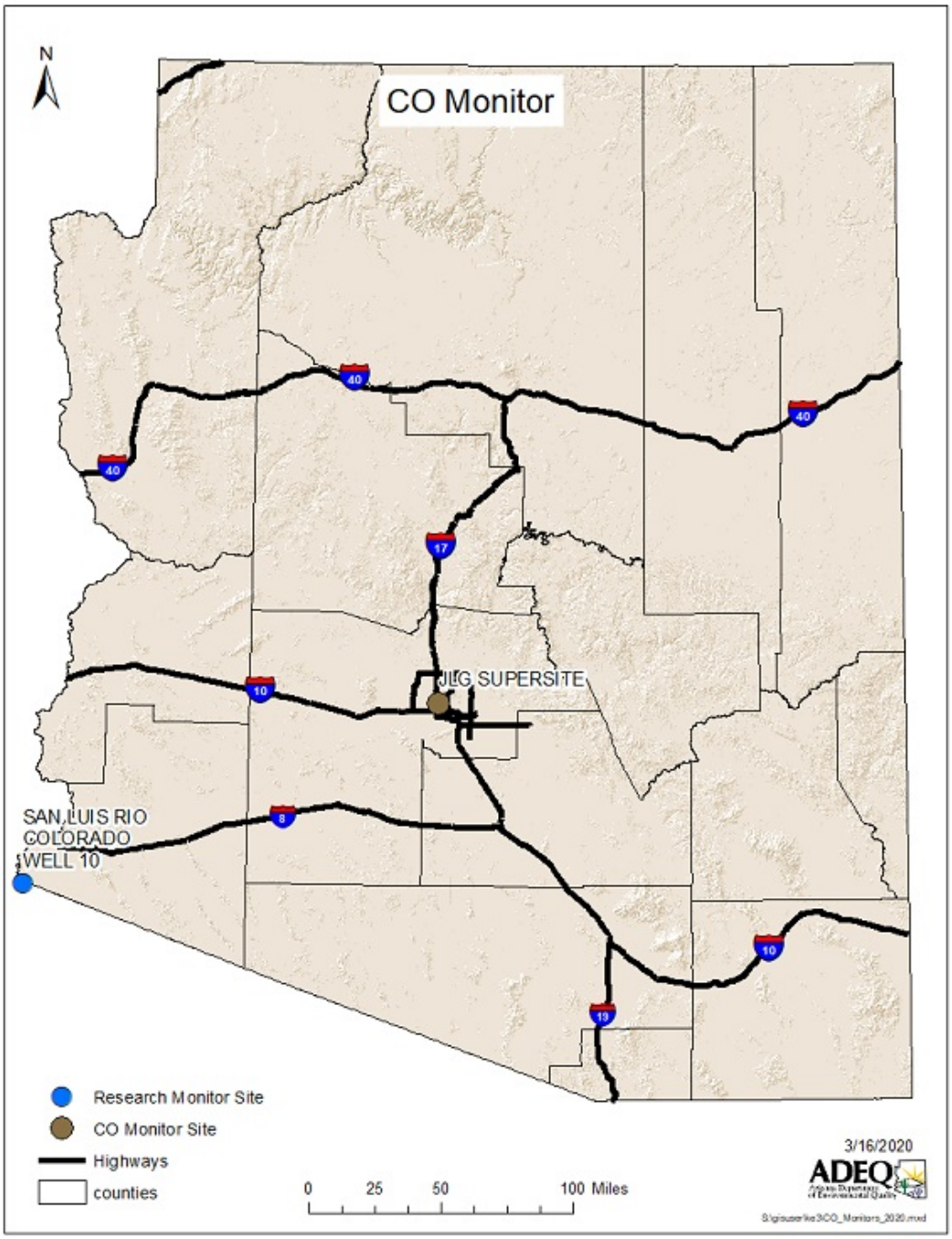
MCAQD	Maricopa County Air Quality Department
MET	Meteorological Measurements (wind, temperature, relative humidity, etc.)
MQO	Measurement Quality Objective
MSA	Metropolitan Statistical Area
$\mu g/m^3$	Micrograms per Cubic Meter
NAAQS	National Ambient Air Quality Standard
NATA	National Air Toxics Assessment
NATTS	National Air Toxics Trends Station
NCore	National Core multipollutant monitoring stations
NEI	National Emissions Inventory
NM	National Monument
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides
NOy	Reactive Nitrogen Oxides
NPAP	National Performance Audit Program
NPEP	National Performance Evaluation Program
NPS	National Park Service
NWS	National Weather Service
O_3	Ozone
PAHs	Polycyclic Aromatic Hydrocarbons
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
PE	Performance Evaluation
PEP	Performance Evaluation Program
PM	Particulate Matter
PM_{10}	Particulate Matter ≤ 10 microns
PM_{coarse}	Coarse Particulate Matter between 2.5 to 10 micrometers aerodynamic diameter, may also be denoted as $PM_{10-2.5}$
$PM_{2.5}$	Particulate Matter ≤ 2.5 microns

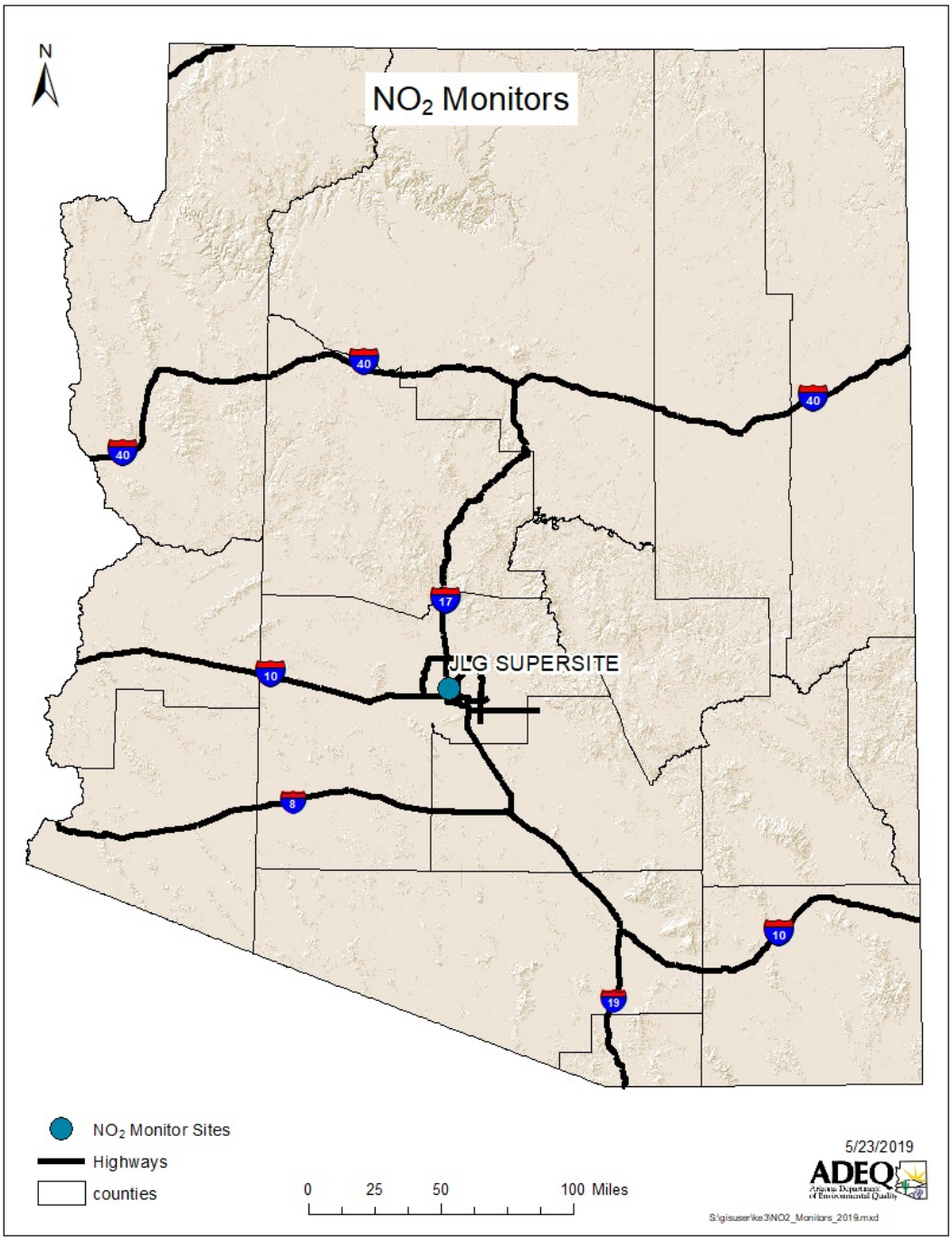
POC	Parameter Occurrence Code
ppb	Parts Per Billion
ppm	Parts Per Million
PQAO	Primary Quality Assurance Organization
PSD	Prevention of Significant Deterioration
PUF	Polyurethane Foam Sampler
PWEI	Populated Weighted Emissions Index
QA	Quality Assurance
QAPP	Quality Assurance Program Plan
QC	Quality Control
QMP	Quality Management Plan
RH	Relative Humidity
SEMARNAT	Secretariat of Environment and Natural Resources
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
SO_2	Sulfur Dioxide
SOP	Standard Operating Procedure
SPM	Special Purpose Monitor
SR	State Route
STN	Speciation Trends Network
SVOC	Semi-Volatile Organic Compounds
TAD	Technical Assistance Document
TEOM	Tapered Element Oscillating Microbalance
TSA	Technical System Audit
TSP	Total Suspended Particulates
UATMP	Urban Air Toxics Monitoring Program
USFS	United States Forest Service
VOC	Volatile Organic Compound

Appendix B – Network Maps

There are twelve maps in this section illustrating the location of ADEQ monitors:

- CO Network
- NO_2 Network
- O_3 Network
- SO_2 Network
- Pb Network
- PM_{10} Network
- $PM_{2.5}$ Network
- Meteorological Network
- Urban Visibility Network
- IMPROVE Network & Class I Wilderness areas
- E-BAM Network
- Air Toxics and Chemical Speciation Networks


N
CO Monitor
40
40
40
17
10
JLG SUPERSITE
SAN LUIS RIO COLORADO WELL 10
8
10
19
Research Monitor Site
CO Monitor Site
Highways
counties
0 25 50 100 Miles
3/16/2020
ADEQ


