State of Arizona Air Monitoring Network Plan

For the Year 2010

Arizona Department of Environmental Quality
Air Quality Division
Air Assessment Section

Final Report

July 1, 2010

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1.0 INTRODUCTION

This document fulfills the obligation, under the Code of Federal Regulations (CFR), Title 40, Section 58.10(a), requiring Arizona Department of Environmental Quality (ADEQ) to complete and submit to the United States Environmental Protection Agency (EPA) an annual network monitoring plan for the year 2010.

This plan informs EPA (Region 9) of the monitoring activities ADEQ will undertake July 1, 2010 through December 2011. 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 database and to AIRNow. Please refer to ADEQ's Annual Air Quality Report for summaries of these data.

In 40 CFR 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. Subpart J of Part 51 specifies that Part 58 Subpart B contains the requirements for establishing air quality surveillance systems to monitor ambient air quality.

Air quality surveillance systems consist of networks of monitors at carefully-chosen physical locations referred to as sites or stations. Some of the networks, sites, and monitors are:

- State and Local Air Monitoring Stations (SLAMS)
- National Core multipollutant monitoring stations (NCore)
- Photochemical Assessment Monitoring Stations (PAMS)
- Chemical Speciation Network (CSN)
- National Air Toxics Trends Sites (NATTS)
- Special Purpose Monitors (SPM)
- Urban Haze monitoring sites
- Interagency Monitoring of PROtected Visual Environments (IMPROVE)
- ADEQ visibility stations located in or near mandatory Class I areas (national parks and wilderness areas). Class I monitoring sites are subject to specific siting and operational guidance developed by the IMPROVE Steering Committee.
- AIRNow information sites
- Source-oriented monitoring sites operated independently by permittees (Industry)
- Meteorological sites

This Annual Monitoring Network Plan identifies the purpose(s) of each monitor and provides evidence that both the siting and the operation of each monitor meet the requirements in 40 CFR Part 58 appendices A, C, D, and E as follows:

- Appendix A – Quality Assurance Requirements for SLAMS, SPMs, and Prevention of Significant Deterioration (PSD) Air Monitoring
- Appendix C – Ambient Air Quality Monitoring Methodology
- Appendix D – Network Design Criteria for Ambient Air Quality Monitoring
- Appendix E – Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring

Results of the annual network review and planning are used to determine how well the network is achieving its required air monitoring objectives, how well it meets data users' needs, and how it should be modified (through termination of existing stations, relocation of stations, establishment of new stations, monitoring of additional parameters, and/or changes to the sampling schedule) in order to continue to meet its objectives and data needs. The network review and planning are performed for the purpose of improving the network and ensuring that it provides adequate, representative, and useful air quality data.

2.0 ADEQ PROGRAM AND NETWORK DESCRIPTIONS

ADEQ operates ambient air quality equipment for a variety of Federal and State monitoring programs. Detailed descriptions of the equipment deployed for each monitoring program are presented in Appendix C. The equipment is grouped by monitoring program or parameter, to easily compare instrument specifics across the networks. Appendix D lists the information about each of ADEQ's 54 monitoring sites, including those sites which ADEQ shares with other agencies or serves as the local site operator. General information about the monitoring programs ADEQ participates in is described in the following sections.

2.1 NAAQS Compliance Network

The largest compliance network in Arizona consists of monitoring sites operated for the purpose of demonstrating compliance with the **National Ambient Air Quality Standards** (**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**). The criteria pollutants are measured using instruments that have been certified by the 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 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
- Quality Assurance
- Data reporting

2.1.1 Changes to the NAAQS

Pb - In November 2008, EPA revised the Pb NAAQS from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$. New requirements for the placement of monitors were added: (1) near Pb sources (by January 1, 2010) having annual ambient air emissions that are expected to exceed one ton and (2) in non-source urban areas (by January 1, 2011) with populations greater than 500,000. In December 2009, EPA proposed revisions to these requirements to include Pb sources with emissions greater than 0.5 tons but less than 1.0 tons per year with monitors for these sources operational by December 30 2010 or 1 year from the date of the final rule. Non-source monitors are to be located at NCore sites. It is estimated that these proposed requirements will be finalized no earlier than the spring of 2010.

O_3 - In March 2008, EPA revised the eight-hour O_3 standard from 0.08 parts per million (ppm) to 0.075 ppm. Monitoring network revisions included the requirement for locating monitors in urban areas with populations between 50,000 and 350,000 and requiring states to operate three non-urban monitors. In January 2010, EPA proposed revisions to the level of the standard, requesting comments on lowering

the standard to a level within 0.060 to 0.070 ppm. No changes were proposed for the monitoring requirements. The final O_3 NAAQS will be issued in August 2010.

SO_2 - EPA proposed a new NAAQS primary standard in November 2009. The proposal replaces the 24-hour and annual standards with a one-hour standard between 50 and 100 parts per billion (ppb). Additionally, the EPA is proposing changes to data reporting requirements which would require agencies to report the maximum five minute concentration for each hour in addition to the hourly averaged concentrations. The final rule is scheduled to be issued in June 2010. New monitoring requirements for placement of monitors will also be issued, and monitors must be operational by January 2013.

NO_2 - In January 2010, EPA set a new one-hour standard for NO_2 of 100 ppb. EPA is retaining the annual standard of 53 ppb. New monitoring requirements were established including near roadway monitors in urban areas, additional urban monitors in large urban areas, and monitors in areas with populations susceptible to NO_2 related health effects.

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 not attaining one or more of the NAAQS and in areas where the NAAQS has been met, but on-going demonstration of compliance is required. Monitoring requirements for these areas are described in their associated SIPs.

2.3 Source Oriented Network

Historically, ADEQ has required several of the major point sources in the state to conduct ambient monitoring for criteria pollutants, primarily PM_{10} and SO_2, in and around specific facilities. Sources located near some Class I areas are required to collect particulate data to assess impacts on visibility. These monitors constitute a subset of the compliance monitoring network described above. ADEQ activities with respect to this network have been limited to performance audits and review of ambient data submitted by the individual sources. Recently, however, SIP support has required the submittal of data by some sources to the Air Quality System (AQS), including review of quality assurance documents kept by the sources to support their ambient monitoring programs.

2.4 NCore Network

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

- Tracking long-term trends of criteria and non-criteria pollutants;
- Support for long-term health assessments that 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.

NCore sites are required under 40 CFR Part 58 Appendix C to be fully operational by January 1, 2011. Additional NCore information is available from the EPA website: http://www.epa.gov/ttn/amtic/ncore/index.html

2.5 Meteorological Network

ADEQ collects meteorological data at sites throughout the state to support the analysis of pollutant data and to provide support for exceptional event reporting. Meteorological measurements are also required for the NCore and PAMS networks.

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 oxides of nitrogen (NOx), speciated volatile organic compounds (VOC), carbonyls, CO, and meteorology to obtain comprehensive and representative O_3 data. Immediately following the promulgation of those rules, the affected states began to implement a program to improve ambient monitoring activities and the monitoring of emissions of NOx and VOCs. Each SIP for the affected areas must contain commitments to implement the appropriate ambient monitoring network for such air pollutants. The subsequent revisions to 40 CFR 58 (1993) required states to establish PAMS as part of their SIP monitoring networks in O_3 non-attainment areas classified as serious, severe, or extreme. The principal reasons for requiring the collection of additional ambient air pollutant and meteorological data are the widespread non-attainment of the O_3 NAAQS and the need for a more comprehensive air quality database for O_3 and its precursors. ADEQ operates two PAMS sites, JLG Supersite and Queen Valley, to represent the Phoenix metropolitan area.