N
NO_2 Monitors
40
40
40
17
10
JLG SUPERSITE
8
10
19
NO_2 Monitor Sites
Highways
counties
0 25 50 100 Miles
5/23/2019
ADEQ
Arizona Department of Environmental Quality
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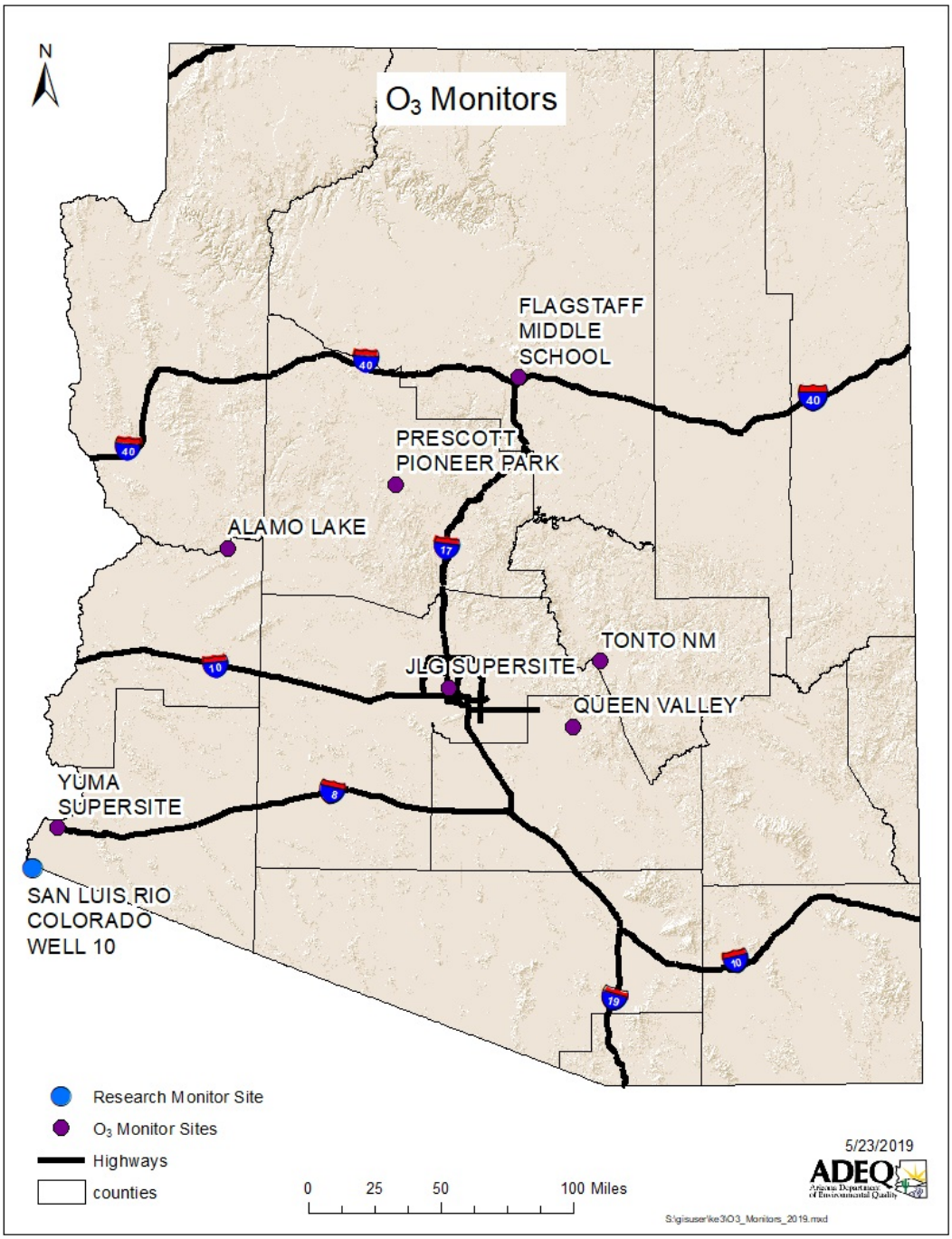
N
O_3 Monitors
FLAGSTAFF MIDDLE SCHOOL
PRESCOTT PIONEER PARK
ALAMO LAKE
TONTO NM
JLG SUPERSITE
QUEEN VALLEY
YUMA SUPERSITE
SAN LUIS RIO COLORADO WELL 10
40
17
10
8
19
Research Monitor Site
O_3 Monitor Sites
Highways
counties
0 25 50 100 Miles
5/23/2019
ADEQ
Arizona Department of Environmental Quality
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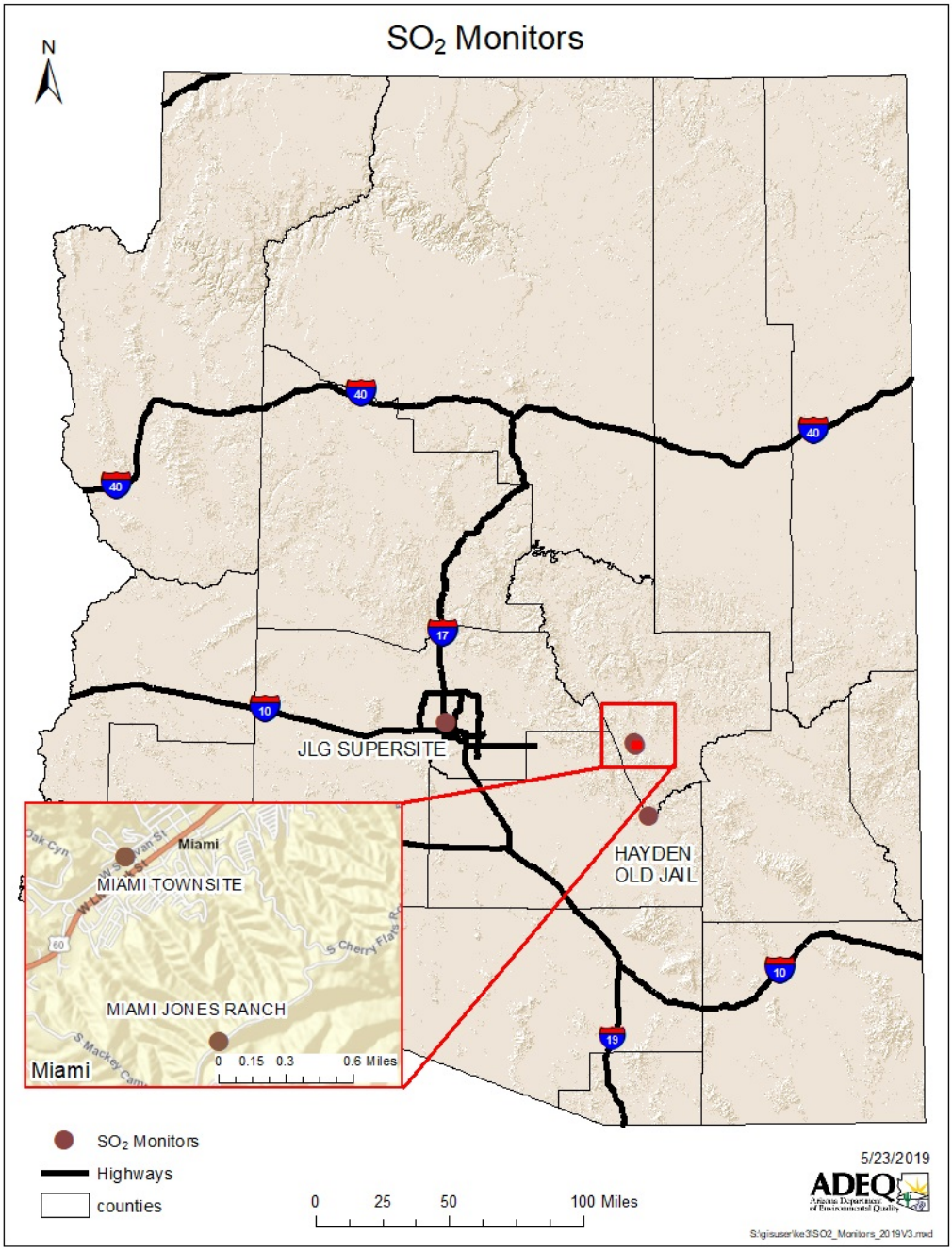
SO2 Monitors
N
JLG SUPERSITE
HAYDEN
OLD JAIL
Miami
MIAMI TOWNSITE
MIAMI JONES RANCH
0 0.15 0.3 0.6 Miles
SO2 Monitors
Highways
counties
0 25 50 100 Miles
5/23/2019
ADEQ
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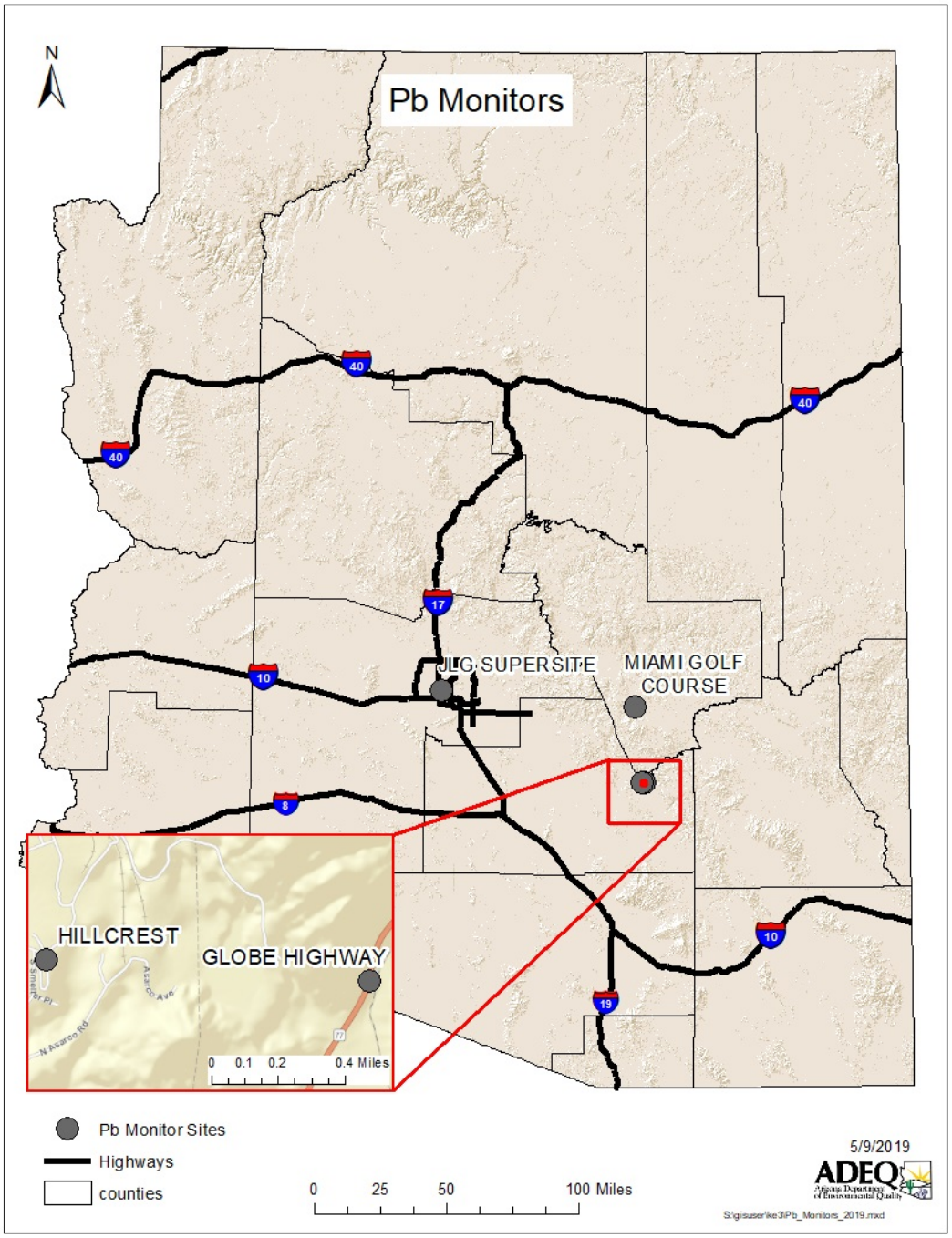
N
Pb Monitors
40
40
40
17
10
8
10
19
JLG SUPERSITE
MIAMI GOLF COURSE
HILLCREST
GLOBE HIGHWAY
0 0.1 0.2 0.4 Miles
Pb Monitor Sites
Highways
counties
0 25 50 100 Miles
5/9/2019
ADEQ
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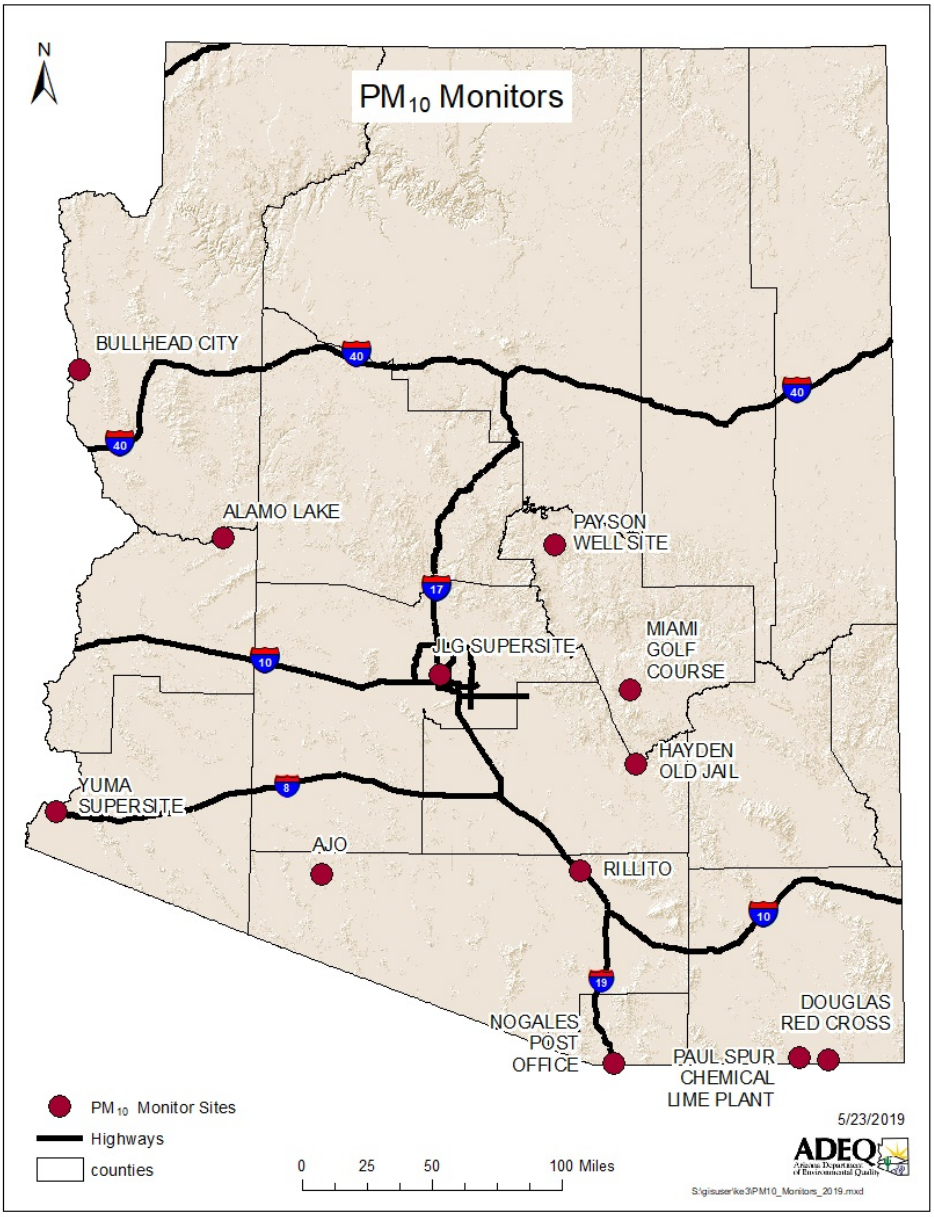
N
PM10 Monitors
BULLHEAD CITY
ALAMO LAKE
PAYSON
WELL SITE
JLG SUPERSITE
MIAMI
GOLF
COURSE
HAYDEN
OLD JAIL
YUMA
SUPERSITE
AJO
RILLITO
NOGALES
POST
OFFICE
PAUL SPUR
CHEMICAL
LIME PLANT
DOUGLAS
RED CROSS
40
17
10
8
19
PM10 Monitor Sites
Highways
counties
0
25
50
100 Miles
5/23/2019
ADEQ
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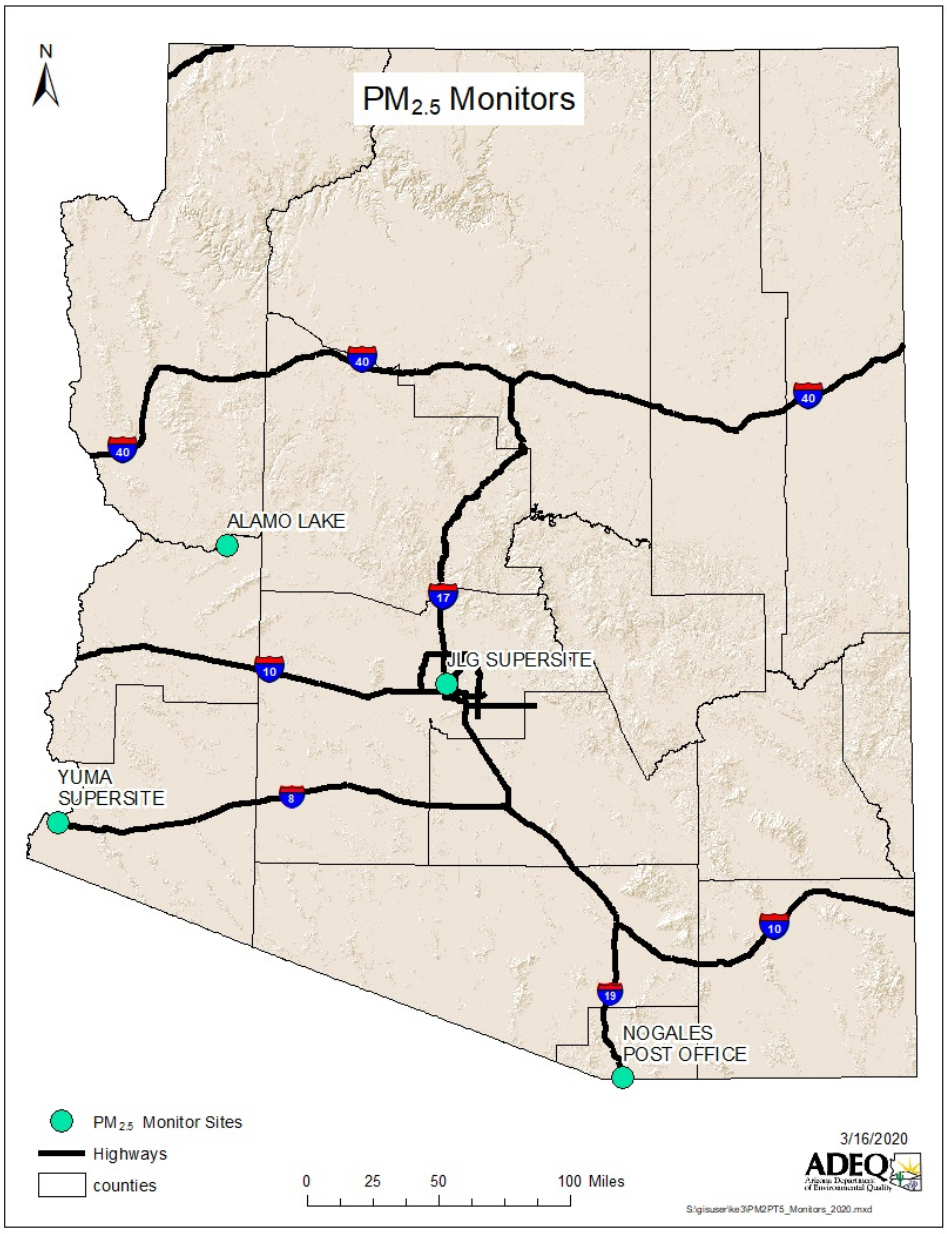
N
PM2.5 Monitors
ALAMO LAKE
JLG SUPERSITE
YUMA
SUPERSITE
NOGALES
POST OFFICE
40
40
40
17
10
8
10
19
PM2.5 Monitor Sites
Highways
counties
0 25 50 100 Miles
3/16/2020
ADEQ
Arizona Department of Environmental Quality
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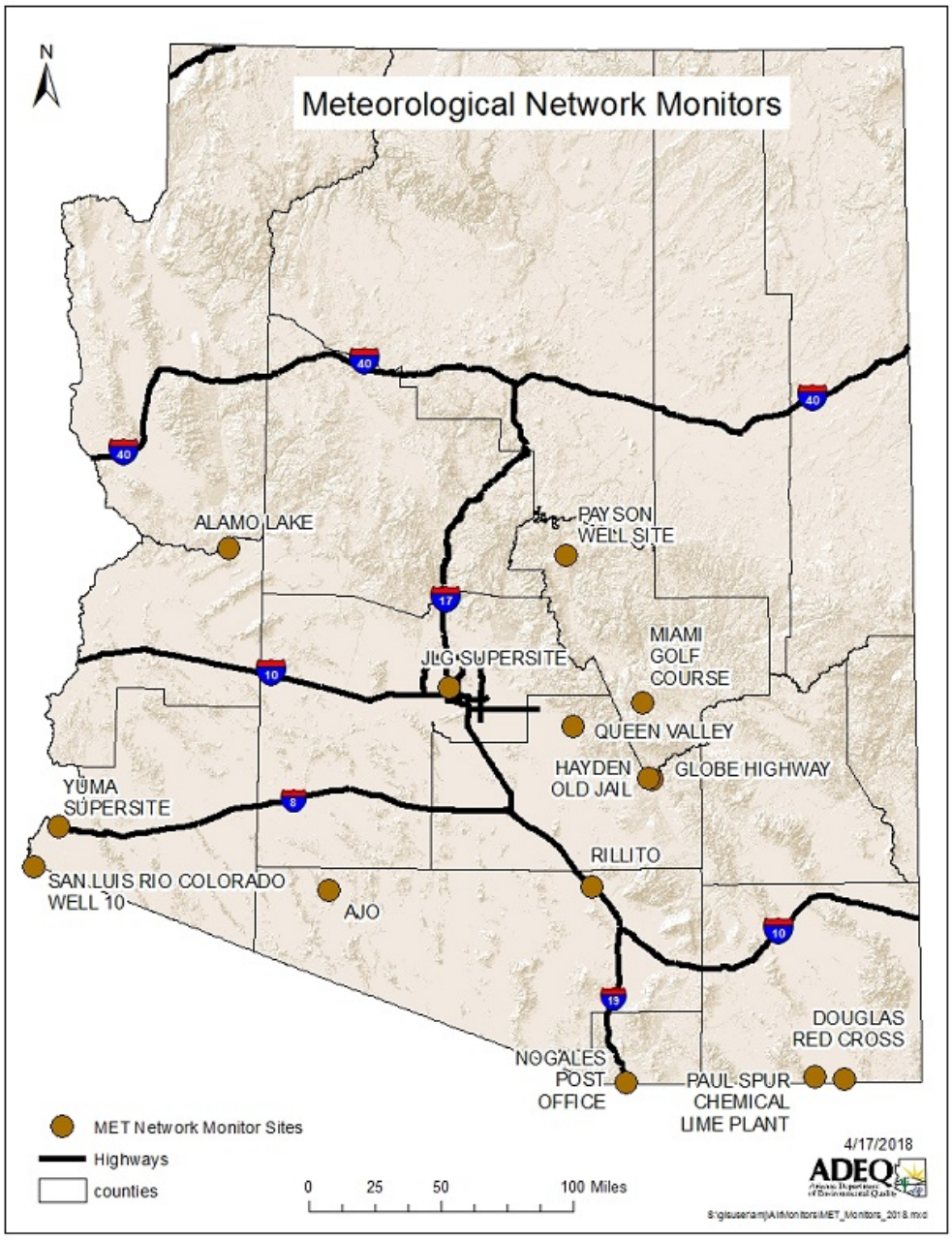
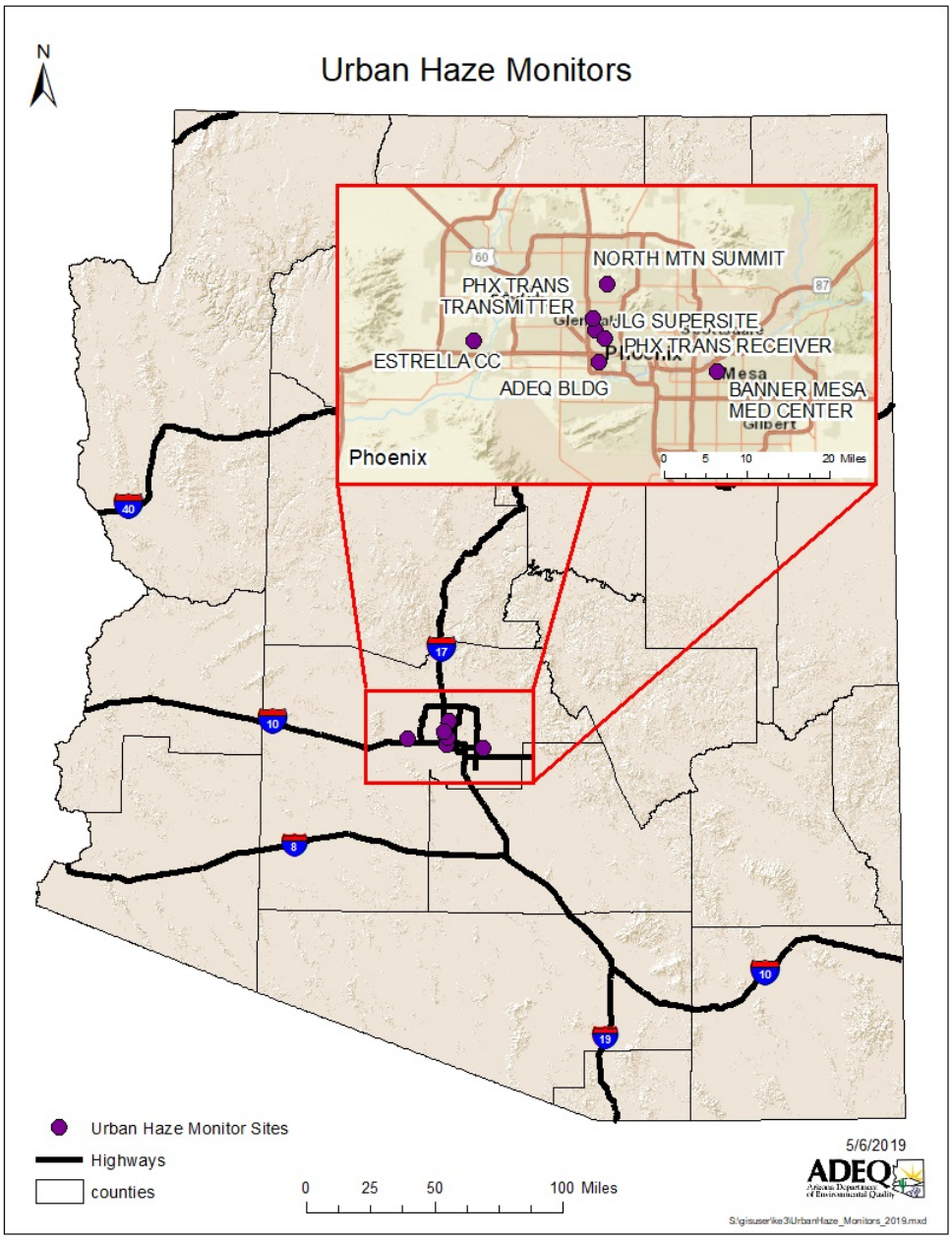

Meteorological Network Monitors
N
ALAMO LAKE
PAYSON
WELL SITE
JLG SUPERSITE
MIAMI
GOLF
COURSE
QUEEN VALLEY
HAYDEN
OLD JAIL
GLOBE HIGHWAY
YUMA
SUPERSITE
SAN LUIS RIO COLORADO
WELL 10
AJO
RILLITO
DOUGLAS
RED CROSS
NOGALES
POST
OFFICE
PAUL SPUR
CHEMICAL
LIME PLANT
MET Network Monitor Sites
Highways
counties
0 25 50 100 Miles
4/17/2018
ADEQ


Urban Haze Monitors
N
NORTH MTN SUMMIT
PHX TRANS TRANSMITTER
JLG SUPERSITE
PHX TRANS RECEIVER
ESTRELLA CC
ADEQ BLDG
BANNER MESA MED CENTER
Phoenix
0 5 10 20 Miles
Urban Haze Monitor Sites
Highways
counties
0 25 50 100 Miles
5/6/2019
ADEQ
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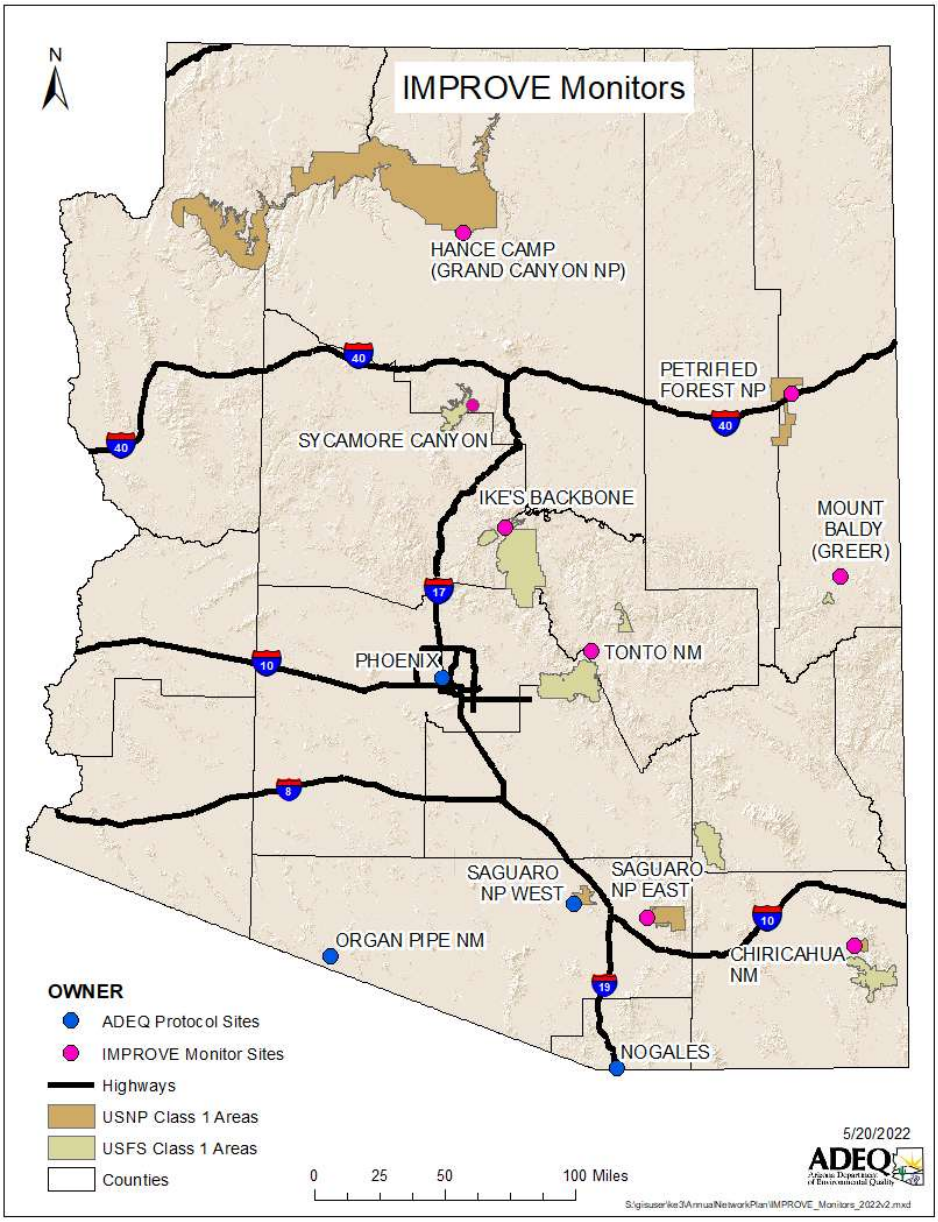
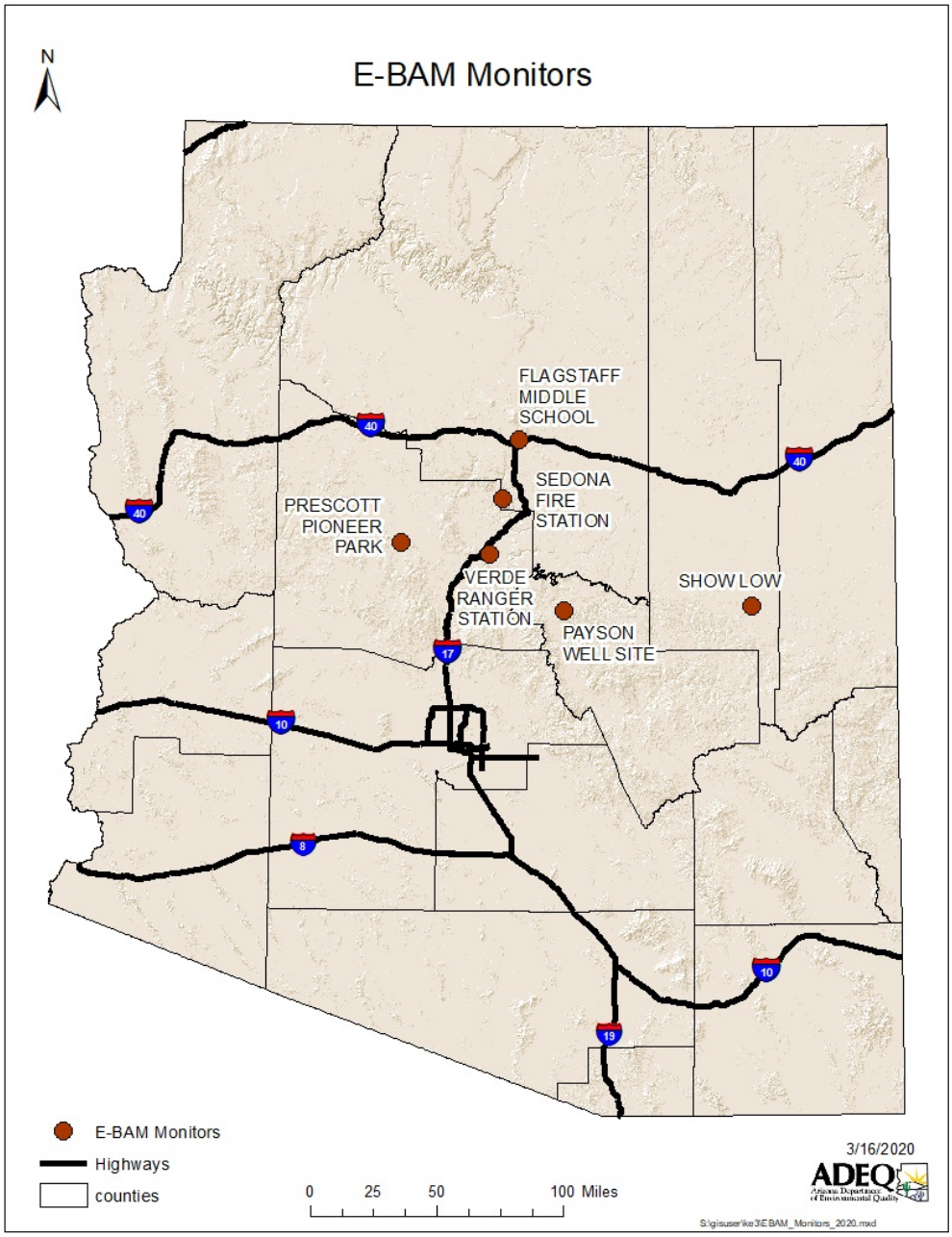