2.7 National Air Toxics Trend Sites (NATTS)

The NATTS network was designed to monitor and record the concentrations of certain 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 in the risks of human exposure. These changes 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 accepted federal funding and responsibility for this program in Arizona in 2003. The ADEQ JLG Supersite is the designated NATTS site for the Phoenix metropolitan area.

2.8 Chemical Speciation Network (CSN)

The CSN was established to meet the regulatory requirements for monitoring speciated $PM_{2.5}$ to determine the chemical composition of these particles. The purpose of the CSN is to determine, over a period of several years, trends in concentration levels of selected ions, metals, carbon species, and organic compounds in $PM_{2.5}$. The program began in 1999 with 54 Speciation Trends Network (STN) sites across the nation located primarily in or near larger Metropolitan Statistical Areas (MSAs). It has increased to 200 sites nationwide. Monitoring at JLG Supersite includes one STN speciation sampler and two IMPROVE samplers as part of the CSN network. The collocated IMPROVE samplers provide precision information for the IMPROVE network and are used for comparison of the speciation results from both programs. In 2009 a URG 3000N carbon sampler was added and data from that sampler was then used in place of the data from the Met One SASS carbon channel. This substitution was made as part of a national program designed to make the characteristics of the CSN carbon method match the IMPROVE carbon method more closely.

2.9 Class I Area Network and IMPROVE Program

Visibility monitoring networks track impairment in specified national parks and wilderness areas. These parks and wilderness areas are called Class I Areas and were designated based on an evaluation required by Congress in the 1977 federal CAA Amendments. The evaluation, which was performed by the United States Forest Service (USFS) and National Park Service (NPS), reviewed the areas of parks and national forests which were designated as wilderness before 1977, were more than 6,000 acres, and have visual air quality as an important resource for visitors. Of the 156 Class I Areas designated across the nation, 12 are located in Arizona. Nine sites are located in USFS areas and three in NPS areas. 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 I Areas across the United States. ADEQ currently operates 11 sites with IMPROVE instrumentation.

2.10 AIRNow Reporting

ADEQ currently utilizes three urban nephelometers to approximate and report $PM_{2.5}$ data to the AIRNow Web site to provide near real-time data for public use in the Phoenix metropolitan area. The $PM_{2.5}$ value is calculated by applying a correlation developed between the nephelometer and filter-based measurements. The program is voluntary and was originally intended to fill gaps in the AIRNow network until actual continuous methods were available.

2.11 Urban Haze Network

ADEQ operates an urban haze network in the Phoenix and Tucson metropolitan areas and provides funding for operation of the Tucson area network by the Pima Department of Environmental Quality (PDEQ). The purpose of the networks is to provide policy-makers and the public with information regarding urban haze levels, track short-term and long-term urban haze trends, assess source contributions to urban haze, and better evaluate the effectiveness of air pollution control strategies on urban haze. Equipment used to evaluate urban visibility includes transmissometers, nephelometers, particulate monitors, and digital camera systems.

2.12 E-BAM Network of PM_{10} Special Purpose Monitors

The current network of E-BAM continuous particulate special purpose monitors (listed in Table 2.0-1) is composed of lightweight, portable monitors typically enclosed in self-contained, environmentally sealed containers. They can be battery or solar powered for operation at sites without fixed electrical power. E-BAMs continuously sample and report particulate concentrations. Data are sampled every second and concentrations recorded every minute. E-BAM monitors have been used by many agencies, particularly in the western United Sates, to provide continuous, real-time particulate concentration data that are useful for making informed smoke management decisions related to prescribed burns. E-BAM instruments are used for special purpose monitoring only. They are not classified as FRMs or FEMs and may not be used to demonstrate NAAQS compliance. Hourly data from the E-BAM monitors can be viewed at: http://www.phoenixvis.net/PPMmain.aspx.

Table 2.0-1 Location of E-BAM Monitors

Site Name	Address
Flagstaff Middle School	755 N. Bonito, Flagstaff, AZ 86001
Prescott College AQD	336 Grove Ave, Prescott, AZ 86301
Sedona Post Office	190 W. Highway 89A, Sedona, AZ 86336
Snowflake	To Be Added in 2010
Springerville	323 S. Mountain Ave., Springerville, AZ 85936
Verde Ranger Station	300 E. Highway 260, Camp Verde, AZ 86322

3.0 MONITORING NETWORK EVALUATION

This section describes changes in ADEQ's current monitoring network that have taken place since the 2009 Network Plan was issued as well as changes planned for the next 18 months.

3.1 Site Closures

Green Valley Fire Administration – The PM_{10} and $PM_{2.5}$ E-BAMS, which had been operated jointly by ADEQ and PDEQ, were closed in February 2010. The monitors where put at this site following specific events in which dust was blown from tailings piles east of Green Valley. Due to improved maintenance procedures of the tailings pile by the mine operator, possibly a result of the monitoring, the monitors were removed and the site was closed. Budget constraints were also a factor in closing the monitors and site.

Mesa Transmissometer – The transmissometer pair (transmitter at Banner Mesa Medical and receiver at the Mesa City Building) was considered redundant to the Phoenix Transmissometer pair and was closed in 2009.

Show Low – This E-BAM site will be closed in 2010. It is no longer considered necessary for its primary purpose of monitoring for smoke.

Yuma Courthouse – This site was closed, due to safety issues, at the end of 2009. The continuous PM_{10} TEOM and the filter-based $PM_{2.5}$ were moved to Yuma Supersite. One of the collocated, filter-based PM_{10} monitors (no longer required for NAAQS compliance following the addition of a continuous PM_{10} TEOM) was moved to Payson Well Site to meet minimum network collocation requirements.

Yuma Agriculture Center Farm and Yuma Mesa – These sites were part of the meteorological network supporting the Western Arizona Sonora Border Air Quality Study (WASBAQS), which concluded in 2007. The sites are not needed to support any current ADEQ monitoring programs. The meteorological equipment was consolidated and moved to the existing Yuma Supersite to support the O_3 and particulate matter monitors.

3.2 New Sites

Lake Havasu City – Kingman MSA – O_3 – This area (population between 50,000 and 350,000) requires an O_3 monitor to be sited to capture maximum concentration in the MSA. The location will likely be in or near Lake Havasu City. A suitable site will be selected following careful analysis of the potential sites identified by our search process and in accordance with O_3 network monitoring guidelines.

Hayden – Miami – Pb – EPA has identified two areas close to smelters for implementation of the Pb monitoring rule: Hayden and Claypool-Miami. ADEQ identified the ASARCO Globe Highway location for the Hayden monitors in accordance with monitoring guidance published by EPA. EPA Region 9 has concurred with the selection of this site (see memo in Appendix F). This site will be the collocated site in ADEQ's Pb source network.

A monitoring site in Miami will be identified in 2010. Several issues including Region 9 approval of the Hayden site, funding, and acquisition of the TSP instruments delayed the start of Pb monitoring at these two source-oriented sites.

Prescott College AQD – O_3 – The O_3 monitor will be moved to a new site in Prescott after the close of the 2010 O_3 season and prior to the start of the 2011 season. The current site does not meet requirements because of the close proximity to tall trees and to a nearby road with a high traffic count. In addition, environmental control issues (the instrument is in a room at the college that may not be temperature-controlled in summer months) have impacted the operation of the seasonal O_3 monitor. A search for a suitable site will continue in 2010.

San Luis Rio Colorado – PM_{10} – This Mexico site was added in July, 2009 as part of the border study program. Filter based PM_{10} samples are collected at the site. The site is operated by a contractor for ADEQ.

Snowflake – PM_{10} – An E-BAM will be added in 2010 for smoke management information.

3.3 Instrument Changes

Class I Nephelometers – ADEQ is discontinuing operation of nephelometers at nine Class I visibility sites in 2010 due to budget constraints. They are not required by the IMPROVE program, the CFR, or by the Regional Haze Rule SIP, and they have been funded solely by ADEQ. The nephelometers supplemented the IMPROVE aerosol monitors at these sites, providing continuous (five-minute) measurements of light scattering. Arizona has, historically, been a major supporter of the national IMPROVE program by funding approximately one third of its nephelometers while having only one fifth of the IMPROVE sites. Supporting meteorological instruments will also be closed.

JLG Supersite trace-level CO and SO_2 – These high-sensitivity instruments are required as part of NCore and will replace the current CO and SO_2 instruments used for NAAQS compliance. Data from these monitors will be reported to AQS. The instruments will be fully operational by January 1, 2011.

JLG Supersite $PM_{10-2.5}$, PM_{10}, and $PM_{2.5}$ BAMs – Two FEM BAM instruments and an electronic connection between them will provide hourly $PM_{10-2.5}$, PM_{10}, and $PM_{2.5}$ measurements to meet NCore requirements. These instruments must be operational by January 1, 2011. Data from these instruments will be reported to AQS.

JLG Supersite PM_{10}, and $PM_{2.5}$ TEOMs – The $PM_{2.5}$ FDMS TEOM and the PM_{10} TEOM instruments will be removed by January 1, 2011. The continuous requirement will be met by the paired BAMs for the PM_{10} coarse measurement.

JLG Supersite $PM_{2.5}$ – The collocated Partisol 2025 $PM_{2.5}$ instruments will be replaced by a Partisol 2000 $PM_{2.5}$. With this change, all $PM_{2.5}$ filter instruments in ADEQ's network will be the same instrument make and model, eliminating the need for collocation since the network collocation requirement is already met.

JLG Supersite Pb – Pb monitoring is required in metropolitan areas with populations greater than 500,000, per the current NAAQS. Proposed revisions to the NAAQS designate NCore sites for Pb monitoring. This instrument will be located at the designated NCore site, JLG Supersite. The instrument is required to be operational by one year after the revised NAAQS is published. Currently, a PM_{10} lo-Vol sampler produces Pb results as part of the NATTS program. ADEQ Air Assessment staff will determine if this current instrument and analysis method meets EPA requirements.

Mexico PM_{10} – Thermo 2000D partisol dichot instruments were installed at the Agua Prieta Fire Station and Nogales Sonora Fire Station as intended replacements for the Andersen dichot instruments, providing filter based measurements for PM fine, coarse, and total concentrations. Due to operational difficulties and sampler problems, the 2000D partisol dichot instruments were replaced with two Thermo 2000F partisol filter samplers (measuring PM_{10} and $PM_{2.5}$) at each site in 2010.

Payson Well Site PM_{10} collocated – A PM_{10} 2000F partisol instrument was added to the site in July of 2009 to meet network collocation requirements. This was necessary due to the removal of the collocated pair of instruments at the Yuma Courthouse site.

Rillito PM_{10} – The Rillito 24-hour design value for 2007-2009 ratio with the NAAQS (as stated in 40 CFR 58.12) placed the site in the category of every other day monitoring. ADEQ replaced the filter based partisol instrument with a TEOM at this site in March 2010.

Rillito Temperature/Relative Humidity – These meteorological instruments were added to the anemometer at the site when the TEOM was installed. Communications were added to the site for remote automated data collection.

Yuma Supersite PM_{10} and $PM_{2.5}$ – The continuous PM_{10} TEOM and the filter-based $PM_{2.5}$ partisol sampler began operation at the site on January 1, 2010. Meteorological instruments (anemometer and temperature/relative humidity probe) were also added to the site in March 2010.

3.4 Summary of Network Changes

Table 3.4-1 Instruments Closed or to be Closed in 2010-2011

Site Name	AQS ID	Classification	Scale	Monitor Objective	Parameter(s) Measured	Reported to AQS	Reason for Monitor Closure
Agua Prieta Fire Station (Mexico)	80-026-1000	SPM	Neighborhood	Population	PM_{10}, $PM_{2.5}$	Yes	Replace dichot monitors
Class I Nephelometers: • Chiricahua Entrance Station • Greer Water Treatment Plant • Ike's Backbone • Organ Pipe National Monument • Petrified Forest National Park - South • Pleasant Valley Ranger Station • Queen Valley • Saguaro National Park West • Sycamore Canyon	N/A	SPM	Regional	Visibility	Bscat, MET	No	Budget constraints
Green Valley Fire Administration	N/A	SPM	Middle	Source	E-BAM PM_{10}, E-BAM $PM_{2.5}$	No	Tailing pile dust controls in place; budget constraints, deploy monitors to other locations
JLG Supersite	04-013-9997	NCore	Neighborhood	Population	SO_2 , CO, PM_{10}, $PM_{2.5}$	Yes	Switching to NCore requirements of trace level; replace TEOMs with BAMs
Prescott College AQD	04-025-8033	SLAMS	Neighborhood	Population	O_3	Yes	Site does not meet EPA siting requirements
Rillito	04-019-0020	SLAMS	Neighborhood	Population	PM_{10}	Yes	Replace partisol with TEOM
Show Low	04-017-0007	SPM	Neighborhood	Population	EBAM PM_{10}	No	No longer needed for primary purpose (smoke)
Sonora Nogales Fire Station (Mexico)	80-026-0005	SPM	Neighborhood	Population	PM_{10}, $PM_{2.5}$	Yes	Replace dichot monitors
Yuma Agriculture Center Farm	N/A	SPM	Neighborhood	Population	Wind, Temp/RH	No	Non-essential meteorology
Yuma Courthouse	04-027-0004	SLAMS	Neighborhood	Population	PM_{10}, $PM_{2.5}$	Yes	Safety issues
Yuma Mesa	N/A	SPM	Neighborhood	Population	Wind, Temp/RH	No	Non-essential meteorology