IMPROVE Monitors
N
HANCE CAMP
(GRAND CANYON NP)
PETRIFIED
FOREST NP
SYCAMORE CANYON
IKE'S BACKBONE
MOUNT
BALDY
(GREER)
PHOENIX
TONTO NM
SAGUARO
NP WEST
SAGUARO
NP EAST
ORGAN PIPE NM
CHIRICAHUA
NM
NOGALES
OWNER
ADEQ Protocol Sites
IMPROVE Monitor Sites
Highways
USNP Class 1 Areas
USFS Class 1 Areas
Counties
0 25 50 100 Miles
5/20/2022
ADEQ


E-BAM Monitors
N
FLAGSTAFF MIDDLE SCHOOL
SEDONA FIRE STATION
PRESCOTT PIONEER PARK
VERDE RANGER STATION
SHOW LOW
PAYSON WELL SITE
40
17
10
8
19
E-BAM Monitors
Highways
counties
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3/16/2020
ADEQ
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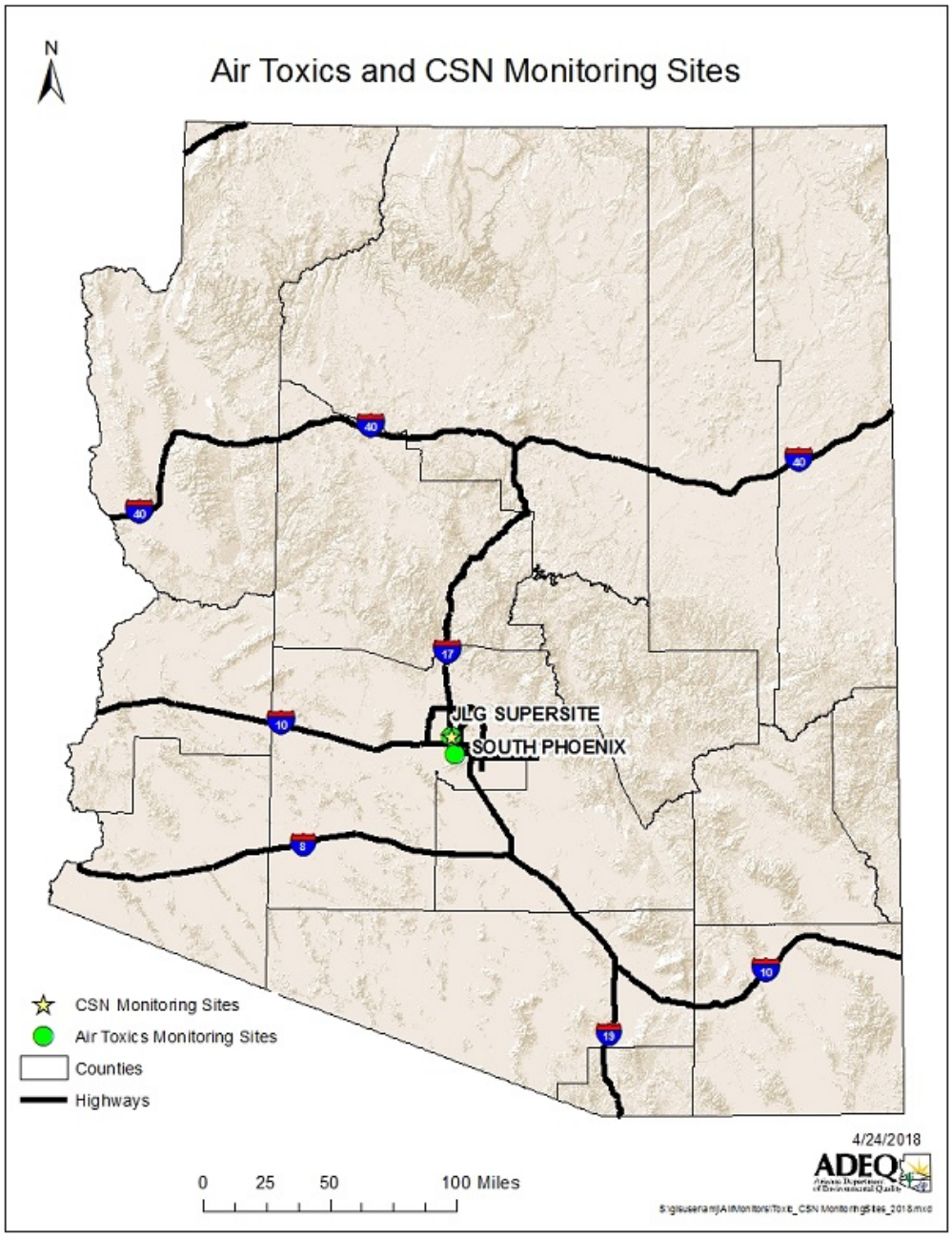

Air Toxics and CSN Monitoring Sites
N
JLG SUPERSITE
SOUTH PHOENIX
CSN Monitoring Sites
Air Toxics Monitoring Sites
Counties
Highways
0 25 50 100 Miles
4/24/2018
ADEQ

Appendix C – Current Monitors by Program or Network

This appendix contains detailed information about monitors operated by ADEQ, or monitors that ADEQ has a strong association with (e.g. IMPROVE monitors). Only those monitors that were at some point in operation during January 1, 2020– July 1, 2021 are included in this appendix. Monitors that are proposed to be installed or those that were discontinued prior to the creation of this network plan are not included in this appendix. Since individual pollutants or networks have specific monitoring or siting criteria, this appendix was created so that siting criteria can be easily identified and evaluated throughout a program or network. See Appendix D for detailed information on specific monitoring sites.

Definitions for Appendix C – Current Monitors by Program or Network

Metadata Type	Description
Local site name	Official name for the site as written in ADEQ's AirVision Database
Pollutant (POC)	The pollutant(s) or parameter(s) being collected or measured at the site and the POC is the Primary Occurrence Code for the instrument
Parameter code	The AQS code representing a specific pollutant being measured or monitored
Basic monitoring objective	Purpose of monitoring for the parameter at the site (Public Information, NAAQS Comparison, or Research)
Site type(s)	A brief description of the intended purpose of the monitor's measurements (Extreme Downwind, Highest Concentration, Max Ozone Concentration, Max Precursor Impact, Population Exposure, Source Oriented, Upwind Background, General / Background, Regional Transport, Welfare-Related Impacts, Quality Assurance, or Other)
Monitor type(s)	The associated monitoring type for the monitor (SLAMS, SPM, Industrial, Non-EPA Federal, Tribal, EPA, Other)
Network affiliation(s)	The associated network affiliations for the monitor (Border Grant, CASTNET, CSN STN, CSN Supplemental, IMPROVE, NATTS, NCore, Near Road, PAMS, Proposed NCore, PSD, School Air Toxics, Unofficial PAMS, Voluntary School Air Toxics)
Collocation designation	For all $PM_{2.5}$, PM_{10}, $PM_{10-2.5}$, Pb, and NO_2 monitors, the associated collocation designation (Primary, QA Collocated, or Other)
Instrument manufacturer and model	The specific make and model of the monitor or instrument used in the network
Method code	The AQS code representing the particular method for collecting samples of the specified instrument
FRM/FEM/ARM/other	Denotes if the instrument is a Federal Reference Method, Federal Equivalency Method, Approved Regional Method (for continuous $PM_{2.5}$ only), or other according to the Federal Registry
Collecting agency	Name of agency collecting data
Analytical Lab (weight, toxics, other)	Name of laboratory performing sample analysis
Reporting Agency	Name of agency reporting the data
Spatial scale (micro, neighborhood)	Area represented by an air quality monitor (microscale: 0 – 100 m, middle scale: 0.1 – 0.5 km, neighborhood: 0.5 – 4 km, urban: 4 – 50 km, regional: ~50 – 500 km, or national/global)
Monitoring start date by pollutant (MM/DD/YYYY)	Date that the monitor was started at the site by pollutant. Does not indicate when the specific POC was started
Current sampling frequency (1:3, continuous)	Frequency the instrument collects samples or measurements (e.g. hourly, daily, 1:3, 1:6, etc.)
Calculated sampling frequency (1:3 / 1:1)	Theoretical frequency for particular matter instrument based on Ratio to Standard Figure in 40 CFR Part 58.12 (e.g. hourly, daily, 1:3, 1:6)
Sampling season (MM/DD-MM/DD)	Period that the instrument collects samples or measurements throughout a given year (expressed as a range of months)
Probe height (meters)	Distance the probe is from the ground in meters (O_3 and SO_2 probes must be between 2 and 15 meters; others pollutants must be between 2 and 7 meters; meteorology typically 2 or 10 meters)
Distance from supporting structure (meters)	For rooftop probe(s) only. The separation distance is in reference to walls, parapets, or penthouses located on roof
Distance from obstructions on roof (meters)	Distance the instrument inlet is from the closest obstruction on the roof in meters (probes and inlets must be at least 1 meter from obstructions)

Distance from obstructions not on roof (meters)	Distance the instrument inlet is from the closest obstruction not on the roof in meters (probes and inlets must be at least 1 meter from obstructions)
Distance from trees (meters)	Distance the instrument inlet is from the nearest tree in meters (must be a minimum of 10 meters from drip line)
Obstruction Height above Probe (meters)	Height the obstruction is above the inlet (distance from the obstruction to the inlet must be at least 2x the height that the obstacle protrudes above the inlet). Trees can be considered obstructions depending on density of foliage, therefore the same obstruction requirements apply to trees
Tree Height above Probe (meters)	Height the tree is above the inlet. Trees that are within 10 meters of inlet may not cause issue if the tree height is at or below the inlet height. Furthermore, as trees grow they may become obstructions, therefore it is important to capture the height of trees
Distance to furnace or incinerator flue (meters)	Distance the instrument inlet is from the nearest furnace or incinerator flue in meters (for Pb and SO_2; designed to avoid undue influences from minor sources)
Distance between collocated monitors (meters)	Distance between the centers of collocated instruments in meters (must be between 1 and 4 meters)
Distance to closest monitor	Distance to closest monitor for all PM and Hi-vol instruments
Unrestricted airflow (degrees)	Angular measure (in degrees) of the area around an instrument that is free from obstructions (minimum of 180°)
Restricted airflow (degrees)	Direction the airflow is restricted in degrees (i.e. 90° = E) (must not be in the direction of the prevailing winds)
Prevailing wind direction (degrees)	Direction the wind predominately comes from in degrees during the season of greatest pollutant concentration. Used to determine if restricted airflow is in the direction of the prevailing wind
Probe material for reactive gases	Type of probe material (SO_2, NO_2, O_3 must have FEP Teflon or borosilicate glass; PAMS and VOCs must be borosilicate glass or stainless steel)
Residence time for reactive gases (seconds)	Number of seconds it takes a sample of air to travel from the inlet to the instrument (reactive gases must be less than 20 seconds)
Changes within the next 18 months? (Y/N)	Are there any planned changes to the monitor in the next 18 months? (Y or N)
Comparison against the annual PM2.5? (Y/N)	Are the data being compared against the annual $PM_{2.5}$ NAAQS? (Y or N)
Frequency of flow rate verification manual PM and Pb samplers	Frequency at which flow rate verifications occur for manual particulate matter and lead instruments (daily, weekly, bi-weekly, monthly)
Frequency of flow rate verification automated PM analyzers	Frequency at which flow rate verifications occur for automated particulate matter instrument (daily, weekly, bi-weekly, monthly)
Frequency of one-point QC check gaseous instruments	Frequency at which zero/span/precision checks occur for gaseous instruments (daily, weekly, bi-weekly, monthly)
Last Annual PE audit for gaseous parameters	Date the last Performance Evaluation audit was performed on the gaseous instrument. (SO_2, NO_2, O_3, CO, etc.) (MM/DD/YYYY)
Last two semi-annual flow rate audits PM and Pb	Dates of the last two audits on the particulate matter and lead instruments flow rate (MM/DD/YYYY, MM/DD/YYYY)
SPM Meets requirements in Appendices A & E	For SPM monitors only. States whether requirements in 40 CFR Part 58 Appendices A & E are being met.

Meteorology - Temp/RH							
Local site name	Ajo	Alamo Lake	Douglas Red Cross	Globe Highway	Hayden Old Jail	JLG Supersite	Miami Golf Course
Pollutant (POC)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)
Parameter code	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201
Basic monitoring objective	--	--	--	--	--	--	--
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Highest Concentration, Source Oriented	Source Oriented	Population Exposure	Source Oriented
Monitor type	--	--	--	--	--	SLAMS	--
Network affiliation(s)	--	--	--	--	--	NCore, PAMS	--
Collocation designation	--	--	--	--	--	--	--
Instrument manufacturer and model	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe
Method code	040	040	040	040	040	040	040
FRM/FEM/ARM/other	--	--	--	--	--	--	--
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	02/11/2014	07/09/2015	08/16/2012	04/15/2011	02/02/2011	07/01/1993	06/08/2011
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	2.3	2.2	2.8	2	2.1	2.4	2
Distance from supporting structure (meters)	1.2	1.0	1.0	--	0.5	1	--
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	--	--
Distance from trees (meters)	14	--	11.5	3.6	12	20	6
Obstruction height above probe (meters)	--	--	--	--	--	--	--
Tree height above probe (meters)	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	270	360	330
Restricted airflow (degrees)	--	--	--	--	250-340	--	310-350
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--

Non-Regulatory - Meteorology - Temp/RH continued								
Local site name	Nogales Post Office	Paul Spur Chemical Lime Plant	Payson Well Site	Phoenix Transmissometer Receiver	Queen Valley	Rillito	San Luis Rio Colorado Well 10	Yuma Supersite
Pollutant (POC)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp R/H (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)
Parameter code	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201
Basic monitoring objective	--	--	--	--	--	--	--	--
Site type(s)	Population Exposure	Source Oriented	Population Exposure	Population Exposure	Downwind	Source Oriented	Source Oriented	Population Exposure
Monitor type	--	--	--	--	--	--	--	--
Network affiliation(s)	--	--	--	--	--	--	--	--
Collocation designation	--	--	--	--	--	--	--	--
Instrument manufacturer and model	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe
Method code	040	040	040	040	040	040	040	040
FRM/FEM/ARM/other	--	--	--	--	--	--	--	--
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Middle	Neighborhood	Urban	Regional	Middle	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	08/11/2011	12/01/2011	05/30/1991	01/01/1994	06/23/2003	03/30/2010	05/10/2017	03/17/2010
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	5.2	2.4	2	32	2.6	2.4	3.7	2
Distance from supporting structure (meters)	--	1.0	--	--	0.50	--	--	1
Distance from obstructions on roof (meters)	--	--	--	10	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	5	--	--	--	--	1
Distance from trees (meters)	5	--	1	--	1.2	19	8.5	--
Obstruction height above probe (meters)	--	--	--	--	--	--	--	--
Tree height above probe (meters)	--	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	250	360	180	290	360	270
Restricted airflow (degrees)	--	--	--	--	90-270	35-105		0-90
Prevailing wind direction (degrees)	--	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--	--

Meteorology - Wind							
Local site name	Ajo	Alamo Lake	Douglas Red Cross	Globe Highway	Hayden Old Jail	JLG Supersite	Miami Golf Course
Pollutant (POC)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)
Parameter code	61103, 61104	61103, 61103	61103, 61104	61103, 61104	61103, 61104	61103, 61104	61103, 61104
Basic monitoring objective	--	--	--	--	--	--	--
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Highest Concentration, Source Oriented	Source Oriented	Population Exposure	Source Oriented
Monitor type	--	--	--	--	--	SLAMS	--
Network affiliation(s)	--	--	--	--	--	NCore, PAMS	--
Collocation designation	--	--	--	--	--	--	--
Instrument manufacturer and model	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer
Method code	065	065	065	065	065	065	065
FRM/FEM/ARM/other	--	--	--	--	--	--	--
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	07/01/1969	07/09/2015	08/06/2012	04/15/2011	02/02/2011	07/01/1993	06/08/2011
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	10	11	10	10	10	10.5	10.5
Distance from supporting structure (meters)	--	--	--	--	--	--	--
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	--	--
Distance from trees (meters)	14	--	11.5	--	--	20	--
Obstruction height above probe (meters)	--	--	--	--	--	--	--
Tree height above probe (meters)	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--

Non-Regulatory - Meteorology - Wind continued							
Local site name	Nogales Post Office	Paul Spur Chemical Lime Plant	Payson Well Site	Queen Valley	Rillito	San Luis Rio Colorado	Yuma Supersite
Pollutant (POC)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)
Parameter code	61103, 61104	61103, 61104	61103, 61104	61103, 61104	61103, 61104	61103, 61104	61103, 61104
Basic monitoring objective	--	--	--	--	--	--	--
Site type(s)	Population Exposure	Source Oriented	Population Exposure	Downwind	Source Oriented	Source Oriented	Population Exposure
Monitor type	--	--	--	--	--	--	--
Network affiliation(s)	--	--	--	--	--	--	--
Collocation designation	--	--	--	--	--	--	--
Instrument manufacturer and model	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer
Method code	065	065	065	065	065	065	065
FRM/FEM/ARM/other	--	--	--	--	--	--	--
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Middle	Neighborhood	Regional	Middle	Middle	Neighborhood
Monitoring start date (MM/DD/YYYY)	01/01/1980	12/01/2011	05/30/1991	06/23/2003	01/08/2004	05/10/2017	03/17/2010
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	8.5	10	10	9	10.4	10.4	10
Distance from supporting structure (meters)	--	--	--	6.5	--	--	6.3
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	--	--
Distance from trees (meters)	--	--	2	--	20	8.5	--
Obstruction height above probe (meters)	--	--	--	--	--	--	--
Tree height above probe (meters)	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	270	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--