Table 3.4-2 Instruments to be Added in 2010-2011

Site/City Name	AQS ID	Classification	Scale	Objective	Parameter(s) Measured	Report to AQS	Reason for Monitor Addition
Agua Prieta Fire Station (Mexico)	80-026-1000	SPM	Neighborhood	Population	PM_{10}, $PM_{2.5}$	Yes	Replace dichot monitors
ASARCO Globe Highway	To be Assigned	SLAMS	Neighborhood	Source	Pb (collocated)	Yes	Required by new NAAQS
JLG Supersite	04-013-9997	NCore	Neighborhood	Population	Trace Level SO_2 and CO, continuous $PM_{10-2.5}$, Pb	Yes	NCore station requirements; Replace TEOMs with BAMs
Lake Havasu City	To Be Assigned	SLAMS	Neighborhood	Population	O_3	Yes	Required for MSA by CFR
Miami	To be Assigned	SLAMS	Neighborhood	Source	Pb	Yes	Required by new NAAQS
Prescott	To be Assigned	SLAMS	Neighborhood	Population	O_3	Yes	Required for MSA by CFR
Rillito	04-019-0020	SLAMS	Neighborhood	Population	Temp/RH, PM_{10}	Yes	Replace partisol with TEOM, add Temp/RH to meteorology and add communications for automated data collection
San Luis Rio Colorado (Mexico)	80-026-8012	SPM	Neighborhood	Population	PM_{10}, $PM_{2.5}$	Yes	New site for border study
Sonora Nogales Fire Station (Mexico)	80-026-0005	SPM	Neighborhood	Population	PM_{10}, $PM_{2.5}$	Yes	Replace dichot monitors
Yuma Supersite	04-027-8011	SLAMS	Neighborhood	Population	PM_{10}, $PM_{2.5}$, Wind, Temp/RH	Yes	Yuma Courthouse closure

4.0 ADEQ MONITORING NETWORKS

Minimum monitoring requirements for the number of sites in a network for $PM_{2.5}$, PM_{10}, and O_3 (including PAMS) are described in 40 CFR Part 58 Appendix D and are based on the population of urban areas. As EPA reviews the NAAQS for each of the criteria pollutants, additional network monitoring requirements for these standards as well as for the other criteria pollutants may be added. The additional requirements may be based on population or on some other metric, such as non-urban areas, micropolitan areas, or simply at the discretion of the EPA Regional Administration to adequately assess air quality for sensitive population groups. Table 4.0-1 lists Arizona's MSA populations.

Table 4.0-1 Arizona MSAs as of the July 2009 Census Estimate

MSA Name	Area included	Population
Flagstaff	Coconino County	129,849
Lake Havasu City – Kingman	Mohave County	194,825
Phoenix – Mesa – Scottsdale	Maricopa & Pinal Counties	4,364,094
Prescott	Yavapai County	215,503
Tucson	Pima County	1,020,200
Yuma	Yuma County	196,972

4.1 $PM_{2.5}$ Monitoring Network Requirements

The number of $PM_{2.5}$ samplers required in urban areas is based on population (see Table 4.1-1) and design values for $PM_{2.5}$ concentrations (see Table 4.1-2).

Table 4.1-1 Minimum Number of $PM_{2.5}$ Monitors Required (40 CFR 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 *
>1,000,000	3	2
500,000 – 1,000,000	2	1
50,000 – 500,000	1	0 or 1**

* 85% of Annual NAAQS (15 ug/m3) = 12.75 ug/m3; 85% of 24-Hour NAAQS (35 g/m3) = 29.75 ug/m3

** NCore sites and population-oriented, maximum concentration sites require a minimum of 1.

The frequency of sample collection is based on the type of sampler and the design value calculated from data collected at each FRM (filter monitors) or FEM (continuous) sampler (see Table 4.1-2). 40 CFR Part 58.12 (d)(1) gives the manual $PM_{2.5}$ sample collection frequency requirement at required SLAMS stations as every third day at sites without a collocated continuously operating $PM_{2.5}$ monitor. For SLAMS $PM_{2.5}$ sites with manual and continuous $PM_{2.5}$ monitors, the agency may request approval from the EPA Regional Administrator for a reduction to every sixth day and/or seasonal sampling schedule. Sites with design values ±10% of 35µg/m^3 (31.5 to 38.5µg/m^3) and sites where 24-hour values exceed

the NAAQS for three consecutive years need an every third day frequency. Sites within ±5% of 35µg/m^3 (33.25 to 36.75µg/m^3) need to operate on a daily schedule.

Table 4.1-2 $PM_{2.5}$ Design Values and Sampling Frequencies (40 CFR 58.12) at ADEQ Sites

Site Name	3-Yr Avg 98th Percentile of 24-hour concentrations 2007-2009 (µg/m^3)	No. of Exceedances of 24-hour NAAQS 2007-2009	Current Sample Frequency	Required Frequency
Douglas Red Cross	15	0	1 in 6	1 in 3
Flagstaff Middle School	19	1	1 in 6	1 in 3
JLG Supersite	22	1	1 in 3	1 in 3
Nogales Post Office	31	3	1 in 6	1 in 3
Prescott Valley *	13	0	1 in 6	1 in 3
Yuma Courthouse *	18	3	1 in 6	1 in 3

* Based on 2008-2009 data only.

ADEQ operates EPA approved FRM samplers at all required monitoring sites; data from these samplers are used for the 24-hour design value calculations. Currently, ADEQ operates continuous samplers that are not FEMs at only two monitoring sites, JLG Supersite and Nogales Post Office. The Nogales area is non-attainment for the 24-hour $PM_{2.5}$ NAAQS.

Although the required frequency for all $PM_{2.5}$ FRM monitors is every third day, ADEQ operates only the monitor at JLG Supersite at this frequency. Sampling frequencies at the other sites have remained on the original every sixth day schedule established when the $PM_{2.5}$ program was started. Consideration of travel time, shipping costs, laboratory processing workload, and little change in annual values through time have discouraged changing to the more frequent monitoring schedule. This will be reviewed in the Five-Year Network Assessment.

4.1.1 Compliance with 40 CFR Part 58.10 (c)

A process for relocating violating $PM_{2.5}$ monitors is 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 or the creation/change to a community monitoring zone, including 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 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. This information will be documented in a brief report.

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 of the affected site.
4. Relocation of the monitor.

4.2 PM_{10} Monitoring Network Requirements

The number of PM_{10} samplers required in urban areas is based on population (see Table 4.2-1) and design values for PM_{10} 24-hour concentrations (see Table 4.2-2). ADEQ has delegated authority for monitoring PM_{10} to Maricopa, Pinal, and Pima Counties, giving them responsibility for the monitoring network for the MSAs within their counties. ADEQ's PM_{10} monitoring network includes the MSAs in all other Arizona counties, as well as the PM_{10} non-attainment areas in those counties. ADEQ does operate PM_{10} monitors at two sites in the Phoenix metropolitan area: at Bethune Elementary School (filter-based instrument as a special purpose monitor in the South Phoenix area) and at JLG Supersite (continuous) as a SLAMS to support the multipollutant measurements at that site.

Table 4.2-1 Minimum Number of PM_{10} Monitors Required (40 CFR 58 Appendix D)

Population (MSA)	High Concentration Exceeds 24-Hour NAAQS by 20% or more (>180µg/m^3)	Medium Concentration Exceeds 80% of 24-Hour NAAQS (>120µg/m^3)	Low Concentration Less than 80% of 24-Hour NAAQS (<120 µg/m^3)
>1,000,000	6-10	4-8	2-4
500,000 – 1,000,000	4-8	2-4	1-2
250,000 – 500,000	3-4	1-2	0-1
100,000 – 250,000	1-2	0-1	0

The monitoring rule in 40 CFR Part 58.12 (e) states that for PM_{10} sites, "…the minimum monitoring schedule for the site in the area of expected maximum concentration shall be based on the relative level of that monitoring site concentration with respect to the 24-hour standard." In rural areas of Arizona where there is only one PM_{10} monitor to represent the area, such as Ajo, Hayden, and Yuma, sites can be considered de facto maximum-concentration sites whose operating frequencies must be determined using the Ratio-to-Standard diagram in 40 CFR Part 58.12 (e). Table 4.2-2 provides the Design Value and Sampling Frequencies for these sites.

Table 4.2-2 PM_{10} Design Value and Sampling Frequencies of ADEQ Maximum Concentration Monitors

Site Name	Max 24-Hr 2007-2009 (µg/m^3)	Ratio Design Value/NAAQS	Current Sample Frequency	Historical Sample Frequency	Required Frequency
Ajo [1]	153	1.02	Continuous	1 in 6	Every day
Bullhead City	98	0.65	1 in 6	1 in 6	1 in 6
Douglas Red Cross	97	0.65	1 in 6	1 in 6	1 in 6
Flagstaff Middle School	56	0.37	1 in 6	1 in 6	1 in 6
Hayden Old Jail [2]	225	1.5	Continuous	1 in 6	Every day
Nogales Post Office [3]	191	1.27	1 in 6 and Continuous	1 in 6 and Continuous	Every other day
Paul Spur Chemical Lime Plant [4]	159	1.06	1 in 6	1 in 6	Every day
Payson Well Site	61	0.41	1 in 6	1 in 6	1 in 6
Prescott Valley [5]	63	0.42	1 in 6	1 in 6	1 in 6
Rillito [6]	208	1.39	Continuous	1 in 6	Every other day
Yuma Courthouse [7]	306	2.04	Continuous	1 in 6 and Continuous	1 in 6

[1] Ajo - Two days have values flagged for exclusion as exceptional events in 2009 (12/22/09 with a value of 153 µg/m^3 and 10/27/2009 with 128), but these are still included in the Design Value. Without both values submitted for exclusion, the three-year Max 24-Hour Design Value would be 123 µg/m^3; ratio of 0.82. NOTE: TEOM replaced FRM 2/19/2009. Design Value statistics includes data from FRM and TEOM monitors.

[2] Hayden Old Jail - Several values have been flagged for exclusion as exceptional events, but these values are still included in the Design Value. If EPA concurs with the exceedances of 225 µg/m^3, the Max 24-Hour Design Value would be 137; ratio of 0.91. NOTE: A TEOM replaced the FRM monitor beginning 4/1/2009. Design Value includes data from FRM and TEOM monitors.

[3] Nogales Post Office – Exceedances for 2007 and 2008 are flagged for exclusion. Without the exceedance values of 190, 155, and 150 µg/m^3 the three-year Max 24-Hour Design Value is 133 µg/m^3; ratio 0.89. NOTE: A continuous monitor (BAM 1020) is operated at this site, but the Design Value statistics are from the FRM monitor only.

[4] Paul Spur CLP – The exceedance for 2008 is flagged for exceptional event exclusion, but still included in the Design Value. Without the exceedance of 159 µg/m^3, the three-year Max 24-Hour Design Value is 93 µg/m^3; ratio of 0.62.

[5] Prescott Valley – The first quarter of 2008 had less than 50% data completeness, which means the Design Value is not valid.

[6] Rillito – The exceedance for 2007 and four high values for 2007-2009 have been flagged for exclusion as exceptional events, but these are still included in the Design Value. Without all of these values submitted for exclusion, the three-year Max 24-Hour Design Value would be 91 µg/m^3; ratio of 0.61. NOTE: A TEOM replaced the FRM monitor beginning 4/1/2010.

[7] Yuma Courthouse – The exceedances for 2009 and five high values for 2007 and 2009 have been flagged as exceptional events, but these are still included in the Design Value. Without these values the Max 24-Hour three-year Design Value would be 100 µg/m^3; ratio of 0.67. NOTE: The FRM collocated monitors were closed 6/30/2009. The Design Value statistic is compiled from the FRM measurements (2007 through June 2009) and the continuous FEM (July-December 2009). The exceedances in 2009 were recorded by the continuous monitor. Also note monitoring in Yuma has been relocated to Yuma Supersite.

4.3 O_3 Monitoring Network Requirements

EPA modified the minimum monitoring requirements for O_3 in July 2009 (see Table 4.3-1). EPA also changed the length of the monitoring season for some states. The modifications also require each state to operate at least three O_3 monitors in non-urban areas.

Table 4.3-1 Minimum Number of O_3 Monitors Required (40 CFR 58 Appendix D)

Population (MSA)	Most recent 3 year 8-hour Design Value ≥ 85% of NAAQS (0.075 ppm) or no Design Value available	Most recent 3 year 8-hour Design Value <85% NAAQS (0.075 ppm)
>10 Million	4	2
4-10 Million	3	1
350,000 - 4 Million	2	1
50,000 – 350,000	1	0 or 1*

* NCore sites require a minimum of 1 monitor

ADEQ operates a network of seven O_3 monitors throughout Arizona (see Table 4.3-2). Authority to operate O_3 monitors has been delegated to Maricopa, Pima, and Pinal counties. ADEQ will be relocating the Prescott College AQD monitor after the 2010 season due to siting requirements. ADEQ will also be looking for a suitable site in Lake Havasu City due to population requirements.

Table 4.3-2 O_3 Design Values at ADEQ Sites

Site	Operating Schedule	Most recent 3 year 8-hour Design Value (ppm)
Alamo Lake	April - October	0.072
Flagstaff Middle School *	April - October	0.070
JLG Supersite	January - December	0.075
Prescott College AQD *	April - October	0.065
Queen Valley	April - October	0.075
Tonto National Monument	April - October	0.075
Yuma Supersite *	April - October	0.072

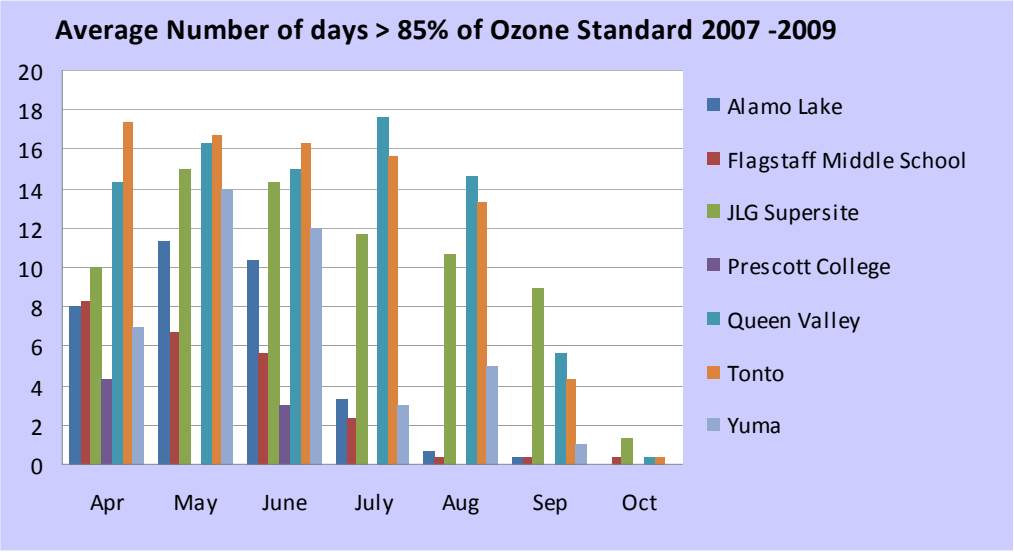
* Based on 2008-2009 data

4.3.1 O_3 Season

In accordance with 40 CFR Part 58, Appendix D, Paragraph 4.1(i), ADEQ was granted a modification to the January through December O_3 season defined in the regulation. The 1998 EPA guidance document entitled, "Guideline for Selecting and Modifying the Ozone Monitoring Season Based on an Eight-Hour Ozone Standard" supports a shorter O_3 season for Arizona (April through October) based upon data collected from 1990-95. For 2007-09, the average number of days above 85% of the 2008 NAAQS of 0 .075 ppm continues to support the operation of seasonal monitors (see Figure 4.3-1).