SPM								
Local site name	Flagstaff Middle School	Payson Well Site	Prescott Pioneer Park	Sedona Fire Station AQD	Show Low	Verde Ranger Station	Hillcrest	San Luis Rio Colorado Well 10
Pollutant (POC)	$PM_{2.5}$ (1)	$PM_{2.5}$ (1)	PM2.5 (1)	$PM_{2.5}$ (1)	PM2.5 (1)	PM2.5 (1)	Continuous Pb (1)	O3 (1)
Parameter code	--	--	--	--	--	--	--	44201
Basic monitoring objective	Public Information	Public Information	Public Information	Public Information	Public Information	Public Information	Public Information	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Max O3 Concentration
Monitor type	Special Purpose	Special Purpose	Special Purpose	Special Purpose	Special Purpose	Special Purpose	Special Purpose	Special Purpose
Network affiliation(s)	--	--	--	--	--	--	--	--
Collocation designation	--	--	--	--	--	--	--	--
Instrument manufacturer and model	Met One E-BAM	Met One E-BAM	Met One E-BAM	Met One E-BAM	Met One E-BAM	Met One E-BAM	Cooper Environmental XACT 625i	Teledyne API 400
Method code	--	--	--	--	--	--	--	087
FRM/FEM/ARM/other	--	--	--	--	--	--	--	FEM
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Micro	Neighborhood
Monitoring start date (MM/DD/YYYY)	09/09/1999	05/16/2012	01/01/2017	12/16/2011	05/25/2011	12/29/2009	11/07/2018	05/10/2017
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	--	01/01-12/31
Probe height (meters)	2.4	2	--	3.6	2.3	3	2.77	10
Distance from supporting structure (meters)	--	--	--	--	--	--	1.2	6.1
Distance from obstructions on roof (meters)	5	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	6	--	--	4.6	6	--	--
Distance from trees (meters)	9	4	--	--	6.4	--	--	5
Obstruction height above probe (meters)	--	--	--	--	--	--	--	--
Tree height above probe (meters)	--	--	--	--	--	--	--	Below Inlet by 3m
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	526	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	--	--	3.4	--
Unrestricted airflow (degrees)	270	90	360	300	300	300	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--	Teflon
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--	<20 seconds
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	N	N	N	N	N	N	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--	Bi-Weekly
Last annual PE audit for gaseous parameters	--	--	--	--	--	--	--	10/11/2018
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--	--
SPM Meets requirements in Appendices A & E	No	No	No	No	No	No	No	Yes

SPM continued								
Local site name	Nogales Mexico ITN	Nogales Mexico ITN	Nogales Mexico ITN	Nogales Mexico ITN	Nogales Mexico ITN	Nogales Mexico ITN	Spruce Mountain Picnic Site	Burnt Well Rest Area EB Tonopah
Pollutant (POC)	$PM_{2.5}/PM_{10}$	O3 (1)	Temp/RH (1)	Wind (1)	Precipitation	Barometric Pressure	O3, NO2	O3, NO2, VOCs
Parameter code	88101, 88102	44201	62101, 62201	61103, 61104	65102	64101	--	--
Basic monitoring objective	Research	Research	Research	Research	Research	Research	Research	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	Special Purpose	Special Purpose	Special Purpose	Special Purpose	Special Purpose	Special Purpose	Special Purpose	Special Purpose
Network affiliation(s)	--	--	--	--	--	--	--	--
Collocation designation	--	--	--	--	--	--	--	--
Instrument manufacturer and model	Teledyne T640X	Teledyne T400	R.M. Young 41382	R.M. Young 5305	R.M. Young 50202	R.M. Young 61302	Aeroqual AQS-1	Aeroqual AQS-1
Method code	238,239	087	040	065	014	014	--	--
FRM/FEM/ARM/other	FEM	FEM	--	--	--	--	--	--
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Regional	Regional
Monitoring start date (MM/DD/YYYY)	05/01/2021	05/01/2021	05/01/2021	05/01/2021	05/01/2021	05/01/2021	05/27/2022	04/06/2022
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	05/27-10/31	04/06-10/31
Probe height (meters)	4.6	3.6	3.6	10	3.6	3.6	1.67	4.02
Distance from supporting structure (meters)	2	1	1	--	1	1	--	0.98
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	--	2.74	--
Distance from trees (meters)	--	--	--	--	--	--	2.74	>14
Obstruction height above probe (meters)	--	--	--	--	--	--	3.66	--
Tree height above probe (meters)	--	--	--	--	--	--	3.66	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--	--
Distance to closest monitor (meters)	>1	>1	>1	>1	>1	>1	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--	--
Probe material for reactive gases	--	Teflon	--	--	--	--	Glass, Teflon	Glass, Teflon
Residence time for reactive gases (seconds)	--	<20	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	Y	Y
Comparison against the annual PM2.5? (Y/N)	N	N	N	N	N	N	N	N
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	Quarterly	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	Weekly	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--	--
SPM Meets requirements in Appendices A & E	No	No	No	No	No	No	No	Yes

NAAQS - SLAMS - CO	
Local site name	JLG Supersite
Pollutant (POC)	CO (1)
Parameter code	42101
Basic monitoring objective	NAAQS Comparison
Site type(s)	Highest Concentration
Monitor type	SLAMS
Network affiliation(s)	NCore
Collocation designation	--
Instrument manufacturer and model	Teledyne T300U
Method code	693
FRM/FEM/ARM/other	FEM
Collecting agency	ADEQ
Analytical lab (weight, toxics, other)	--
Reporting agency	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood
Monitoring start date (MM/DD/YYYY)	01/01/1999
Current sampling frequency (1:3, continuous)	Continuous
Calculated sampling frequency (1:3 / 1:1)	--
Sampling season (MM/DD-MM/DD)	01/01-12/31
Probe height (meters)	4.1
Distance from supporting structure (meters)	1.2
Distance from obstructions on roof (meters)	--
Distance from obstructions not on roof (meters)	20
Distance from trees (meters)	20
Obstruction height above probe (meters)	6
Tree height above probe (meters)	6
Distance to furnace or incinerator flue (meters)	--
Distance between collocated monitors (meters)	--
Distance to closest monitor (meters)	--
Unrestricted airflow (degrees)	360
Restricted airflow (degrees)	--
Prevailing wind direction (degrees)	--
Probe material for reactive gases	Glass, Teflon
Residence time for reactive gases (seconds)	2.68
Changes within the next 18 months? (Y/N)	N
Comparison against the annual PM2.5? (Y/N)	--
Frequency of flow rate verification manual PM and Pb samplers	--
Frequency of flow rate verification automated PM analyzers	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly
Last annual PE audit for gaseous parameters	11/09/2021
Last two semi-annual flow rate audits PM and Pb	--

NAAQS - SLAMS - NO_2	
Local site name	JLG Supersite
Pollutant (POC)	NO_2 (1)
Parameter code	42602
Basic monitoring objective	NAAQS Comparison
Site type(s)	Highest Concentration
Monitor type	SLAMS
Network affiliation(s)	NCore
Collocation designation	Primary
Instrument manufacturer and model	Teledyne T500U
Method code	212
FRM/FEM/ARM/other	FEM
Collecting agency	ADEQ
Analytical lab (weight, toxics, other)	--
Reporting agency	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood
Monitoring start date (MM/DD/YYYY)	01/01/1999
Current sampling frequency (1:3, continuous)	Continuous
Calculated sampling frequency (1:3 / 1:1)	--
Sampling season (MM/DD-MM/DD)	01/01-12/31
Probe height (meters)	4.1
Distance from supporting structure (meters)	1.2
Distance from obstructions on roof (meters)	--
Distance from obstructions not on roof (meters)	20
Distance from trees (meters)	20
Obstruction height above probe (meters)	6
Tree height above probe (meters)	6
Distance to furnace or incinerator flue (meters)	--
Distance between collocated monitors (meters)	--
Distance to closest monitor (meters)	--
Unrestricted airflow (degrees)	360
Restricted airflow (degrees)	--
Prevailing wind direction (degrees)	--
Probe material for reactive gases	Glass, Teflon
Residence time for reactive gases (seconds)	3.23
Changes within the next 18 months? (Y/N)	N
Comparison against the annual PM2.5? (Y/N)	--
Frequency of flow rate verification manual PM and Pb samplers	--
Frequency of flow rate verification automated PM analyzers	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly
Last annual PE audit for gaseous parameters	11/19/2021
Last two semi-annual flow rate audits PM and Pb	--

NAAQS - SLAMS - O_3								
Local site name	Alamo Lake	Flagstaff Middle School	JLG Supersite	Prescott Pioneer Park	Queen Valley	San Luis Rio Colorado Well 10	Tonto National Monument	Yuma Supersite
Pollutant (POC)	O_3 (1)	O_3 (1)	O_3 (1)	O_3 (1)	O_3 (1)	O_3 (1)	O_3 (1)	O_3 (1)
Parameter code	44201	44201	44201	44201	44201	44201	44201	44201
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	Research	NAAQS Comparison	NAAQS Comparison
Site type(s)	Regional Transport	Max O_3 Concentration	Max O_3 Concentration	Max O_3 Concentration	Extreme Downwind	Max O_3 Concentration	Extreme Downwind	Max O_3 Concentration
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM	SLAMS	SLAMS
Network affiliation(s)	--	--	NCore, PAMS	--	--	--	--	--
Collocation designation	--	--	--	--	--	--	--	--
Instrument manufacturer and model	Teledyne API 400	Teledyne API 400	Teledyne API 400	Teledyne API 400	Teledyne API 400	Teledyne API 400	Teledyne API 400	Teledyne API 400
Method code	087	087	087	087	087	087	087	087
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FEM	FEM	FEM	FEM
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Regional	Neighborhood	Neighborhood	Neighborhood	Regional	Neighborhood	Regional	Neighborhood
Monitoring start date (MM/DD/YYYY)	05/20/2005	04/01/2008	07/01/1993	01/01/2017	05/23/2001	05/10/2017	05/23/2002	05/06/2008
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4.1	9.5	4.1	3.6	4.5	10	4.1	4.3
Distance from supporting structure (meters)	1.6	1.5	1.2	1.5	2.0	6.1	1.4	1.6
Distance from obstructions on roof (meters)	--	0	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	20	--	--	--	--	65
Distance from trees (meters)	--	21.5	20	11.1	--	5	--	--
Obstruction height above probe (meters)	--	--	6	--	--	--	--	0
Tree height above probe (meters)	--	3	6	3.0	--	Below Inlet by 3m	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--	--
Probe material for reactive gases	Teflon	Teflon	Glass, Teflon	Teflon	Teflon	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	3.37	7.39	5.52	1.49	3.13	<20 seconds	3.19	0.27
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly
Last annual PE audit for gaseous parameters	08/27/2021, 03/06/2021	08/19/2021	11/08/2021, 07/22/2021, 05/04/2021	03/17/2021	04/09/2021	10/11/2018	05/10/2021	12/10/2021, 03/06/2021
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--	--

NAAQS - SLAMS - SO_2				
Local site name	Hayden Old Jail	JLG Supersite	Miami Jones Ranch	Miami Townsite
Pollutant (POC)	SO_2 (1)	SO_2 (1)	SO_2 (1)	SO_2 (1)
Parameter code	42401	42401	42401	42401
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Source Oriented	Population Exposure	Source Oriented	Source Oriented
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	--	NCore	--	--
Collocation designation	--	--	--	--
Instrument manufacturer and model	Teledyne T100	Teledyne T100	Teledyne T100	Teledyne T100
Method code	100	600	100	100
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	01/05/1979	03/04/2005	02/01/2013	02/01/2013
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4.7	4.1	3.5	3.7
Distance from supporting structure (meters)	2.1	1.2	1	1
Distance from obstructions on roof (meters)	--	--	--	--
Distance from obstructions not on roof (meters)	--	20	--	26.4
Distance from trees (meters)	12	20	--	14
Obstruction height above probe (meters)	--	6	--	10.9
Tree height above probe (meters)	0	6	--	7
Distance to furnace or incinerator flue (meters)	280	--	3081	2300
Distance between collocated monitors (meters)	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360
Restricted airflow (degrees)	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--
Probe material for reactive gases	Teflon	Glass, Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	4.03	5.34	9.02	6.68
Changes within the next 18 months? (Y/N)	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly
Last annual PE audit for gaseous parameters	03/16/2021	05/06/2021, 11/09/2021	08/12/2021	11/22/2021
Last two semi-annual flow rate audits PM and Pb	--	--	--	--

NAAQS - SLAMS - Pb				
Local site name	Globe Highway	Hillcrest	Hillcrest	Miami Golf Course
Pollutant (POC)	Pb (1)	Pb (1)	Pb (2)	Pb (1)
Parameter code	14129	14129	14129	14129
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Highest Concentration, Source Oriented	Highest Concentration, Source Oriented	Highest Concentration, Source Oriented	Source Oriented
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	--	--	--	--
Collocation designation	Primary	Primary	QA Collocated	Primary
Instrument manufacturer and model	Tisch TE-8550-BL TSP	Tisch TE-8550-BL TSP	Tisch TE-8550-BL TSP	Tisch TE-8550-BL TSP
Method code	191	191	191	191
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	PCRWRD	PCRWRD	PCRWRD	PCRWRD
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	01/01/2011	01/01/2016	09/24/2019	01/01/2011
Current sampling frequency (1:3, continuous)	1:6	1:6	1:6	1:6
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	2	3	3	3
Distance from supporting structure (meters)	1.1	1.2	1.2	1.1
Distance from obstructions on roof (meters)	--	--	--	--
Distance from obstructions not on roof (meters)	65	--	--	--
Distance from trees (meters)	3	--	--	10
Obstruction height above probe (meters)	23	--	--	--
Tree height above probe (meters)	-1	--	--	0
Distance to furnace or incinerator flue (meters)	1043	526	526	2635
Distance between collocated monitors (meters)	--	2	2	--
Distance to closest monitor (meters)	--	2	2	3.5
Unrestricted airflow (degrees)	360	360	360	360
Restricted airflow (degrees)	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--
Probe material for reactive gases	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	Monthly	Monthly	Monthly	Monthly
Frequency of flow rate verification automated PM analyzers	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	01/26/2021, 04/02/2021, 07/08/2021, 10/15/2021	01/26/2021, 04/02/2021, 07/08/2021, 10/15/2021	02/11/2021, 04/02/2021, 07/08/2021, 10/15/2021	01/26/2021, 04/02/2021, 07/08/2021, 10/15/2021

NAAQS - SLAMS - PM_{10}						
Local site name	Ajo	Alamo Lake	Bullhead City	Douglas Red Cross	Hayden Old Jail	JLG Supersite
Pollutant (POC)	PM_{10} (3)	PM_{10} (3)	PM_{10} (3)	PM_{10} (3)	PM_{10} (3)	PM_{10} (3)
Parameter code	81102	81102	81102	81102	81102	81102
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Population Exposure	Background	Population Exposure	Population Exposure	Source Oriented	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	--	--	--	--	--	NCore
Collocation designation	Primary	Primary	Primary	Primary	Primary	Primary
Instrument manufacturer and model	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020
Method code	122	122	122	122	122	122
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FEM	FEM
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Regional	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	12/01/1986	01/01/2014	11/01/1997	09/02/1998	12/01/1986	07/01/1993
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	1:1	1:1	1:1	1:6	1:6	1:2
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	3.7	4.4	8	3.1	4.6	5.1
Distance from supporting structure (meters)	2.6	2	2	2.1	2	2.1
Distance from obstructions on roof (meters)	--	--	6.3	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	15
Distance from trees (meters)	12	--	--	10	12	15
Obstruction height above probe (meters)	--	--	0	--	--	5
Tree height above probe (meters)	0	--	--	1	0	5
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--
Distance to closest monitor (meters)	--	1.0	--	1.0	--	1.0
Unrestricted airflow (degrees)	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	
Last two semi-annual flow rate audits PM and Pb	12/10/2021, 06/11/2021	08/27/2021, 03/06/2021	06/17/2021, 03/12/2021	08/20/2021, 02/15/2021	09/13/2021, 03/16/2021	11/08/2021, 05/03/2021

NAAQS - SLAMS - PM_{10} continued						
Local site name	Miami Golf Course	Nogales Post Office	Paul Spur Chemical Lime Plant	Payson Well Site	Rillito	Yuma Supersite
Pollutant (POC)	PM_{10} (3)	PM_{10} (3)	PM_{10} (3)	PM_{10} (3)	PM_{10} (3)	PM_{10} (3)
Parameter code	81102	81102	81102	81102	81102	81102
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Source Oriented	Population Exposure	Source Oriented	Population Exposure	Source Oriented	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	--	--	--	--	--	--
Collocation designation	Primary	Primary	Primary	Primary	Primary	Primary
Instrument manufacturer and model	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020
Method code	122	122	122	122	122	122
FRM/FEM/ARM/other	FEM	FEM	FEM	FRM	FEM	FEM
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Middle	Neighborhood	Middle	Neighborhood
Monitoring start date (MM/DD/YYYY)	7/26/2012	12/01/1986	12/01/1986	05/31/1991	03/01/1986	02/08/2006
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	1:6	1:1	1:2	1:6	1:6	1:6
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4	8	3.1	4.75	4.3	5
Distance from supporting structure (meters)	2	2.7	2	2.1	2	2.2
Distance from obstructions on roof (meters)	--	11	--	--	--	--
Distance from obstructions not on roof (meters)	--		--	--	3	65
Distance from trees (meters)	10	10	--	17.4	20	--
Obstruction height above probe (meters)	--	2	--	--	0	0
Tree height above probe (meters)	0	0	--	1	0	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	3	--	--	--	--
Distance to closest monitor (meters)	--	1.0	--	--	--	1.0
Unrestricted airflow (degrees)	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	09/13/2021, 03/05/2021	07/14/2021, 03/18/2021	08/20/2021, 02/15/2021	11/02/2021, 05/16/2021	12/21/2021, 06/11/2021	12/10/2021, 06/11/2021

NAAQS - SLAMS - $PM_{2.5}$						
Local site name	Alamo Lake	JLG Supersite	JLG Supersite	Nogales Post Office	Nogales Post Office	Yuma Supersite
Pollutant (POC)	$PM_{2.5}$ (3)	$PM_{2.5}$ (3)	$PM_{2.5}$ (1)	$PM_{2.5}$ (3)	$PM_{2.5}$ (1)	$PM_{2.5}$ (3)
Parameter code	88101	88101	88101	88101	88101	88101
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Background	Population Exposure	Population Exposure	Highest Concentration	Highest Concentration	Regional Transport
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	--	NCore	NCore	--	--	--
Collocation designation	Primary	Primary	QA Collocated	Primary	QA Collocated	Primary
Instrument manufacturer and model	Met One BAM 1020	Met One BAM 1020	Thermo Partisol 2000i	Met One BAM 1020	Thermo Partisol 2000i	Met One BAM 1020
Method code	170	170	143	170	143	170
FRM/FEM/ARM/other	FEM	FEM	FRM	FEM	FRM	FEM
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	IML	--	IML	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Regional	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	01/01/2014	01/01/2011	01/06/1999	04/01/2013	01/06/1999	01/01/2010
Current sampling frequency (1:3, continuous)	Continuous	Continuous	1:3	Continuous	1:6	Continuous
Calculated sampling frequency (1:3 / 1:1)	1:3	1:3	1:3	1:3	1:3	1:3
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4.5	5.2	4.7	8.3	8.3	5.1
Distance from supporting structure (meters)	2.1	2.2	2	3	3	2.3
Distance from obstructions on roof (meters)	--	--	--	12	9	--
Distance from obstructions not on roof (meters)	--	15	15			65
Distance from trees (meters)	--	15	15	10	10	--
Obstruction height above probe (meters)	--	5	6	1.7	1.7	0
Tree height above probe (meters)	--	5	6	0	0	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	1.3	1.3	2.2	2.2	--
Distance to closest monitor (meters)	1.0	1.0	1.3	1.0	3.0	1.0
Unrestricted airflow (degrees)	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	180	180	--
Probe material for reactive gases	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	Y	Y	Y	Y	Y	Y
Frequency of flow rate verification manual PM and Pb samplers	--	--	Monthly	--	Monthly	--
Frequency of flow rate verification automated PM analyzers	Monthly	Monthly	--	Monthly	--	Monthly
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	08/27/2021, 03/06/2021	11/08/2021, 05/03/2021	11/08/2021, 05/03/2021	07/14/2021, 03/18/2021	07/14/2021, 03/18/2021	12/10/2021, 06/11/2021

NAAQS - CSN		
Local site name	JLG Supersite	JLG Supersite
Pollutant (POC)	$PM_{2.5}$ Speciation (7)	$PM_{2.5}$ Speciation (7)
Parameter code	Multiple	Multiple
Basic monitoring objective	Research	Research
Site type(s)	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS
Network affiliation(s)	CSN STN, NCore	CSN STN, NCore
Collocation designation	--	--
Instrument manufacturer and model	Met One SuperSASS	URG 3000N
Method code	Various	Various
FRM/FEM/ARM/other	--	--
Collecting agency	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	RTI	RTI
Reporting agency	RTI	RTI
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	02/21/2000	02/21/2000
Current sampling frequency (1:3, continuous)	1:3	1:3
Calculated sampling frequency (1:3 / 1:1)	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31
Probe height (meters)	4.7	4.9
Distance from supporting structure (meters)	2	2.2
Distance from obstructions on roof (meters)	--	--
Distance from obstructions not on roof (meters)	20	20
Distance from trees (meters)	20	20
Obstruction height above probe (meters)	6	5
Tree height above probe (meters)	6	5
Distance to furnace or incinerator flue (meters)	--	--
Distance between collocated monitors (meters)	--	--
Distance to closest monitor (meters)	--	--
Unrestricted airflow (degrees)	360	360
Restricted airflow (degrees)	--	--
Prevailing wind direction (degrees)	--	--
Probe material for reactive gases	--	--
Residence time for reactive gases (seconds)	--	--
Changes within the next 18 months? (Y/N)	N	N
Comparison against the annual PM2.5? (Y/N)	--	--
Frequency of flow rate verification manual PM and Pb samplers	Monthly	Monthly
Frequency of flow rate verification automated PM analyzers	--	--
Frequency of one-point QC check gaseous instruments	--	--
Last annual PE audit for gaseous parameters	--	--
Last two semi-annual flow rate audits PM and Pb	11/08/2021, 05/03/2021	11/08/2021, 05/03/2021