ADEQ will operate the seasonal monitors from April 1st through October 31st. These sites are: Alamo Lake, Flagstaff Middle School, Prescott College AQD, Queen Valley, Tonto National Monument, and Yuma Supersite. The JLG Supersite will continue to operate on a January to December schedule.

Figure 4.3-1 – Monthly O_3 Concentration at ADEQ Sites using 2008 8-hour NAAQS (0.075 ppm)



4.3.2 O_3 Non-urban Networks

The 2009 revised O_3 monitoring regulation requires three non-urban monitors in Arizona. New sites are not required because O_3 monitors are currently operated by the NPS at Grand Canyon National Park, Petrified Forest National Park, and Chiricahua National Monument in Arizona. ADEQ operates O_3 monitors at two non-urban sites: Alamo Lake and Tonto National Monument. ADEQ believes all of these sites meet the non-urban network requirement.

4.4 PAMS Monitoring Network Requirements

Network design and monitoring requirements for PAMS stations are provided in 40 CFR 58 Appendix D for areas classified as serious, severe, or extreme nonattainment for O_3. Overall, only two sites are required for each area, providing all chemical measurements are made. Measurements include speciated VOCs, carbonyls, NO_x, trace level nitrogen oxides (NO_y), CO, O_3, surface meteorology, and upper air meteorology. In 2008, EPA shortened the PAMS monitoring season to June through August.

ADEQ's PAMS network consists of two ambient air monitoring sites in the Phoenix-Mesa-Scottsdale MSA and a wind profiler site for the collection of upper air meteorological data.

<u>JLG Supersite – Type 2 PAMS Site</u>
The JLG Supersite was designated a PAMS site in 1999. To meet the revised EPA requirement for daily monitoring, ADEQ contracted with an outside vendor for the operation of an automated gas chromatograph mass spectrometer (Auto GC/MS) monitoring system for collection and analysis of PAMS VOCs data at JLG Supersite for the 2007 monitoring season. The hourly data were reviewed and

submitted to AQS. A comparison with the canister samples collected for Toxics VOCs indicated the Auto GC/MS measurements were within 15 percent of the canister method results. Analysis of the 2007 results has been completed. The successful operation of the Auto GC/MS and the reliability of the results for analysis plus the additional information that continuous measurements can provide could support a decision to purchase an Auto GC/MS to be operated at JLG Supersite during PAMS season in lieu of canister sampling. However, consultation with current users of Auto GC equipment in several different agencies confirmed that purchase and installation would cost approximately $100,000 and successful operation would require half an FTE on a continuing basis. Since the required manual method of eight three-hour canisters running daily is impractical due to increased expenses for staff, shipping, and analysis, ADEQ returned to the 2006 monitoring schedule of a 24-hour canister sample every sixth day at the JLG Supersite during PAMS season for VOCs. This will be reviewed as part of the Five-Year Network Assessment due July 1, 2010. ADEQ also operates carbonyl, O_3, NOx, and surface meteorological monitoring equipment at JLG Supersite (see Table 4.4-1).

Table 4.4-1 JLG Supersite PAMS Instrumentation

Parameter	Dates of Operation	Collection Method	Frequency and Duration
VOC	6/1/10 – 8/31/10	Canister Sampler	Every 6th day, 24 Hr
Carbonyl	6/1/10 – 8/31/10	Multi-port Carbonyl Sampler	Every 6th day, 24 Hr, and 3 - 3hr samples (0500-0800, 0800-1100, 1100-1400)
O_3	1/1/10 – 12/31/10	O_3 Analyzer	Hourly average
NOx	1/1/10 – 12/31/10	NOx Analyzer	Hourly average

Queen Valley – Type 3 PAMS Site

Queen Valley was designated a PAMS site in 2001. The site is located near the southeastern edge of the photochemical modeling grid domain and is considered to be downwind of the source of maximum precursor emissions in the Phoenix metropolitan area. Pollutants collected at the site include VOCs, O_3, and total reactive NOx. Carbonyl samples are not required at Type 3 sites. Table 4.4-2 lists the instrumentation and monitoring schedule at the Queen Valley site.

Table 4.4-2 Queen Valley PAMS Instrumentation

Parameter	Dates of Operation	Collection Method	Frequency and Duration
VOC	6/1/10 – 8/31/10	Multi-port sampler	Every 6th day, 24Hr, and 3 - 3hr samples (0500-0800, 1300-1600, 1600-1900)
O_3	4/1/10 – 10/31/10	O_3 Analyzer	Hourly average
NOx	4/1/10 – 10/31/10	NOy Analyzer	Hourly average

Vehicle Emissions Laboratory – Upper Air Meteorology Site

A radar wind profiler collects continuous upper air meteorological data for determination of mixing heights. This site also includes a pyranometer to measure total solar radiation, UV solar radiation, wind speed, wind direction, temperature, and relative humidity. Barometric pressure and precipitation measurements are collected by the National Weather Service (NWS) site at nearby Sky Harbor Airport.

Table 4.4-3 Vehicle Emissions Laboratory PAMS Instrumentation

Parameter	Dates of Operation	Method	Duration
Meteorology	1/1/10-12/31/10	• Radar Acoustic Sounding System (RASS) • pyranometer (total solar radiation) • ultra-violet (UV solar) • wind speed/direction • temperature • relative humidity	Hourly average

4.5 NCore Monitoring Network Requirements

EPA has identified JLG Supersite as the required NCore site for the Phoenix metropolitan area. JLG Supersite has a long history of multipollutant monitoring since its establishment in 1993. Currently, several monitoring programs are supported at this site, (SLAMS, PAMS, NATTS, and CSN) as well as meteorology. The required NCore parameters are listed in Table 4.5-1. All required NCore monitors will be operational on or before January 1, 2011. EPA approved ADEQ's NCore monitoring plan submitted in 2009, but did not grant the waiver request to substitute NOx monitoring for NOy.