NAAQS - NCore					
Local site name	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Pollutant (POC)	CO (1)	NOy (1)	O3 (1)	SO2 (1)	$PM_{10-2.5}$ (1)
Parameter code	42101	42600	44201	42401	86101
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	Research
Site type(s)	Highest Concentration	Population Exposure	Max O3 Concentration	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NCore	NCore, PAMS	NCore, PAMS	NCore	NCore
Collocation designation	--	--	--	--	Primary
Instrument manufacturer and model	Teledyne T300U	Teledyne T200U/Noy	Teledyne API 400	Teledyne T100	Met One BAM 1020
Method code	693	699	087	600	185
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FEM
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	1/1/1999	01/01/2011	7/1/1993	3/4/2005	11/10/2010
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4.1	10	4.1	4.1	4.9
Distance from supporting structure (meters)	1.2	7	1.2	1.2	2.5
Distance from obstructions on roof (meters)	--	--	--	--	--
Distance from obstructions not on roof (meters)	20	20	20	20	15
Distance from trees (meters)	20	20	20	20	15
Obstruction height above probe (meters)	6	0	6	6	5
Tree height above probe (meters)	6	0	6	6	5
Distance to furnace or incinerator flue (meters)	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	2.0
Unrestricted airflow (degrees)	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--
Probe material for reactive gases	Glass, Teflon	Glass, Teflon	Glass, Teflon	Glass, Teflon	--
Residence time for reactive gases (seconds)	2.68	4.51	5.52	5.34	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	Monthly
Frequency of one-point QC check gaseous instruments	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	--
Last annual PE audit for gaseous parameters	11/09/2021	11/19/2021	11/08/2021, 07/22/2021, 05/04/2021	05/06/2021, 11/09/2021	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--

NAAQS - NCore continued						
Local site name	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Pollutant (POC)	PM2.5 (3)	PM2.5 (1)	$PM_{2.5}$ Speciation (7)	$PM_{2.5}$ Speciation (7)	Temp/RH (1)	Wind (1)
Parameter code	88101	88101	Multiple	Multiple	62101, 62201	61103, 61104
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	Research	Research	--	--
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NCore	NCore	CSN STN, NCore	CSN STN, NCore	NCore, PAMS	NCore, PAMS
Collocation designation	Primary	QA Collocated	--	--	--	--
Instrument manufacturer and model	Met One BAM 1020	Thermo Partisol 2000i	Met One SuperSASS	URG 3000N	Vaisala HMP 155 Probe	RM Young 5305 Anemometer
Method code	170	143	Various	Various	040	065
FRM/FEM/ARM/other	FEM	FRM	--	--	--	--
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	IML	RTI	RTI	--	--
Reporting agency	ADEQ	ADEQ	RTI	RTI	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	1/1/2011	1/6/1999	02/21/2000	02/21/2000	7/1/1993	7/1/1993
Current sampling frequency (1:3, continuous)	Continuous	1:3	1:3	1:3	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	1:3	1:3	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	5.2	4.7	4.7	4.9	2.4	10.5
Distance from supporting structure (meters)	2.2	2	2	2	1	--
Distance from obstructions on roof (meters)	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	15	15	20	15	--	--
Distance from trees (meters)	15	15	20	15	20	20
Obstruction height above probe (meters)	5	6	6	5	--	--
Tree height above probe (meters)	5	6	6	5	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	1.3	1.3	--	--	--	--
Distance to closest monitor (meters)	1.0	1.3	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	Y	Y	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	Monthly	Monthly	Monthly	--	--
Frequency of flow rate verification automated PM analyzers	Monthly	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	11/08/2021, 05/03/2021	11/08/2021, 05/03/2021	11/08/2021, 05/03/2021	11/08/2021, 05/03/2021	--	--

PAMS								
Local site name	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Pollutant (POC)	NO2 (1)	O3 (1)	Carbonyl (30,31)	Carbonyl (32)	VOC (6)	VOC (7)	Auto-GC	Mixing Layer Height
Parameter code	42602	44201	Multiple	Multiple	Multiple	Multiple	Multiple	61301
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	Research	Research	Research	Research	Research	Research
Site type(s)	Highest Concentration	Max O3 Concentration	Max Precursor Impact	QA Collocated	Max Precursor Impact	QA Collocated	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NCore	NCore, PAMS	PAMS	PAMS	PAMS, NATTS	PAMS, NATTS	PAMS	PAMS
Collocation designation	Primary	--	--	--	--	--	--	--
Instrument manufacturer and model	Teledyne T500U	Teledyne API 400	ATEC 8000	ATEC 8000	ATEC 2200	ATEC 2200	CAS-Chromatotec FID	Lufft CHM15K
Method code	212	087	202	202	126	126	--	--
FRM/FEM/ARM/other	FEM	FEM	--	--	--	--	--	--
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	ERG	ERG	ERG	ERG	--	--
Reporting agency	ADEQ	ADEQ	ERG	ERG	ERG	ERG	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	01/01/1999	07/01/1993	05/15/1999	05/15/1999	05/15/1999	05/15/1999	06/01/2021	06/01/2021
Current sampling frequency (1:3, continuous)	Continuous	Continuous	1:6	1:6	1:6	1:6	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	06/01-08/31	06/01-08/31	06/01-08/31	06/01 - 08/31	01/01-12/31	01/01-12/31
Probe height (meters)	4.1	4.1	4.7	4.7	4.7	4.7	4.8	4.1
Distance from supporting structure (meters)	1.2	1.2	2	2	2	2	2	1.4
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	20	20	20	20	20	20	--	--
Distance from trees (meters)	20	20	20	20	20	20	20	20
Obstruction height above probe (meters)	6	6	6	6	6	6	--	--
Tree height above probe (meters)	6	6	6	6	6	6	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--	--
Probe material for reactive gases	Glass, Teflon	Glass, Teflon	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	--
Residence time for reactive gases (seconds)	3.23	5.52	2.04	2.03	15.71	15.71	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly	Bi-Weekly	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	11/19/2021	11/08/2021, 07/22/2021, 05/04/2021	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--	--

PAMS continued							
Local site name	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Pollutant (POC)	Temp/RH (1)	Wind (1)	Horizontal Solar Radiation (1)	Ultraviolet Solar Radiation (1)	Precipitation	Barometric Pressure	NOy (1)
Parameter code	62101, 62201	61103, 61104	63301	63302, 63304	65102	64101	42600
Basic monitoring objective	--	--	Research	Research	Research	Research	NAAQS Comparison
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NCore, PAMS	NCore, PAMS	PAMS	PAMS	PAMS	PAMS	NCore, PAMS
Collocation designation	--	--	--	--	--	--	--
Instrument manufacturer and model	Vaisala HMP 155 Probe	RM Young 5305 Anemometer	Kipp & Zonen CMP6 Pyranometer	Epply TUVR UV	RM Young 50202	RM Young 61302V	Teledyne T200U/Noy
Method code	040	065	011	011	014	014	699
FRM/FEM/ARM/other	--	--	--	--	--	--	FEM
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	07/01/1993	07/01/1993	04/29/2016	04/29/2016	07/01/2020	07/01/2020	1/1/2011
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	2.4	10.5	5.4	5.5	1.5	2.0	10
Distance from supporting structure (meters)	1	--	2.4	2.5	--	--	7
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	0.6	20
Distance from trees (meters)	20	20	25	25	15	20	20
Obstruction height above probe (meters)	--	--	--	--	--	1	0
Tree height above probe (meters)	--	--	--	--	--	--	0
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	0.33	0.33	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	Glass, Teflon
Residence time for reactive gases (seconds)	--	--	--	--	--	--	4.51
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	Bi-Weekly
Last annual PE audit for gaseous parameters	--	--	--	--	--	--	11/19/2021
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--

Air Toxics -NATTS/UATMP							
Local site name	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	South Phoenix
Pollutant (POC)	Carbonyl (6)	Carbonyl (7)	VOC (6)	VOC (7)	HAP/SVOC/PAH (6)	PM_{10} metals speciation (1)	VOC (6)
Parameter code	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple
Basic monitoring objective	Research	Research	Research	Research	Research	Research	Research
Site type(s)	Population Exposure	QA Collocated	Population Exposure	QA Collocated	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NATTS	NATTS	PAMS, NATTS	PAMS, NATTS	NATTS	NATTS	UATMP
Collocation designation	--	--	--	--	--	--	--
Instrument manufacturer and model	ATEC 8000	ATEC 8000	ATEC 2200	ATEC 2200	Tisch PUF+	Thermo Partisol 2000	ATEC 2200
Method code	202	202	101	101	118	202	101
FRM/FEM/ARM/other	--	--	--	--	--	--	--
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	ERG	ERG	ERG	ERG	ERG	ERG	ERG
Reporting agency	ERG	ERG	ERG	ERG	ERG	ERG	ERG
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	05/15/1999	05/15/1999	06/06/2001	06/06/2001	07/08/2007	01/01/2005	08/05/2001
Current sampling frequency (1:3, continuous)	1:6	Every other month	1:6	Every other month	1:6	1:6	1:12
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4.7	4.7	4.7	4.7	4.1	4.7	4.6
Distance from supporting structure (meters)	2	2	2	2	1.2	2	1.6
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	20	20	20	20	20	20	8.0
Distance from trees (meters)	20	20	20	20	20	20	4.8
Obstruction height above probe (meters)	6	6	6	6	6	6	8.0
Tree height above probe (meters)	6	6	6	6	6	6	8.0
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	2.0	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	335
Restricted airflow (degrees)	--	--	--	--	--	--	240-265
Prevailing wind direction (degrees)	--	--	--	--	--	--	250-260
Probe material for reactive gases	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	--	--	Stainless Steel
Residence time for reactive gases (seconds)	2.04	2.03	15.71	15.71	--	--	16.35
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	Monthly	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	11/08/2021, 05/03/2021	11/08/2021, 05/03/2021	--

Urban Haze							
Local site name	ADEQ Building	Banner Mesa Medical Center	Estrella Mountain Community College	North Mountain Summit	North Mountain Summit	Phoenix Transmissometer Receiver	Phoenix Transmissometer Transmitter
Pollutant (POC)	Visibility (1)	Visibility (1)	Visibility (1)	Visibility (1)	Visibility (2)	B_{ext} (1)	B_{ext} (1)
Parameter code	--	--	--	--	--	--	--
Basic monitoring objective	Public Information	Public Information	Public Information	Public Information	Public Information	Public Information	Public Information
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	--	--	--	--	--	--	--
Network affiliation(s)	--	--	--	--	--	--	--
Collocation designation	--	--	--	--	--	--	--
Instrument manufacturer and model	CANON EOS Rebel T2i	CANON EOS Rebel T2i	CANON EOS Rebel T2i	CANON EOS Rebel T2i	CANON EOS Rebel T2i	Optec LVP-2 Transmissometer Receiver	Optec LVP-2 Transmissometer Transmitter
Method code	--	--	--	--	--	--	--
FRM/FEM/ARM/other	--	--	--	--	--	--	--
Collecting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial scale (micro, neighborhood)	Urban	Urban	Urban	Urban	Urban	Urban	Urban
Monitoring start date (MM/DD/YYYY)	07/01/2002	01/01/1993	01/01/1993	01/01/1993	01/01/1993	12/01/1992	12/01/1992
Current sampling frequency (1:3, continuous)	Every 5 min.	Every 5 min.	Every 5 min.	Every 5 min.	Every 5 min.	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	--	--	--	--	--	30	27
Distance from supporting structure (meters)	--	--	--	--	--	--	--
Distance from obstructions on roof (meters)	--	--	--	--	--	5	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	--	--
Distance from trees (meters)	--	--	--	--	--	--	--
Obstruction height above probe (meters)	--	--	--	--	--	--	--
Tree height above probe (meters)	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Distance to closest monitor (meters)	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	--	--	--	--	--	240	360
Restricted airflow (degrees)	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	Y	Y
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--

Visibility - ADEQ IMPROVE Protocol					
Local site name	JLG Supersite	JLG Supersite	Nogales Post Office	Organ Pipe National Monument	Saguaro National Park West
Pollutant (POC)	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE
Parameter code	Multiple	Multiple	Multiple	Multiple	Multiple
Basic monitoring objective	Research	Research	Research	Research	Research
Site type(s)	Other	Other	Background	Other	Other
Monitor type	--	--	--	--	--
Network affiliation(s)	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE
Collocation designation	--	--	--	--	--
Instrument manufacturer and model	--	--	--	--	--
Method code	Various	Various	Various	Various	Various
FRM/FEM/ARM/other	Other	Other	Other	Other	Other
Collecting agency	ADEQ	ADEQ	ADEQ	NPS	NPS
Analytical lab (weight, toxics, other)	--	--	--	--	--
Reporting agency	UC Davis	UC Davis	UC Davis	UC Davis	UC Davis
Spatial scale (micro, neighborhood)	Neighborhood	Neighborhood	Regional	Regional	Regional
Monitoring start date (MM/DD/YYYY)	04/25/2001	04/25/2001	10/24/2015	01/15/2003	04/19/2001
Current sampling frequency (1:3, continuous)	1:3	1:3	1:3	1:3	1:3
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	5.5	5.5	8.3	3.4	3.3
Distance from supporting structure (meters)	--	--	--	1.4	1
Distance from obstructions on roof (meters)	--	--	16.0	--	--
Distance from obstructions not on roof (meters)	15	15	--	--	--
Distance from trees (meters)	15	15	--	13	15
Obstruction height above probe (meters)	5	5	1.7	--	--
Tree height above probe (meters)	5	5	--	--	2
Distance to furnace or incinerator flue (meters)	--	--	--	--	--
Distance between collocated monitors (meters)	4	4	--	--	--
Distance to closest monitor (meters)	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	N	N	N	N	N
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--
Last annual PE audit for gaseous parameters	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--

Appendix D – Site Information Data Tables

This appendix contains detailed information about sites that are fully or partially operated by ADEQ. All sites that were operational between January 1, 2020 and July 1, 2021 are included in this appendix. This appendix also contains general information about the air quality monitors at each site. See Appendix C for more detailed information on specific monitors and networks.

Definitions for Appendix D – Site Information Data Tables

Local Site Name	Official name for the site as written in ADEQ's AirVision Database
Site Narrative	Brief summary of the site location and surroundings

Site Information

AQS ID	Unique identifier from EPA's Air Quality System database
Street Address	Physical Street Address or cross streets of the monitoring site
County	Arizona county the monitor is located within
CBSA	Core Based Statistical Area that the site is located within. A CBSA is a U.S. geographic area defined by the Office of Management and Budget based around an urban center of at least 10,000 people and adjacent areas that are socioeconomically tied to the urban center by commuting
Surrounding Area	Description of area around monitoring site (residential, commercial, industrial, agricultural, desert, forest, mobile, blighted area, and military reservation)
Roadway Info	Distance and direction from the edge of the nearest roadway to the instrument in meters
Nearest Assessed Roadway Info	ADOT supplied traffic count for the nearest major roadway. Includes distance and direction of roadway if differs from the nearest roadway
Groundcover	Type of surface at the base of the instrument (e.g. sand, cement, rooftop, metal, asphalt, etc.)
Latitude	The North/South geographic location of a site in decimal degrees
Longitude	The East/West geographic location of a site in decimal degrees
Elevation	The vertical distance above sea level of the site in meters
Site Established Date	Date site was first used as a monitoring site

Parameters Monitored

Bulleted list of all parameters monitored at the site

Site Photos

Aerial View	Image of site and the surrounding area (using Google Earth)
Site View	Most current photo of monitors at the site

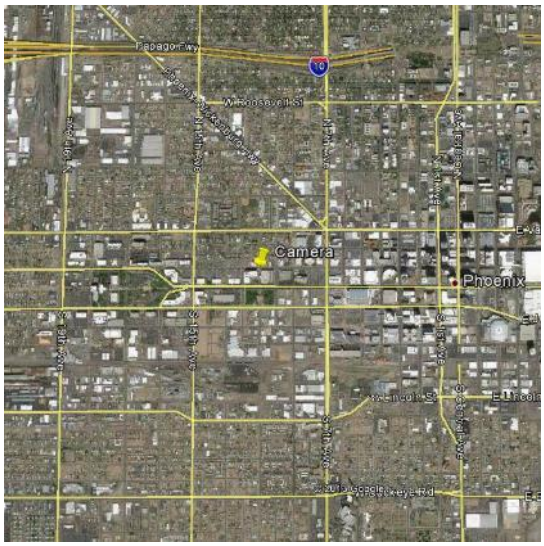
ADEQ Building

The high-resolution digital camera sits on the northeast corner of ADEQ's main campus building in Phoenix and points toward Camelback Mountain, which lies 13.4 km to the northeast. The pictures of the local view are updated every 15 minutes and can be viewed on the internet at http://phoenixvis.net/index.aspx. The area between the site and Camelback Mountain is primarily residential with some commercial areas. The camera is part of the Visibility network.

Site Information			
AQS ID	None		
Street Address	1110 W. Washington St. Phoenix, AZ 85007		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4483
Surrounding Area	Residential/Commercial	Longitude	-112.0878
Adjacent Roadway Info	84 m – S – Washington St. AADT Count – 11,088	Elevation	329 m
Nearest Assessed Roadway Info	Same	Site Established Date	07/01/2002

Parameters Monitored
• Visibility (Camelback Mountain View)

Site Photos



Aerial view of ADEQ Building

Camera on rooftop of ADEQ Building – 04/2010

Ajo

The site is located at the Pima County Maintenance Yard, with the wind system mounted to the north of the instruments. The closest structure to the site is an east-west oriented ADOT office/trailer to the southeast. To the east lies the stabilized tailings pile associated with the Ajo mining operation that closed in 1985. The parameters measured are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-019-0001		
Street Address	1211 Well Rd. Ajo, AZ 85321		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	32.3820
Surrounding Area	Residential/Commercial	Longitude	-112.8575
Adjacent Roadway Info	109 m – E – Ajo Well Rd. 1 AADT Count – Negligible	Elevation	515 m
Nearest Assessed Roadway Info	700 m - W - Cedar St AADT Count - 715	Site Established Date	07/01/1969

Parameters Monitored

- PM_{10}
- Wind
- Temp/RH

Site Photos

Aerial view of Ajo

Ajo fenced area and meteorological tower 05/2014

Alamo Lake

The site was established to replace the Hillside site and is located in Alamo Lake State Park, which is approximately 49 km north of Wenden, AZ. The surrounding area consists of mostly desert, with a lake about 1 km to the northeast. A small water pump/storage tank (1,000 gallon) lies 7 meters to the east of the shelter. The parameters measured are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-012-8000		
Street Address	Alamo Lake State Park		
County	La Paz	Groundcover	Gravel
CBSA	None	Latitude	34.2439
Surrounding Area	Desert	Longitude	-113.5586
Adjacent Roadway Info	80 m – NE – Alamo Rd. AADT Count – Negligible	Elevation	403 m
Nearest Assessed Roadway Info	Same	Site Established Date	05/20/2005

Parameters Monitored	
• O_3 • PM_{10}	• $PM_{2.5}$ • Wind • Temp/RH

Site Photos

Regional view of Alamo Lake

Alamo Lake shelter with PM inlets – 02/2020

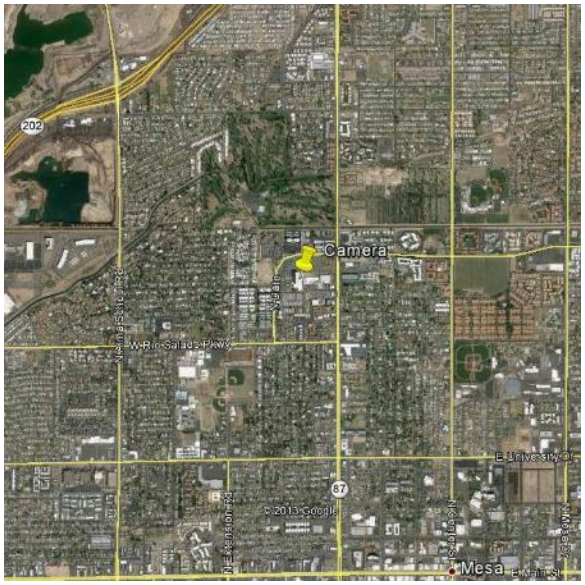
Banner Mesa Medical Center

The high-resolution digital camera sits on the east side of the Banner Mesa Medical Center and points to the Superstition Mountains, which lie 32 km east of the site. The pictures of the local views are updated every 15 minutes and can be viewed on the internet at http://phoenixvis.net/index.aspx. The area between the site and the mountains is primarily residential with some commercial areas. The camera is part of the Visibility network.

Site Information			
AQS ID	None		
Street Address	525 W. Brown Rd. Mesa, AZ 85201		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4335
Surrounding Area	Residential	Longitude	-111.8428
Adjacent Roadway Info	170 m – N – W Brown St. AADT Count – 9,345	Elevation	454 m
Nearest Assessed Roadway Info	Same	Site Established Date	01/01/1993

Parameters Monitors
• Visibility (Superstition Mountain View)

Site Photos



Aerial view of Banner Mesa Medical Center


Banner Mesa Medical Center Camera– 05/2013

Bullhead City

The site is located on the rooftop of the U.S. Post Office Building, northeast of SR 95 and 7th Street. The surrounding area is commercial and residential to the west and south. The Colorado River lies to the west less than 300 meters. To the northeast/east, about 675 meters, is the Bullhead City Airport. The PM_{10} monitored is part of the SLAMS network.

Site Information			
AQS ID	04-015-1003		
Street Address	990 Highway 95 Bullhead City, AZ 86429		
County	Mohave	Groundcover	Rooftop
CBSA	Lake Havasu City-Kingman	Latitude	35.1538
Surrounding Area	Commercial/Residential	Longitude	-114.5668
Adjacent Roadway Info	40 m – W – SR 95 AADT Count – 25,611	Elevation	167 m
Nearest Assessed Roadway Info	Same	Site Established Date	11/01/1997

Parameters Monitors
• PM_{10}

Site Photos

Aerial view of Bullhead City

Roof of Bullhead City Post Office– 06/2012

Douglas Red Cross

The site is located at the Red Cross building on the south side of 15th Street. The surrounding area is a mix of residential and commercial land use. The site is about 1,685 meters from the Arizona/Mexico border. The IMPROVE protocol monitor was relocated to Nogales in 2015. The parameters monitored are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-003-1005		
Street Address	1445 E. 15th St. Douglas, AZ 85607		
County	Cochise	Groundcover	Dirt/Grass
CBSA	Sierra Vista-Douglas	Latitude	31.3492
Surrounding Area	Commercial/Residential	Longitude	-109.5397
Adjacent Roadway Info	30 m – N – 15th St. AADT Count – 5,622	Elevation	1,224 m
Nearest Assessed Roadway Info	Same	Site Established Date	09/01/1998

Parameters Monitors
• PM_{10} • Temp/RH • Wind

Site Photos

Aerial view of Douglas Red Cross


Douglas Red Cross fenced site – 03/2016

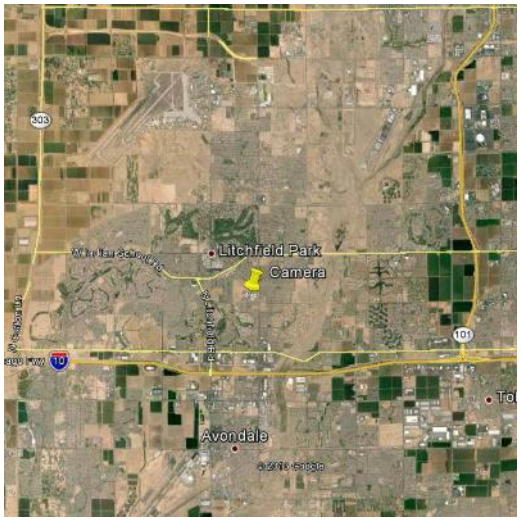
Estrella Mountain Community College

The high-resolution digital camera points to the White Tanks mountain range, which is 20 km to the northeast. The pictures of the local views are updated every 15 minutes and can be viewed on the internet at http://phoenixvis.net/index.aspx. The area between the site and the mountain ranges is a mixture of residential, commercial, and agricultural uses. The camera is part of the Visibility network.

Site Information			
AQS ID	None		
Street Address	3000 N. Dysart Rd. Avondale, AZ 85323		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4836
Surrounding Area	Residential	Longitude	-112.3503
Adjacent Roadway Info	155 m – S – Thomas Rd. AADT Count – 9,858	Elevation	305 m
Nearest Assessed Roadway Info	Same	Site Established Date	01/01/1993

Parameters Monitors
• Visibility (White Tanks View)

Site Photos



Aerial view of Estrella Mountain Community College


View of Camera on Rooftop

Flagstaff Middle School

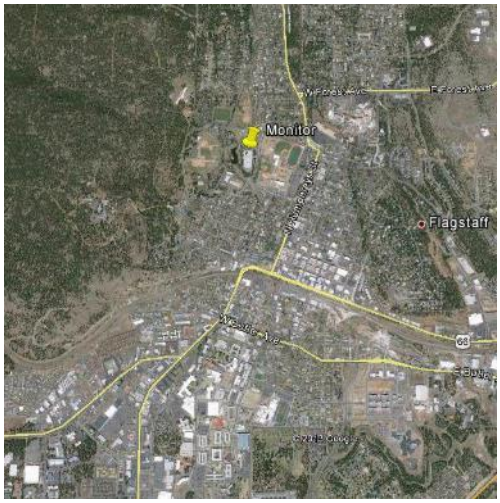
The site is west of Bonito Street on the west side of the rooftop on the Flagstaff Middle School building. The surrounding area is generally residential, with Thorpe Park located about 800 meters to the west, and US Route 180 approximately 415 meters to the east. The parameters monitored are part of the SLAMS and SPM networks.

Site Information			
AQS ID	04-005-1008		
Street Address	755 N. Bonito St. Flagstaff, AZ 86001		
County	Coconino	Groundcover	Rooftop
CBSA	Flagstaff	Latitude	35.2061
Surrounding Area	Residential	Longitude	-111.6528
Adjacent Roadway Info	80 m – E – N. Bonito St. AADT Count – 1,216	Elevation	2,126 m
Nearest Assessed Roadway Info	Same	Site Established Date	10/29/1996

Parameters Monitors

- O_3
- $PM_{2.5}$ (E-BAM)

Site Photos



Aerial view of Flagstaff Middle School

O_3 sample cane at Flagstaff – 02/2020

Globe Highway

ASARCO mine also maintains an SO_2 analyzer, Pb sampler, PM sampler, wind monitor, rain gage, and temp/RH at the site. The site is located on the southwest end of a small canyon and may be influenced by both broad and local meteorological conditions. Approximately 10m to the west lies State Route 77. The site is located approximately 1km to the east/southeast of the ASARCO smelting facility and 300 m to the east of the ASARCO slag pile. A roadway AADT count of 2,700 that is 10 meters from the closest monitor would classify the Pb monitor as a micro or middle scale but the neighborhood scale more accurately represents the siting of the monitor. The roadway is not the predominant source of Pb in the area and therefore does not impact area concentrations. The parameters monitored are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-007-1002		
Street Address	SR 77 Winkelman, AZ 85292		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	33.002
Surrounding Area	Desert/Residential	Longitude	-110.765
Adjacent Roadway Info	10 m – W – SR 77 AADT Count – 1,443	Elevation	602 m
Nearest Assessed Roadway Info	Same	Site Established Date	01/01/1975

Parameters Monitors

- Pb
- Temp/RH
- Wind

Site Photos

Aerial view of Globe Highway

Meteorological tower and TSP monitor at Globe Highway – 03/2020

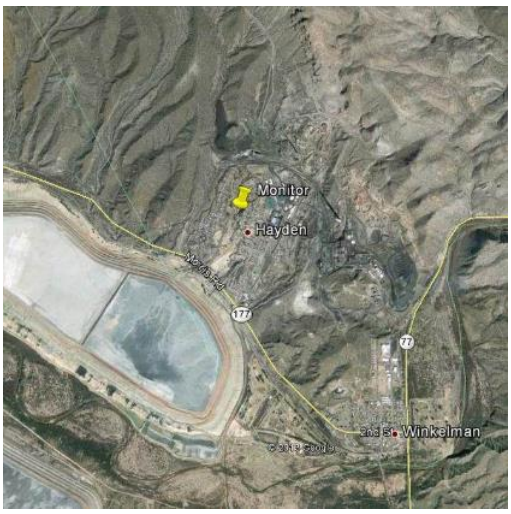
Hayden Old Jail

The site is located in a shelter next to the old Hayden Jail building near the center of town. The instruments were previously located in the jail building and were moved to a shelter next to the jail due to safety and siting concerns. The surrounding area consists mainly of residential and commercial buildings. The site is located approximately 1 km to the west of the ASARCO smelting facility. ASARCO mine also maintains an SO_2 analyzer in the old Hayden Jail building next to the new shelter. The parameters monitored are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-007-1001		
Street Address	Canyon Dr. & Kennecott Ave. Hayden, AZ 85235		
County	Gila	Groundcover	Shelter
CBSA	Payson	Latitude	33.0062
Surrounding Area	Residential	Longitude	-110.7864
Adjacent Roadway Info	10 m – E – Canyon Dr. AADT Count – Negligible Count	Elevation	625 m
Nearest Assessed Roadway Info	49 m – W – Kennecott Rd. AADT Count – 503	Site Established Date	01/01/1969

Parameters Monitors
• SO_2 • PM_{10} • Temp/RH • Wind

Site Photos



Aerial view of Hayden Old Jail

Hayden Old Jail shelter, PM inlet and meteorological tower – 05/2014

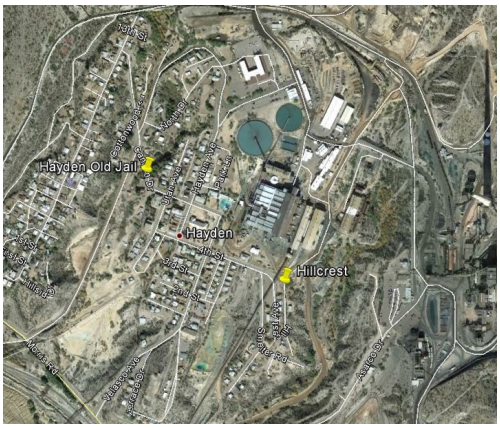
Hillcrest

This site is the location of the collocated TSP Pb monitors in Hayden, AZ. The site is located just outside the ASARCO smelter property line. The site is a micro scale specifically located for Pb maximum concentration determination and was chosen in response to elevated readings from an EPA superfund monitor. To the east 10m is the ASARCO smelting operations property with an overhead conveyer belt located 15m to the west. The area to the south and west is residential neighborhood. Directly to the south is a mine operated Superfund site. The Pb instruments are part of the SLAMS network. A continuous Pb monitor was added in November 2018.

Site Information			
AQS ID	04-007-1003		
Street Address	123 S. Hillcrest Ave. Hayden, AZ 85235		
County	Gila	Groundcover	Dirt
CBSA	Payson	Latitude	33.0035
Surrounding Area	Residential	Longitude	-110.7822
Adjacent Roadway Info	18 m – W – S. Hillcrest Ave. AADT Count – Negligible Count	Elevation	643 m
Nearest Assessed Roadway Info	226 m – W – Velasco Ave. AADT Count – 655	Site Established Date	01/01/2016

Parameters Monitors
• Pb • Pb-Secondary • Continuous Pb

Site Photos



Aerial view of Hillcrest


Hillcrest Pb samplers and stand. The ASARCO stack is in the background – 09/2019

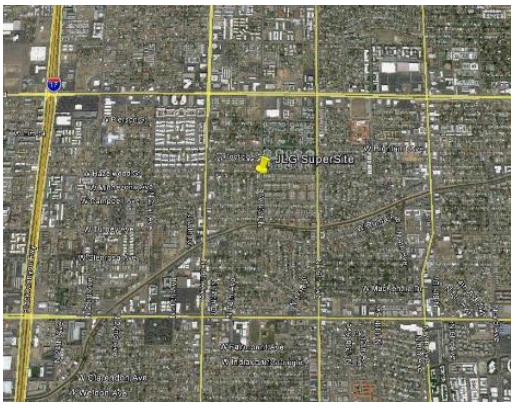
JLG Supersite

The site was established to represent air quality in the central core of the Phoenix metropolitan area. The surrounding area is primarily residential neighborhoods, with I-17 approximately 1.6 km to the west. The parameters measured cover multiple networks including SLAMS, NCore, PAMS, NATTS, CSN, meteorology, and IMPROVE. This is ADEQ's main test site for various instruments and networks.

Site Information			
AQS ID	04-013-9997		
Street Address	4530 N. 17th Ave. Phoenix, AZ 85015		
County	Maricopa	Groundcover	Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.5038
Surrounding Area	Residential	Longitude	-112.0957
Adjacent Roadway Info	10 m – E – 17th Ave. AADT Count – Negligible Count	Elevation	354 m
Nearest Assessed Roadway Info	158 m – S – Campbell Ave. AADT Count – 2,282 367 m – W – N 19th Ave. AADT Count – 21,784	Site Established Date	07/01/1993

Parameters Monitors		
• CO • NO • NO_2 • NOy • O_3 • SO_2 • Carbonyl • Mixing Layer Height	• VOC Continuous • VOC Filter • SVOC (PUF) • PM_{10} metals speciation • PM_{10} • $PM_{10-2.5}$ (Coarse) • $PM_{2.5}$ Continuous • Precipitation	• $PM_{2.5}$ Filter • $PM_{2.5}$ Speciation (SASS) • $PM_{2.5}$ Speciation (URG) • Temp/RH • Wind • IMPROVE Primary • IMPROVE Secondary • Ambient Pressure

Site Photos



Aerial view of JLG Supersite

Eastern side of JLG Supersite two shelters, roof top, and meteorological tower – 06/2020

Miami Golf Course

This site is the location of the TSP-Pb and PM_{10} monitors in Miami, AZ. The site is located near the Cobre Valley Country Club with residential areas to the south and east and the Freeport McMoRan facility approximately 2 km to the west/southwest and tailings ponds less than 1 km to the west. Surrounding trees are below inlet height and have no vegetation. The parameters monitored are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-007-8000		
Street Address	SR 188 and US 60 Miami, AZ 85539		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	33.4190
Surrounding Area	Residential	Longitude	-110.8296
Adjacent Roadway Info	220 m – SE – SR 188 AADT Count – 3,094	Elevation	1000 m
Nearest Assessed Roadway Info	Same	Site Established Date	01/01/1997

Parameters Monitors

- Pb
- PM_{10}
- Temp/RH
- Wind

Site Photos

Aerial view of Miami Golf Course


Fenced Miami Golf Course site – 03/2020

Miami Jones Ranch

This site is one of three SO_2 sites in the Miami area. Freeport McMoRan Copper and Gold Inc. operate an SO_2 instrument at this site as well. The site is located south of the town of Miami and is over 3 km south/southwest of the smelter. The site located in the desert hills overlooking the town and is off a gravel/dirt road. The SO_2 instrument is part of the SLAMS network.

Site Information			
AQS ID	04-007-0011		
Street Address	Cherry Flats Rd. Miami, AZ 85539		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	33.3853
Surrounding Area	Residential	Longitude	-110.8673
Adjacent Roadway Info	15 m – SE – Cherry Flats Rd. AADT Count – Negligible Count	Elevation	1,242 m
Nearest Assessed Roadway Info	1300 m – NW – US 60 AADT Count – 6,976	Site Established Date	01/01/1997

Parameters Monitors
• SO_2

Site Photos

Aerial view of Miami Jones Ranch


Fenced Miami Jones Ranch site – 05/2014

Miami Townsite

This site is one of three SO_2 sites in the Miami area. Freeport McMoRan Copper and Gold Inc. run a SO_2 instrument at this site as well. This site is located on the western side of Miami, near the center of the town. There is a church and a police station to the west with residential to the north and south. The road is located to the south of the site. The smelter is over 2 km to the northeast of the site. The SO_2 instrument is part of the SLAMS network.

Site Information			
AQS ID	04-007-0012		
Street Address	Sullivan ST & Davis Canyon Miami, AZ 85539		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	33.3973
Surrounding Area	Residential	Longitude	-110.8744
Adjacent Roadway Info	16.5 m – SE – Sullivan St. AADT Count - 351	Elevation	1,042 m
Nearest Assessed Roadway Info	113 m – SE – US 60 AADT Count – 6,976	Site Established Date	01/01/1997

Parameters Monitors
• SO_2

Site Photos

Aerial view of Miami Townsite


Fenced Miami Townsite – 05/2014

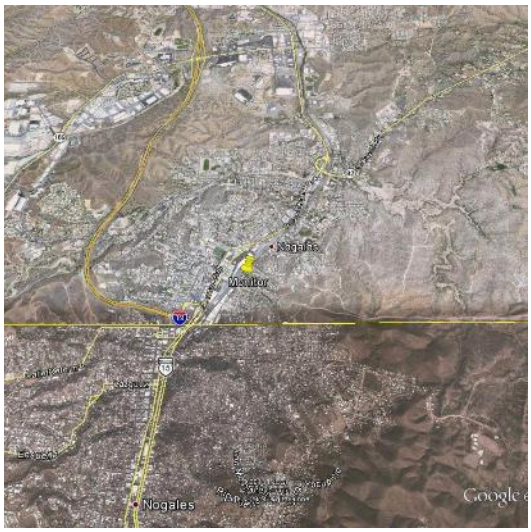
Nogales Post Office

The site is located on the rooftop of the U.S. Post Office building, which lies approximately 670 meters north from the Arizona/Mexico Border. The surrounding area is a mixture of commercial and residential land use. This site is used to meet the $PM_{2.5}$ collocation requirement. The parameters monitored are part of the SLAMS, IMPROVE, and meteorological networks.

Site Information			
AQS ID	04-023-0004		
Street Address	300 N. Morley Ave. Nogales, AZ 85621		
County	Santa Cruz	Groundcover	Rooftop
CBSA	Nogales	Latitude	31.3372
Surrounding Area	Residential/Commercial	Longitude	-110.9367
Adjacent Roadway Info	37.6 m – NW – Morley Ave. AADT Count – 3,397	Elevation	1,176 m
Nearest Assessed Roadway Info	Same	Site Established Date	01/01/1980

Parameters Monitors	
• PM_{10} (Continuous) • $PM_{2.5}$ (Continuous) • $PM_{2.5}$ (Filter)	• Temp/RH • Wind • IMPROVE

Site Photos



Aerial view of Nogales Post Office

Particulate and meteorological monitors on roof of Nogales Post Office – 03/2021

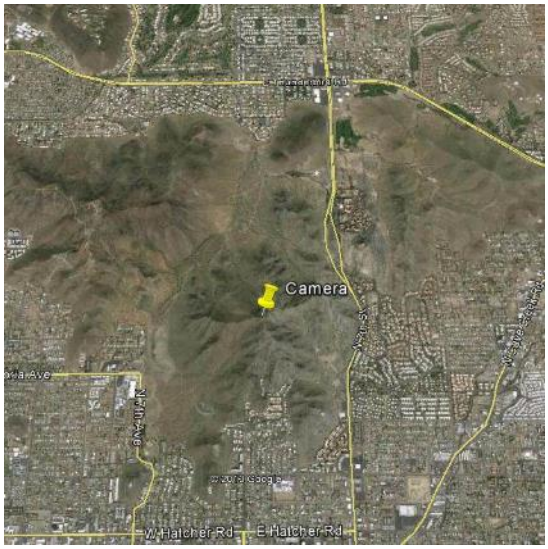
North Mountain Summit

The site is located on a mountaintop in the North Mountain Recreation Area of Phoenix. One high-resolution digital camera faces South Mountain, which lies 27 km to the south. Another camera faces the Estrella Mountains, which lie 35 km to the southwest. The pictures of the local views are updated every 15 minutes and can be viewed on the internet at http://phoenixvis.net/index.aspx. The surrounding area is desert recreation area to the north and west and residential with some commercial activity to the south and east. The cameras are part of the Visibility network.

Site Information			
AQS ID	None		
Street Address	West side of 7th St. in North Mountain Recreation Area Phoenix, AZ		
County	Maricopa	Groundcover	Dirt/Desert
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.5855
Surrounding Area	Residential/Desert	Longitude	-112.0722
Adjacent Roadway Info	850 m – E – 7th St. AADT Count – 34,088	Elevation	625 m
Nearest Assessed Roadway Info	Same	Site Established Date	01/01/1993

Parameters Monitors
• Visibility (South Mountain View) • Visibility (Estrella Mountain View)

Site Photos



Aerial view of North Mountain Summit


Camera located on tower at North Mountain Summit – 04/2013

Organ Pipe National Monument

The site is owned by the NPS, who operates the monitor at the site. The site is located 1 km south/southwest of the national monument visitor center, which is about 35.4 km south of Why, AZ. The site is about seven meters from a water pump house and lies about 540 meters east of a small mountain range. The surrounding area is predominately desert. This is an IMPROVE protocol site.