Table 4.5-1 JLG Supersite NCore Instrumentation

Required Measurement	Frequency/Duration	Status
$PM_{2.5}$ FRM mass	24 hour average every 3rd day	Thermo partisol is current instrument; $PM_{2.5}$ samples collected since 1999
$PM_{2.5}$ speciation - organic and elemental carbon, major ions, and trace metals	24 hour average; every 3rd day	MetOne SuperSASS with URG module is current instrument; STN samples collected since 1999
Continuous $PM_{10-2.5}$ mass	Hourly	MetOne BAM 1020 FEM pair beginning 1/1/2011
Continuous $PM_{2.5}$ mass	Hourly	MetOne BAM 1020 FEM pair beginning 1/1/2011
O_3	Hourly	API Teledyne 400E beginning 1/1/2011
CO	Hourly	Ecotech CO 9830 beginning 1/1/2011
SO_2	Hourly	Ecotech SO_2 9850 beginning 1/1/2011
NO	Hourly	Thermo 42C currently in operation
NOy	Hourly	Thermo 42C TL beginning 1/1/2011
Surface meteorology	Hourly	RM Young anemometer, Rotronics temperature/relative humidity probe currently in operation
Pb	24 hour average; every 6th day	To be determined. Currently Pb measurements are from the NATTS PM_{10} metals sampler.

4.6 SIP Monitoring Network Requirements

ADEQ is responsible for preparation and submittal of SIPs to EPA for the non-attainment and maintenance areas in Arizona. ADEQ is also responsible for conducting ambient air monitoring for these areas with the exception of the delegated agreements with Maricopa, Pima, and Pinal counties and tribal lands. Permitted sources are also responsible for monitoring air quality, if they are the largest source of emissions for that area. Some monitoring sites are specifically named in some SIPs; other monitoring sites are not specifically named, but are representative of the air quality in that SIP area. Table 4.6-1 lists the ADEQ and source operated monitors used to determine SIP compliance.

Table 4.6-1 SIP Network Monitoring Requirements

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

Area and County	Pollutant	Classification	ADEQ SIP Sites
Phoenix, Maricopa	CO	Maintenance/Attainment	*JLG Supersite*
Phoenix, Maricopa	O_3 1-hr	Maintenance/Attainment	*JLG Supersite, Tonto National Monument*
Phoenix-Apache Junction, Maricopa and Pinal	O_3 8-hr	"Basic" Nonattainment	Alamo Lake, *JLG Supersite*, Queen Valley, *Tonto National Monument*
Ajo, Pima	PM_{10}	Moderate Nonattainment	*Ajo*
Bullhead City, Mohave	PM_{10}	Maintenance/Attainment	*Bullhead City (Post Office)*
Douglas, Cochise	PM_{10}	Moderate Nonattainment	Douglas Red Cross ADEQ also operates one PM_{10} site at the Agua Prieta Fire Station in Mexico.
Paul Spur, Cochise	PM_{10}	Moderate Nonattainment	*Paul Spur Chemical Lime Plant*
Hayden, Gila and Pinal	PM_{10}	Moderate Nonattainment	*Hayden Old Jail*
Miami, Gila	PM_{10}	Moderate Nonattainment	*Freeport McMoRan sites: Golf Course & Miami Ridgeline*
Nogales, Santa Cruz	PM_{10}	Moderate Nonattainment	*Nogales Post Office* ADEQ also operates one PM_{10} site at Nogales Fire Station in Mexico.
Payson, Gila	PM_{10}	Maintenance/Attainment	*Payson Well Site*
Phoenix, Maricopa, and Pinal (Apache Junction portion) Phoenix (Salt River Area)	PM_{10}	Serious Nonattainment	Bethune Elementary School, *JLG Supersite*
Rillito, Pima	PM_{10}	Moderate Nonattainment	*Rillito* Both ADEQ and the source, APCC, operate instruments at this site.
Yuma, Yuma	PM_{10}	Moderate Nonattainment	Yuma Supersite
Nogales, Santa Cruz	PM_{25}	Nonattainment	Nogales Post Office
Ajo, Pima	SO_2	Maintenance/Attainment	No network or commitment
Douglas, Cochise	SO_2	Maintenance/Attainment	No network or commitment
Hayden, Gila and Pinal	SO_2	Nonattainment – Primary	*ADEQ: 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*

Area and County	Pollutant	Classification	ADEQ SIP Sites
Miami, Gila	SO_2	Nonattainment – Primary	*ADEQ: Miami Ridgeline* *Freeport McMoRan (SO_2, MET) Jones Ranch, Miami Townsite*
Morenci, Greenlee	SO_2	Maintenance/Attainment	No network or commitment
San Manuel, Pima and Pinal	SO_2	Maintenance/Attainment	No network or commitment
Regional Haze, 12 Class I areas	Visibility Impairing pollutants (VOC, NOx, SO_2, PM_{10}, $PM_{2.5}$, $PM_{2.5}$ species)	Statewide – IMPROVE monitors	ADEQ Protocol sites: Douglas Red Cross, Organ Pipe Natl Monument, JLG Supersite, Queen Valley, Saguaro West Natl Monument National Park Service sites: Chiricahua Entrance Station, Greer Water Treatment Plant, Indian Gardens-Grand Canyon, Hance Camp-Grand Canyon, Ike's Backbone, Meadview, Petrified Forest National Park, Pleasant Valley Ranger Station, Saguaro National Park-East, Sycamore Canyon, Tonto National Monument

4.7 Source Compliance Monitoring Network Requirements

Historically, ADEQ has required several of the major point sources in the state to conduct ambient monitoring for selected pollutants in and around specific facilities. Some requirements are for PSD monitoring prior to operation of the facility. Other monitoring requirements are for the duration of the permit. ADEQ activities have been limited to regular performance audits of some equipment at these sites and review of ambient data submitted according to permit requirements. Recently, ADEQ has begun to submit a portion of these data to the EPA AQS database to support SIP compliance. Sources are required to review their data and submit quality assurance documents to ADEQ with the data. Table 4.7-1 lists the monitors operated by ADEQ permitted sources.

Table 4.7-1 Source Compliance Monitoring Network

Site Name	City	Pollutant(s)	AQS Submittal
APCC – Rillito	Rillito	PM_{10}, Meteorology	No
ASARCO – Globe Highway	Winkelman	SO_2, Pb	SO_2 Yes, begin w/ 2008 Pb, Yes, begin w/ 2010
ASARCO – Hayden– Garfield Ave.	Hayden	SO_2	Yes, begin w/ 2008 data
ASARCO – Montgomery Ranch	Hayden	SO_2	Yes, begin w/ 2008 data
ASARCO – Hayden Junction	Hayden Junction	SO_2	No
ASARCO – Hayden Old Jail	Hayden	SO_2	No
Chemical Lime Plant	Nelson	Meteorology	No
Drake Cement	Sycamore Canyon	PM_{10}, $PM_{2.5}$ mass and ammonium speciation, Meteorology	No
FMMI – Miami Ridgeline	Miami	PM_{10} mass and	Yes, begin w/ 2002 data

Site Name	City	Pollutant(s)	AQS Submittal
		metals speciation	
FMMI – Golf Course	Miami	PM_{10} mass and metals speciation, collocated	Yes, begin w/ 2002 data
FMMI – Miami – Jones Ranch	Miami	SO_2	Yes, begin w/ 2008 data
FMMI – Miami – Townsite	Miami	SO_2	Yes, begin w/ 2008 data
PCC – Clarkdale NW	Clarkdale	PM_{10} mass and metals speciation, Meteorology	No
PCC – Clarkdale SE	Clarkdale	PM_{10} mass and metals speciation, Meteorology	No
Carlota Mine – Sanctuary	Globe	PM_{10}, Sulfuric acid mist, Meteorology	No
TEP – Springerville – Coyote Hills	Springerville	NO_2, PM_{10}, SO_2, Meteorology	No
TEP – Springerville – Coal Yard	Springerville	PM_{10}	No

4.8 Class I Visibility Network

Visibility monitoring networks track impairment in specified national parks and wilderness areas. These parks and wilderness areas are called Class I Areas and were designated based on an evaluation required by Congress in the 1977 federal CAA Amendments. The evaluation which was performed by the USFS and NPS reviewed the wilderness areas of parks and national forests which were designated as wilderness before 1977, were more than 6,000 acres in size, and have visual air quality as an important resource for visitors. Of the 156 Class I Areas designated across the nation, 12 are located in Arizona.