Site Information			
AQS ID	04-019-0005		
Street Address	SR 85 & Puerto Blanco Rd. Ajo, AZ 85321		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	31.9499
Surrounding Area	Desert	Longitude	-112.8010
Adjacent Roadway Info	400 m – E – SR 85 AADT Count – 2,670	Elevation	505 m
Nearest Assessed Roadway Info	Same	Site Established Date	01/01/1971

Parameters Monitors
• IMPROVE

Site Photos

Regional view of Organ Pipe NM

Shelter at Organ Pipe NM – 04/2014

Paul Spur Chemical Lime Plant

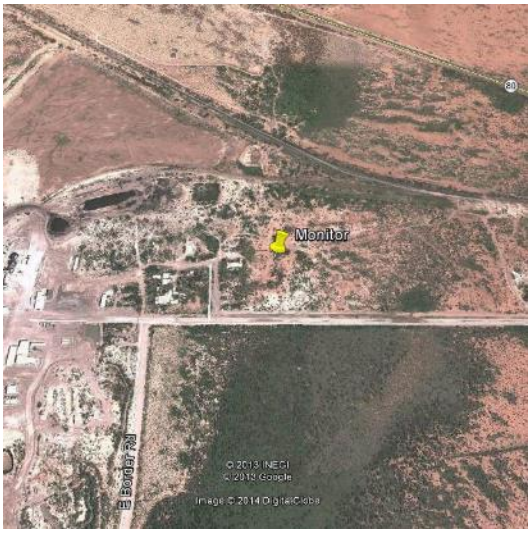
The site is located approximately 1 km to the northeast of the Chemical Lime Plant, just south of SR 80 between Bisbee and Douglas, and 3.5 km north of the Arizona/Mexico border. The surrounding area is predominately desert. The Chemical Lime Plant is not operational at this time. The parameters monitored are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-003-0011		
Street Address	SR 80 & Paul Spur Rd. Paul Spur, AZ 85603		
County	Cochise	Groundcover	Dirt
CBSA	Sierra Vista-Douglas	Latitude	31.3658
Surrounding Area	Desert	Longitude	-109.7308
Adjacent Roadway Info	107 m – S – Paul Spur Rd. AADT Count – Negligible Count	Elevation	1,280 m
Nearest Assessed Roadway Info	230 m – N – SR 80 AADT Count – 4,270	Site Established Date	01/01/1985

Parameters Monitors

- PM_{10}
- Temp/RH
- Wind

Site Photos



Aerial view of Paul Spur Chemical Lime Plant


Particulate monitors and meteorological tower at Paul Spur Chemical Lime Plant – 02/2016

Payson Well Site

The site is located in the southern area of Payson, in a field at a well water site. To the south of the site are two tanks. In general, the surrounding area is commercial with some residential land use and 200 m to the southeast is SR 87. Site was moved 90m NE on the same parcel to meet siting requirements in 2014. The parameters monitored are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-007-0008		
Street Address	204 W. Aero Dr. Payson, AZ 85541		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	34.2297
Surrounding Area	Residential/Commercial	Longitude	-111.3295
Adjacent Roadway Info	134 m – S – Aero Dr. AADT Count – 1,473	Elevation	1,501 m
Nearest Assessed Roadway Info	Same	Site Established Date	01/01/1991

Parameters Monitors

- PM_{10}
- $PM_{2.5}$ (EBAM)
- Temp/RH
- Wind

Site Photos

Aerial view of Payson Well Site


Payson Well Site continuous particulate monitor probe and shelter – 07/2014

Phoenix Transmissometer Receiver

The site is located in downtown Phoenix on the North side of the rooftop of the Ramada by Wyndham Phoenix Midtown Hotel near 2nd Avenue and Osborn Road. The transmitter is located on top of Abrazo Central Campus 4.5 km to the northwest. The area between the two sites is a mix of residential and commercial. This instrument is part of the Visibility network.

Site Information			
AQS ID	None		
Street Address	212 W Osborn Rd. Phoenix, AZ 85013		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4901
Surrounding Area	Commercial/Residential	Longitude	-112.0767
Adjacent Roadway Info	44 m – S – Osborn Rd. AADT Count – 35,704	Elevation	337 m
Nearest Assessed Roadway Info	Same	Site Established Date	12/01/1992

Parameters Monitors
• Bext • Temp R/H

Site Photos

Aerial view of Phoenix Transmissometer Receiver


Phoenix Transmissometer Receiver on hotel rooftop – 12/2012

Phoenix Transmissometer Transmitter

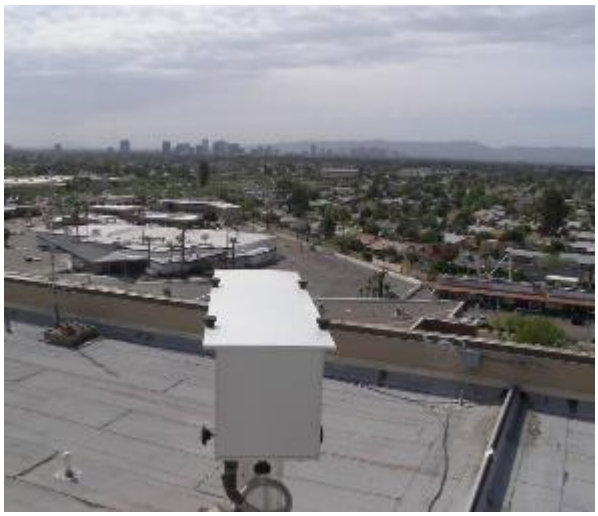
The transmitter is located on the southeast side of the rooftop of Abrazo Central Campus at 19th Avenue and Bethany Home Road. The receiver is located at the Ramada by Wyndham Phoenix Midtown Hotel 4.5 km to the southeast. The area between the two sites is a mix of residential and commercial. A new long lasting LED bulb was installed in May 2014. This instrument is part of the Visibility network.

Site Information			
AQS ID	None		
Street Address	2000 W. Bethany Home Rd. Phoenix, AZ 85015		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.5253
Surrounding Area	Commercial/Residential	Longitude	-112.1019
Adjacent Roadway Info	120 m – S – Beth. Home Rd. AADT Count – 36,016	Elevation	340 m
Nearest Assessed Roadway Info	Same	Site Established Date	12/01/1992

Parameters Monitors
• Bext

Site Photos

Aerial view of Phoenix Transmissometer Transmitter



Phoenix Transmissometer Transmitter Pathway – 2005

Prescott Pioneer Park

This site is the maximum concentration O_3 site for the Yavapai County MSA. The Prescott College site was shut down on 12/31/2016 thus making this the sole site in Yavapai County. Prevailing wind direction is SW. To the NE is the predominant VOC and NOx point source in the area in Ernest Love Airfield.

Site Information			
AQS ID	04-025-8034		
Street Address	1200 Commerce Drive, Prescott, AZ 86305		
County	Yavapai	Groundcover	Rooftop / Desert
CBSA	Prescott	Latitude	34.6121
Surrounding Area	Residential/Commercial	Longitude	-112.4632
Adjacent Roadway Info	210 m – SW – Commerce Drive – Negligible Count	Elevation	1,602 m
Nearest Assessed Roadway Info	600 m – N – Pioneer Parkway – AADT Count– 3,515	Site Established Date	1/1/2018

Parameters Monitors
• O_3 • $PM_{2.5}$ (E-BAM)

Site Photos

Aerial view of Prescott Pioneer Park

Prescott Pioneer Park – 01/2018

Queen Valley

The site is located in northern Pinal County on the far east/southeastern outskirts of the Phoenix metropolitan area. It is located 635 m southeast of the small town of Queen Valley, AZ and the surrounding area is primarily desert. The parameters monitored are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-021-8001		
Street Address	10 S. Queen Anne Dr. Queen Valley, AZ 85219		
County	Pinal	Groundcover	Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.2938
Surrounding Area	Desert	Longitude	-111.2857
Adjacent Roadway Info	87 m – E – Queen Anne Dr. AADT Count – 1,284	Elevation	668 m
Nearest Assessed Roadway Info	Same	Site Established Date	01/01/1998

Parameters Monitors

- O_3
- Temp/RH
- Wind

Site Photos

Regional view of Queen Valley

Shelter and meteorological tower at Queen Valley site – 08/2014

Rillito

The site is located at a city water pumping station. The surrounding area is primarily residential and industrial, with I-10 approximately 260 meters to the northeast. The site is located within the small town of Rillito, AZ and is approximately 500 m to the north/northwest of the Cal Portland Rillito Cement Plant. The parameters monitored are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-019-0020		
Street Address	8840 W. Robinson St. Rillito, AZ 85653		
County	Pima	Groundcover	Dirt
CBSA	Tucson	Latitude	32.4143
Surrounding Area	Residential	Longitude	-111.1545
Adjacent Roadway Info	10 m – S – Robinson St. AADT Count – Negligible Count	Elevation	626 m
Nearest Assessed Roadway Info	240 m – NE – Frontage Rd. AADT Count – 1,878 260 m – NE – I10 AADT Count – 57,874	Site Established Date	01/01/1985

Parameters Monitors

- PM_{10}
- Temp/RH
- Wind

Site Photos

Aerial view of Rillito

Rillito meteorological tower and particulate monitors on platform – 01/2015

Saguaro National Park West

The site is located within the Saguaro National Park West. The site is operated by the NPS. The area surrounding the site is residential to the northwest and south/southeast and desert to the northeast. The site lies approximately 17 km southwest of I-10. This is an IMPROVE protocol site.

Site Information			
AQS ID	04-019-9000		
Street Address	N. Sandario Rd. and W. Mile Wide Rd. Tucson, AZ		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	32.2485
Surrounding Area	Desert	Longitude	-111.2175
Adjacent Roadway Info	27 m – W – Mile Wide Rd. AADT Count – 786	Elevation	718 m
Nearest Assessed Roadway Info	Same	Site Established Date	12/29/1996

Parameters Monitors
• IMPROVE

Site Photos

Regional view of Saguaro NP West

Shelters at Saguaro NP West site – 07/2012

San Luis Rio Colorado Well 10

This site is located in San Luis, Mexico. Its purpose is to monitor and provide ozone concentrations within the city of San Luis. Data will help gain a better understanding of ozone concentrations in the area. The parameters monitored are classified as SPM.

Site Information			
AQS ID	80-026-8012		
Street Address	Avenida Carranza and Calle 15, San Luis Rio Colorado, Mexico		
County	San Luis Rio Colorado	Groundcover	Rooftop
CBSA	None	Latitude	32.4665
Surrounding Area	Residential/Commercial	Longitude	-114.7688
Adjacent Roadway Info	12 m – E – Calle 15 – Negligible Count 42 m – S – Ave Carranza – Negligible Count	Elevation	41 m
Nearest Assessed Roadway Info	N/A	Site Established Date	5/9/17

Parameters Monitors	
• O_3 • Temp/Rh	• Wind

Site Photos

Aerial view of San Luis Rio Colorado Well 10

San Luis Rio Colorado Well 10 – 05/2018

Sedona Fire Station AQD

In 2011, the E-BAM instrument in Sedona was moved from the Sedona Post Office site to the Sedona Fire Station site. The Sedona Fire Station site is located approximately 300 m to the northeast of the Sedona Post Office site and 150 m west of State Route 89A. The surrounding area is composed of residential and commercial use. The E-BAM instrument is part of the SPM network.

Site Information			
AQS ID	None		
Street Address	310 Forest Rd, Sedona, AZ 86336		
County	Coconino	Groundcover	Rooftop
CBSA	Flagstaff	Latitude	34.8683
Surrounding Area	Commercial/Residential	Longitude	-111.7633
Adjacent Roadway Info	50 m – S – Forest Rd AADT Count – Negligible Count	Elevation	1,326 m
Nearest Assessed Roadway Info	150 m – E – SR 89A AADT Count – 17,871	Site Established Date	12/16/2011

Parameters Monitors
• $PM_{2.5}$ (E-BAM)

Site Photos

Aerial view of Sedona Fire Station


E-BAM at Sedona Fire Station – 09/2020

South Phoenix

The site is owned by MCAQD. ADEQ operates the toxics sampler at the site as part of the Urban Air Toxics Monitoring Program (UATMP). The site is situated in South Phoenix, at the edge of a high population area, bordering a mixture of residential and commercial properties. Two high population areas are located north and west of the site.

Site Information			
AQS ID	04-013-4003		
Street Address	33 W. Tamarisk St. Phoenix, AZ 85041		
County	Maricopa	Groundcover	Asphalt
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4030
Surrounding Area	Residential/Commercial	Longitude	-112.0750
Adjacent Roadway Info	83 m – N – Tamarisk St. AADT Count – Negligible Count	Elevation	330 m
Nearest Assessed Roadway Info	165 m – E – Central Ave. AADT Count – 24,856	Site Established Date	01/01/1997

Parameters Monitors
• VOC

Site Photos

Aerial view of South Phoenix

Shelter and meteorological tower at South Phoenix site – 04/2005

Tonto National Monument

The site is jointly operated by ADEQ and USFS. The site is located within the Tonto National Forest at the base of Tonto National Monument, about 58 m south of SR 188. The area surrounding the site is desert with Roosevelt Lake about 1 km to the north. The O_3 instrument is part of the SLAMS network.

Site Information			
AQS ID	04-007-0010		
Street Address	South of SR 188 Roosevelt, AZ 85545		
County	Gila	Groundcover	Dirt/Rock
CBSA	Payson	Latitude	33.6547
Surrounding Area	Desert	Longitude	-111.1075
Adjacent Roadway Info	17 m – NE – SR 188 AADT Count – 860	Elevation	730 m
Nearest Assessed Roadway Info	Same	Site Established Date	04/23/1988

Parameters Monitors
• O_3 • IMPROVE (not a protocol site)

Site Photos

Regional view of Tonto NM

Shelter at Tonto NM site – 01/2016

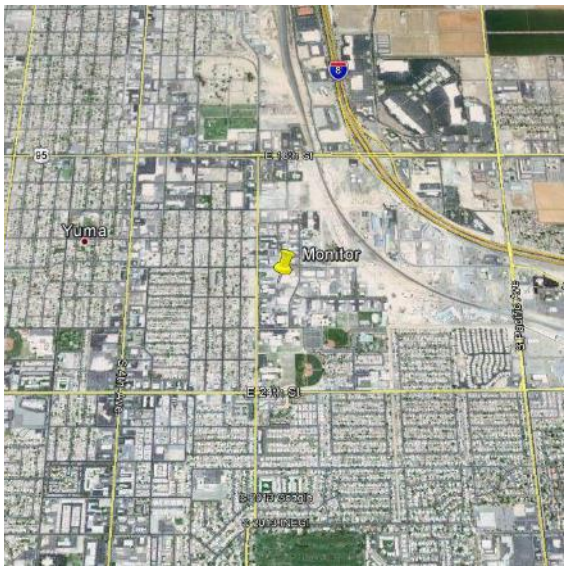
Yuma Supersite

The site is located on the southeast corner of the Rural Metro Administration Facility property. The surrounding area is commercial and industrial, with a dirt lot adjacent to the south and I-8 1 km to the northeast. In addition to NAAQS compliance, the site is also used to help understand transport of PM and O_3. The parameters monitored are part of the SLAMS and meteorological networks.

Site Information			
AQS ID	04-027-8011		
Street Address	2029 S. Arizona Ave. Yuma, AZ 85364		
County	Yuma	Groundcover	Gravel
CBSA	Yuma	Latitude	32.6903
Surrounding Area	Commercial/Industrial	Longitude	-114.6144
Adjacent Roadway Info	91 m – W – Arizona Ave. AADT Count – 9,103	Elevation	60 m
Nearest Assessed Roadway Info	Same	Site Established Date	02/01/2006

Parameters Monitors	
• O_3 • PM_{10} • $PM_{2.5}$	• Wind • Temp/RH

Site Photos



Aerial view of Yuma Supersite


Shelter and Meteorological Tower at Yuma Supersite – 04/2014

Appendix E – Letters to EPA

This appendix may contain letters to EPA that have occurred during current Network Plan time period. The letters may include siting waivers, requests for system modifications, and other communications outside of the Annual Network Plan.

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

Douglas A. Ducey
Governor

Misael Cabrera
Director

May 17, 2022

Gwen Yoshimura
Manager, Air Quality Analysis Office
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Subject: ADEQ Request for Siting Criteria Waiver JLG Supersite

Dear Ms.Yoshimura:

The Arizona Department of Environmental Quality (ADEQ) is requesting a siting criteria waiver from EPA for the placement of the WS/WD anemometer at the JLG Supersite (AQD site ID: 04-013-9997). It currently does not meet the distance from obstructions listed in the Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV: Meteorological Measurements Version 2.0.

The required distance from obstruction is 10X the height of obstruction. The anemometer cannot be raised enough to eliminate the impact by adjacent trees. ADEQ has found that this probe cannot reasonably be relocated so as to meet the siting criteria because of the physical constraints of the site.

The WS/WD anemometer is representative of the sampling conditions at JLG and general Phoenix Metropolitan Area. ADEQ is requesting a siting criteria waiver from EPA for the placement of WS/WD anemometer located at JLG Supersite regarding the distance from obstruction siting criteria listed in the Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV: Meteorological Measurements Version 2.0.

We appreciate the effort by EPA in the review of this waiver request for air monitoring siting. Please contact Bradley Busby with any questions regarding this request, (602) 771-7676.

Sincerely,

Brad Busby, Value Stream Manager
Air Monitoring and Assessment Value Stream
ADEQ Air Quality Division

Appendix F – ADEQ's Air Quality Monitoring Role in Arizona

This appendix contains a document to outline the responsibilities delineated to each monitoring agency in Arizona. This document was approved by ADEQ in 2015 with their commitment to follow the minimum monitoring responsibilities.

Interagency Air Quality Monitoring for the State of Arizona

Purpose:

40 CFR Part 58 Appendix D(e) states that "Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator." EPA Region 9 indicated in their response to the 2013 Network Plan that an interagency document should be in place to delineate the shared monitoring requirements by overlapping agencies. This document is to fulfill this CFR requirement, to clarify the monitoring requirements, and to support requirements for the monitoring networks in Arizona.

The following table outlines Minimum Monitoring Requirements in the State of Arizona as required in 40 CFR 58 Appendix D. This does not take into account the breadth of monitoring that is required by the EPA Regional Administrator for the design of a complete monitoring program. Each State or local agency must work with the EPA Regional Administrator to develop a monitoring program for their area.

Agreement:

Arizona Department of Environmental Quality (ADEQ) assumes full responsibility for their minimum monitoring requirements outlined in Table 1. ADEQ is meeting the minimum monitoring for each requirement and will augment its monitoring network to fulfill future needs in all of its areas.

Sincerely,

FOR ERIC MASSEY

Eric C. Massey, Director

Air Quality Division

cc: Jennifer Williams, US EPA, Region 9

Bradley Busby, ADEQ

Heather Colson, ADEQ

Mark Carrel, ADEQ

Craig Pearson, ADEQ

Table 1: Minimum Monitoring Requirements in Arizona

Pollutant/ Station	CFR Reference	CBSA/ Source required to monitor	Requirement Type	Minimum # Required	Agency fulfillment
Ncore	40 part 58 app D 3.0	State Requirement	1 Per State	1	ADEQ and PDEQ
O_3	40 part 58 app D 4.1	Phoenix-Mesa-Scottsdale MSA	Population/Design Value Based	3	MCAQD and PCAQCD
O_3	40 part 58 app D 4.1	Tucson MSA	Population/Design Value Based	2	PDEQ
O_3	40 part 58 app D 4.1	Yuma MSA	Population/Design Value Based	1	ADEQ
O_3	40 part 58 app D 4.1	Flagstaff MSA	Population/Design Value Based	1	ADEQ
O_3	40 part 58 app D 4.1	Prescott MSA	Population/Design Value Based	1	ADEQ
O_3	40 part 58 app D 4.1	Sierra-Vista MSA	Population/Design Value Based	1	ADEQ
O_3	40 part 58 app D 4.1	Lake Havasu City MSA	Population/Design Value Based	1	ADEQ
CO	40 part 58 app D 4.2	Phoenix-Mesa-Scottsdale MSA	Collocated with NO_2 by Population	1	MCAQD
NO_2	40 part 58 app D 4.3	Phoenix-Mesa-Scottsdale MSA	Near-Road Population/Traffic Based	2	MCAQD
NO_2	40 part 58 app D 4.3	Tucson MSA	Near-Road Population/Traffic Based	1	PDEQ
NO_2	40 part 58 app D 4.3	Phoenix-Mesa-Scottsdale MSA	Population Based	1	MCAQD
SO_2	40 part 58 app D 4.4	None	Weighted Population Index Based	0	None
Pb	40 part 58 app D 4.5	FMMI Smelter	Source Oriented	1	ADEQ
Pb	40 part 58 app D 4.5	ASARCO Hayden Smelter	Source Oriented	1	ADEQ
PM_{10}	40 part 58 app D 4.6	Phoenix-Mesa-Scottsdale MSA	Population/Design Value Based	6-10	MCAQD and PCAQCD
PM_{10}	40 part 58 app D 4.6	Tucson MSA	Population/Design Value Based	4-8	PDEQ
PM_{10}	40 part 58 app D 4.6	Yuma MSA	Population/Design Value Based	1	ADEQ
PM_{10}	40 part 58 app D 4.6	Flagstaff MSA	Population/Design Value Based	0	ADEQ
PM_{10}	40 part 58 app D 4.6	Prescott MSA	Population/Design Value Based	0	ADEQ
PM_{10}	40 part 58 app D 4.6	Sierra-Vista MSA	Population/Design Value Based	1	ADEQ
PM_{10}	40 part 58 app D 4.6	Lake Havasu City MSA	Population/Design Value Based	1	ADEQ
$PM_{2.5}$	40 part 58 app D 4.7	Phoenix-Mesa-Scottsdale MSA	Population/Design Value Based	3	MCAQD and PCAQCD
$PM_{2.5}$	40 part 58 app D 4.7	Tucson MSA	Population/Design Value Based	2	PDEQ
$PM_{2.5}$	40 part 58 app D 4.7	Yuma MSA	Population/Design Value Based	1	ADEQ
$PM_{2.5}$	40 part 58 app D 4.7	Flagstaff MSA	Population/Design Value Based	0	ADEQ
$PM_{2.5}$	40 part 58 app D 4.7	Prescott MSA	Population/Design Value Based	0	ADEQ
$PM_{2.5}$	40 part 58 app D 4.7	Sierra-Vista MSA	Population/Design Value Based	1	ADEQ
$PM_{2.5}$	40 part 58 app D 4.7	Lake Havasu City MSA	Population/Design Value Based	1	ADEQ
$PM_{2.5}$	40 part 58 app D 4.7	Background Station	1 Per State	1	ADEQ
$PM_{2.5}$	40 part 58 app D 4.7	Transport Station	1 Per State	1	ADEQ
$PM_{2.5}$	40 part 58 app D 4.7	State STN Station	1 Per State	1	ADEQ
PM Coarse	40 part 58 app D 4.8	Required at Ncore Station	1 Per Ncore Station	2	ADEQ and PDEQ
PAMS	40 part 58 app D 5.0	Ozone Area Requirement	Per EPA Admin for Ozone Area	Per PAMS Plan	ADEQ

ADEQ
Arizona Department
of Environmental Quality

Appendix G– Annual SO_2 Modeling Report

Air Quality Division
April 27, 2022

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A1 Introduction

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) finalized and promulgated the sulfur dioxide (SO_2) Data Requirements Rule (DRR) (80 FR 51052), which requires the characterization of ambient SO_2 air quality around SO_2 emission sources emitting 2,000 or more tons per year of SO_2. The Arizona Department of Environmental Quality (ADEQ) identified five sources that needed to be addressed for the SO_2 DRR; two copper smelters and three coal-fired power plants. The Hayden and Miami copper smelters were designated as nonattainment during the first round of designations. The three coal-fired power plants are the Tucson Electric Power's Springerville Generating Station (TEP-Springerville), the Arizona Public Service's Cholla Generating Station (APS-Cholla), and the Arizona Electric Power Cooperatives' Apache Generating Station (AEPCO-Apache).

The SO_2 DRR provides air agencies the flexibility to characterize air quality using either modeling of actual source emissions or using appropriately sited ambient air quality monitors. ADEQ decided to evaluate air quality using air dispersion modeling for the three coal-fired power plants. Specifically, ADEQ characterized ambient air quality in areas proximate to the three sources by using actual hourly emissions and meteorology for the most recent 3 years (2012, 2013 and 2014) at the time of modeling.

The SO_2 DDR also includes a requirement that any area where modeling was used to show attainment of the 2010 SO_2 National Ambient Air Quality Standard (NAAQS), an annual report is needed. This report should document the annual SO_2 emissions of each applicable source in each such area, provide an assessment of the cause of any emission increases, and include a recommendation by the air agency whether additional modeling is needed.

For this annual report analysis, ADEQ used 2019-2021 SO_2 data from EPA's Clean Air Markets Division (CAMD). Based on the emission totals and other factors discussed in the proceeding sections, ADEQ recommends that no additional modeling is needed for all three facilities.

A2 TEP-Springerville

TEP-Springerville is located in Apache County, approximately 15 miles north of Springerville, Arizona and about 240 miles north east of Phoenix. TEP-Springerville is a steam electric generating station with a Standard Industrial Classification (SIC) code of is 4911. The station consists of four coal-fired generating units designated as Unit 1, Unit 2, Unit 3 and Unit 4. All four units of TEP-Springerville burn coal during normal operation except the period of start-up and flame stabilization for which fuel oil including bio-diesel is fired. Under normal full load operating conditions, the net megawatts (MW) ratings at the units 1, 2, 3, and 4 are 387 MW, 390 MW, 417 MW, and 415 MW, respectively. TEP-Springerville supplies electric power for sale to residential and commercial customers in southern Arizona. Unit 1 and Unit 2 boilers are tangentially-fired while Unit 3 and Unit 4 boilers are dry bottom wall-fired units.

Table 1 shows the modeled emission rates used by ADEQ for the TEP-Springerville facility. The resulting modeled concentration is also provided, which includes both facility impact and background concentration.

Table 1: TEP-Springerville Modeled Emissions (tons) and Results

Operating Unit	2012	2013	2014	Modeled Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
Unit 1	2,396	3,112	2,794	107.69	196
Unit 2	2,206	2,820	1,552		
Unit 3	657	892	903		
Unit 4	900	1,117	973		

A2.1 Annual SO_2 Emissions

The emission rates for the TEP-Springerville facility have not increased when compared to the 2012-2014 totals (see Figure 1). The 2019-2021 emissions at TEP-Springerville facility have decreased (5%) since the 2012-2014 timeframe. This decrease is due to the decline in the facility's emissions in 2020 and 2021. The emissions totals for 2020 and 2021 were below the 2012 emission total, which represented the lowest modeled emission rate. The 2019 emissions increased compared to the modeled emissions in 2012 and 2014. According to an explanation that ADEQ received from TEP-Springerville, annual SO_2 emissions from each boiler unit at the facility correlate well with running hours of that unit. Compared to the 2012-2014 baseline years, the increased run hours as well as the perceived increase of SO_2 emissions was almost exclusively due to the market demand. Table 2 shows actual running hours recorded for each unit for 2019-2021. Many factors impact unit running hours. One factor is the electric power demands from customers. Another factor is the outage hours required for each boiler unit for maintenance and repair.

Although it is true that the longer runtime results in higher SO_2 emissions, there are other factors that could also impact SO_2 emissions at the release point. One such factor is SO_2 control efficiency by the spray dryer absorber (SDA), which varies from time to time depending on the amount of lime injected and other parameters. Also, as a perspective when looking into plant-wide emission totals, the current TEP-Springerville air permit caps the facility total of SO_2 emissions at 10,800 tons per year.

The average 2019-2021 emissions show a 5% decrease compared to the average 2012-2014 modeled emissions.

Figure 1: TEP-Springerville Emissions

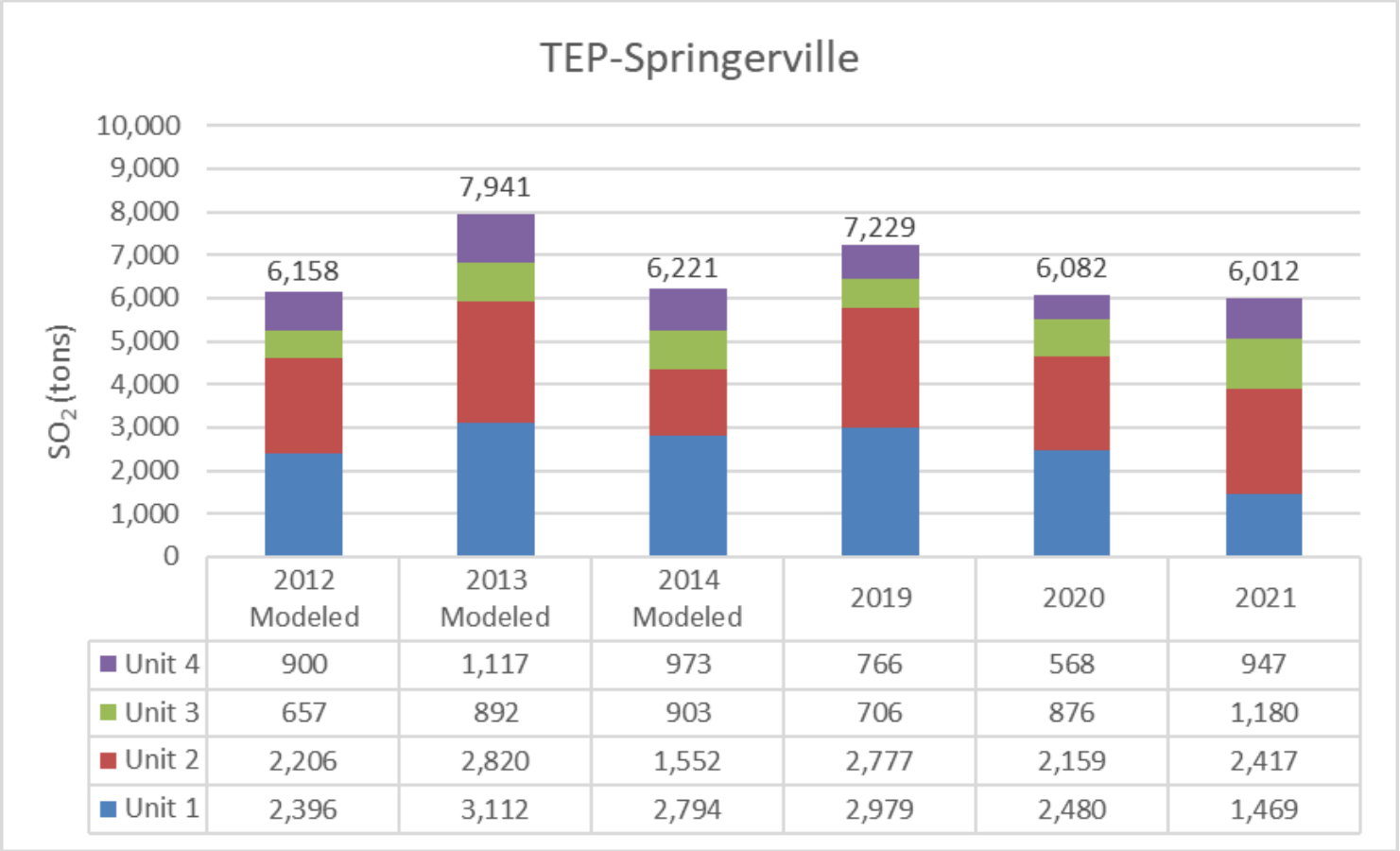


Table 2: Hours of Operation by unit at TEP-Springerville Units

Unit ID	Annual hours of operation		
	Y2019	Y2020	Y2021
1	7,977	7,892	4,447
2	7,840	7,617	8,235
3	6,433	8,620	7,718
4	7,205	6,248	7,283

A2.2 Modeling Recommendation

The SO_2 DRR requires that ADEQ make a recommendation whether additional modeling is needed to show attainment of the 2010 SO_2 NAAQS. The following list summarizes the critical information ADEQ relied on to make this recommendation:

1. The modeled concentration for the TEP-Springerville facility was 45% below the SO_2 NAAQS.
2. The facility's average SO_2 emissions for the 2019-2021 period has decreased (5%) compared to the 2012-2014 modeled average emissions.

Based on the above information, ADEQ recommends that no additional modeling is needed for the TEP-Springerville facility[1].

[1] EPA's Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO2) Primary National Ambient Air Quality Standard (NAAQS), 80 FR 5105

A3 APS-Cholla

APS-Cholla is located approximately two miles east of Joseph City and about 200 miles north east of Phoenix along the Interstate 40 in Navajo County, Arizona. Cholla consists of four primarily coal-fired Electric Generating Units (EGUs) with a total plant-wide generating capacity of 1,180 gross MW. Unit 1 is a 126 gross MW tangentially-fired, dry-bottom boiler. Units 2, 3, and 4 have capacities of 272, 272, and 410 gross MW, respectively, and are tangentially-fired, dry-bottom boilers. Units 1, 2, and 3 are owned and operated by APS, whereas Unit 4 is owned by PacifiCorp and operated by APS. Unit 1 was completed in 1962, Units 2 and 3 were completed in 1978 and 1980, and Unit 4 was placed in commercial operation in 1981.

Table 3 shows the modeled emission rates used by ADEQ for the APS-Cholla facility. The resulting modeled concentration is also provided, which includes both facility impact and background concentration.

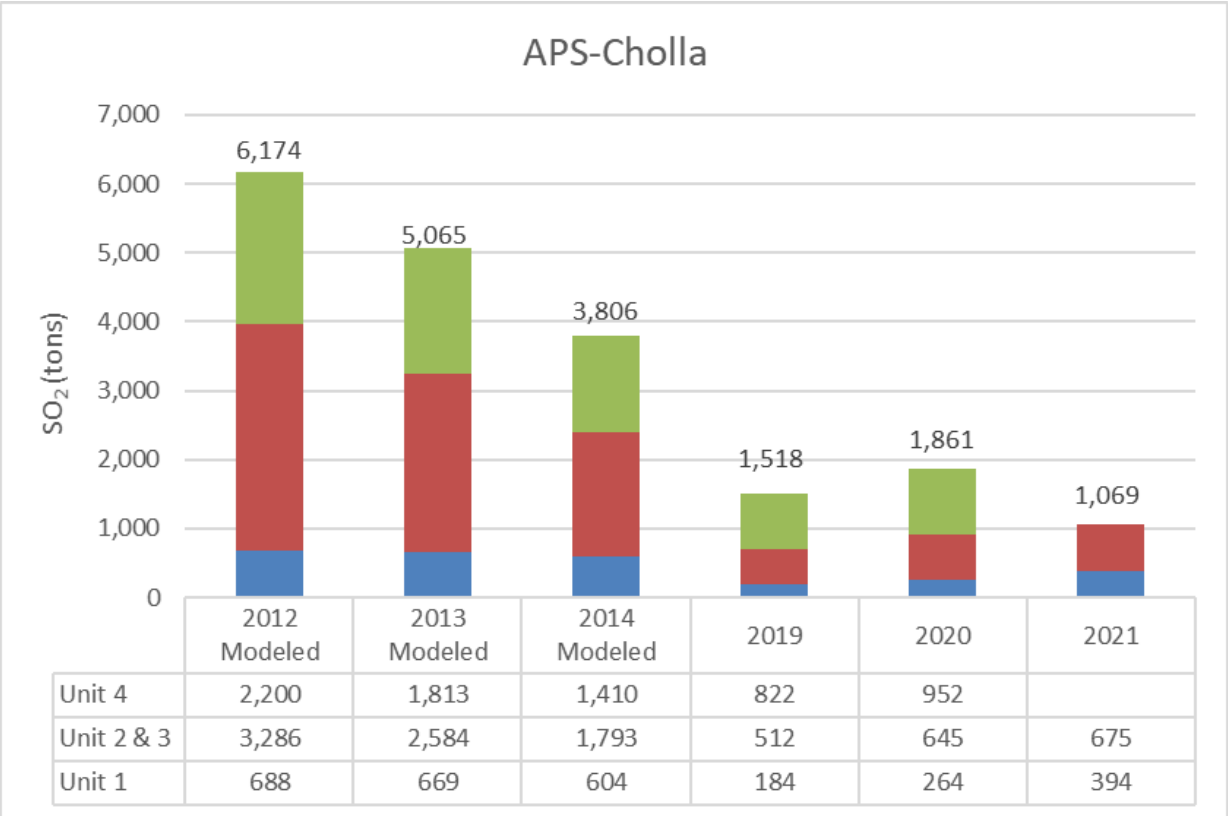
Table 3: APS-Cholla Modeled Emissions (tons) and Results

Operating Units	2012	2013	2014	Modeled Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
Unit 1	688	669	604	156.83	196
Unit 2 & 3	3,286	2,584	1,793		
Unit 4	2,200	1,813	1,410		

A3.1 Annual SO_2 Emissions

The emission rates for the APS-Cholla facility have not increased when compared to the 2012-2014 totals (see Figure 2). In fact, the 2019-2021 emissions at the APS-Cholla facility have significantly decreased (70%) since the 2012-2014 timeframe. These decreases are due to the general decline in the facility's coal usage since 2014. In addition, per information obtained from APS-Cholla, Unit 2 was permanently shut down in 2016 and Unit 4 was shut down in 2020.

Figure 2: APS-Cholla Emissions



	2012 Modeled	2013 Modeled	2014 Modeled	2019	2020	2021
Unit 4	2,200	1,813	1,410	822	952	
Unit 2 & 3	3,286	2,584	1,793	512	645	675
Unit 1	688	669	604	184	264	394

A3.2 Modeling Recommendation

The SO_2 DRR requires that ADEQ make a recommendation whether additional modeling is needed to show attainment of the 2010 SO_2 NAAQS. The following list summarizes the critical information ADEQ relied on to make this recommendation:

1. The modeled concentration for the APS-Cholla facility was 20% below the SO_2 NAAQS.
2. The facility's average SO_2 emissions for the 2019-2021 period has decreased significantly (70%) compared to the 2012-2014 modeled average emissions.

Based on the above information, ADEQ recommends that no additional modeling is needed for the APS-Cholla facility.

A4 AEPCO-Apache

AEPCO-Apache is located approximately 3 miles south of the town of Cochise, Cochise County, Arizona and 75 miles south east of Tucson, Pima County, Arizona. The Apache Generating Station consists of seven electric generating units: two coal/natural gas fired steam electric units (Unit 2 and Unit 3), a natural gas/fuel oil-fired steam electric, combined cycle unit (Unit 1), and four natural gas/fuel oil-fired turbines with a total generating capacity of 560 megawatts (MW).

Table 4 shows the modeled emission rates used by ADEQ for the AEPCO-Apache facility. The resulting modeled concentration is also provided, which includes both facility impact and background concentration.

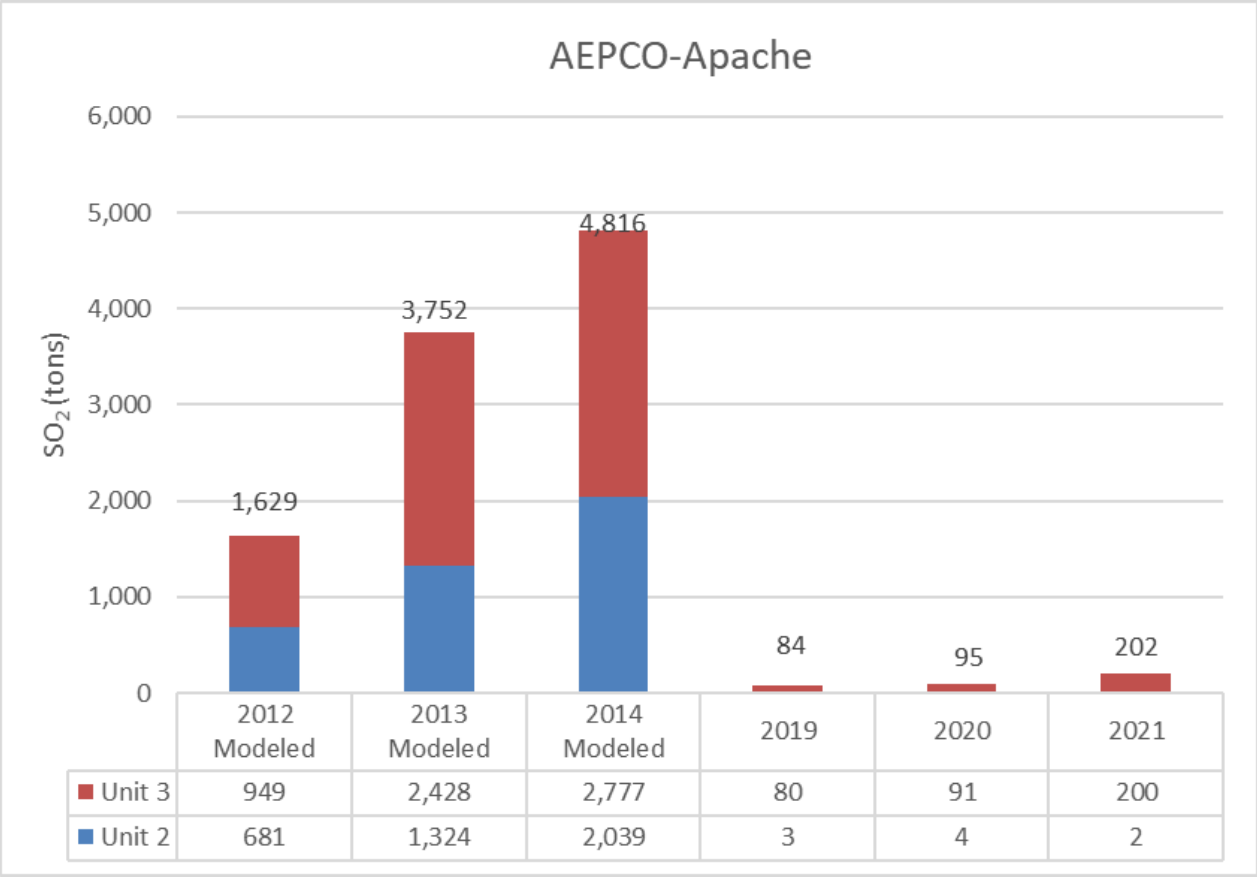
Table 4: AEPCO-Apache Modeled Emissions (tons) and Results

Operating Unit	2012	2013	2014	Modeled Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
Unit 2	681	1,324	2,039	161.09	196
Unit 3	949	2,428	2,777		

A4.1 Annual SO_2 Emissions

The emission rates for the AEPCO-Apache facility have not increased compared to the 2012-2014 emission totals (see Figure 3). In fact, the 2019-2021 emissions at the AEPCO-Apache facility have significantly decreased (96%) since the 2012-2014 timeframe. This decrease is due to operational changes that the facility has undertaken to reduce emissions to comply with the Mercury Air Toxics Standards. The facility has also been transitioning from coal to natural gas in both units 2 and 3. The facility's coal usage peaked in 2014 but has been declining significantly ever since. Unit 2 and 3 can operate both on natural gas and coal. Unit 2 can only operate coal under emergency conditions and unit 3 can run either of those fuels anytime. The significant SO_2 emissions reduction indicates that the facility has been primarily using natural gas for both units.

Figure 3: AEPCO-Apache Emissions



A4.2 Modeling Recommendation

The SO_2 DRR requires that ADEQ make a recommendation whether additional modeling is needed to show attainment with the 2010 SO_2 NAAQS. The following list summarizes the critical information ADEQ relied on to make this recommendation:

1. The modeled concentration for the AEPCO-Apache facility was 18% below the NAAQS.
2. The facility's average emissions for the 2019-2021 period show a 96% decrease compared to the 2012-2014 modeled average emissions.

Based on the above information, ADEQ recommends that no additional modeling is needed for the AEPCO-Apache facility.

A5 References

EPA's Clean Air Markets Division (CAMD) SO2 Emissions Data: https://ampd.epa.gov/ampd/

EPA's Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO2) Primary National Ambient Air Quality Standard (NAAQS), 80 FR 51051, August 2015.

EPA's SO2 NAAQS Designations Modeling Technical Assistant Document, August 2016.