For the Class I Area designations, EPA initiated a nationally-operated monitoring network in 1987 called the Interagency Monitoring of PROtected Visual Environments (IMPROVE) program. The purpose of the network is to characterize broad regional trends and visibility conditions using monitoring data collected in or near Class I Areas across the United States. Originally the national IMPROVE network was made up of approximately 30 sites at Class I areas; during 1999-2000 the number of sites increased to approximately 110. ADEQ, Pima and Pinal counties, and federal land managers at Arizona's Class I areas cooperatively operate the visibility monitoring network in Arizona. The current network is described in Table 4.8-1. An annual monitoring plan for this network is prepared by ADEQ.

Table 4.8-1 2010-2011 Arizona Class I Visibility Monitoring Network

Geographic Area Represented	Monitoring Location
Background	Meadview, Organ Pipe National Monument
Chiricahua National Monument, Chiricahua Wilderness Area and Galiuro USFS Wilderness	Chiricahua Entrance Station
Grand Canyon National Park	Hance Camp and Indian Gardens
Mazatzal and Pine Mountain USFS Wilderness	Humboldt Mountain, Ike's Backbone
Mount Baldy	Greer Water Treatment Plant
Petrified Forest National Park	Petrified Forest
Saguaro National Park	East Unit and West Unit
Sierra Ancha USFS Wilderness	Pleasant Valley Ranger Station
Superstition USFS Wilderness	Tonto National Monument, Queen Valley
Sycamore Canyon USFS Wilderness	Sycamore Canyon (Camp Raymond)

ADEQ's 1996 monitoring plan for the Arizona Class I areas proposed adding optical and meteorological monitoring equipment to existing IMPROVE sites to supplement data collected by the IMPROVE aerosol monitors with continuous measurements to better characterize the air quality in these areas. ADEQ also established protocol sites (completely supported by ADEQ following IMPROVE monitoring requirements) to supplement network coverage. Part of the motivation for installing integrating nephelometers at IMPROVE sites was a desire to use short term (five minutes) visibility estimates to model the visual experience of a visitor to a Class I area. A second motivation for installing nephelometers at IMPROVE sites was to provide input to mathematical algorithms that create values that can be compared with the IMPROVE measurements to test the performance of the IMPROVE algorithm. Both the original and the revised IMPROVE algorithms tend to over-estimate the lowest extinction values typical of the Arizona IMPROVE sites.

ADEQ is discontinuing operation of the nephelometers at nine Class I visibility sites in 2010 due to budget constraints. They are not required by the IMPROVE program, the CFR, or by the Regional Haze Rule SIP, and they have been funded solely by ADEQ. A wealth of data has been collected at each site and will be analyzed and summarized to characterize optical air quality for each Class I area represented. These results will be made available on ADEQ's website and the VIEWS website during the summer of 2010. See Table 3.4-1 for a list of the nephelometers to be closed.

4.9 Urban Haze Monitoring Network

ADEQ monitors the Phoenix and Tucson metropolitan areas with a network of instruments to characterize and quantify the extent of urban haze. There are no established federal or state standards for acceptable levels of urban haze. ADEQ began studying the nature and causes of urban hazes 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 1993, ADEQ began deploying visibility monitoring equipment in Phoenix and Tucson. These visibility monitoring data are needed to provide policymakers and the public with information, track short and long-term trends, assess source contributions to urban haze, and better evaluate the effectiveness of air pollution control

strategies. Equipment currently used to evaluate urban visibility includes transmissometers, nephelometers, particulate monitors, 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, four nephelometers for measuring light scattering, six digital camera systems to record visual characteristics of the urban area, and particulate filters for quantifying and characterizing particulate matter. The Tucson urban haze network includes one transmissometer for measuring light extinction along a fixed path length of about three to five kilometers, two nephelometers for measuring light scattering, and a digital camera system operated by PDEQ to record visual characteristics of the urban area. The sites are described in Table 4.9-1.

Table 4.9-1 Urban Haze Monitoring Network

Site Name	Parameter(s) Measured
Phoenix Network	
ADEQ Building	High Resolution Digital Camera
Banner Mesa Medical Center	High Resolution Digital Camera
Dysart	Light Scattering (Bscat) Nephelometer
Estrella	Light Scattering (Bscat) Nephelometer
Estrella Mountain Community College	2 High Resolution Digital Cameras
JLG Supersite	IMPROVE
North Mountain	High Resolution Digital Cameras
Phoenix Transmissometer (Phoenix Baptist Hospital to Holiday Inn Hotel)	Transmissometer (Bext)
Vehicle Emissions Laboratory	Light Scattering (Bscat) Nephelometer
Tucson network	
22nd St./Craycroft	Light Scattering (Bscat) Nephelometer
Children's Park	Light Scattering (Bscat) Nephelometer
Tucson Transmissometer (U of A Clinical Science Building to Pima County Health & Welfare Building)	Transmissometer (Bext)

4.10 Meteorology Monitoring Network

ADEQ operates meteorological equipment at selected sites throughout its network. Some sites were originally established because other meteorology networks (NWS, AZMet, etc.) were not located near ADEQ's ambient air quality sites. Review of the meteorological network will be done during the Five-Year Network Assessment. To help support exceptional event investigations, ADEQ is considering adding standard meteorological measurements to all of the air quality monitoring sites.

Table 4.10-1 Meteorology Monitoring Network

Site	Temp.	Temp. Lapse Rate System	Relative Humidity	Wind	Total Horizontal Solar Radiation	Ultraviolet Solar Radiation	Wind Profiler	Report to AQS	Comments
Ajo				X				No	
JLG Supersite	X		X	X				Yes	For PAMS support
Nogales Post Office				X				No	
Paul Spur Chemical Lime Plant - South				X				No	
Payson Well Site	X		X	X				No	
Rillito	X		X	X				No	
Vehicle Emissions Laboratory	X	X	X	X	X	X	X	Solar only	For PAMS support
Yuma Supersite	X		X	X				No	

4.11 AIRNow Reporting Network

ADEQ originally began reporting $PM_{2.5}$ data (converted from nephelometer light scatter measurements) from four sites in the Phoenix metropolitan area: JLG Supersite, Dysart, Estrella, and VEI. ADEQ's air quality forecasters use these data for daily forecast reports for Phoenix. This data reporting began for the Phoenix metropolitan area because continuous $PM_{2.5}$ instruments were not in operation. Since reporting began, Maricopa County Air Quality Department has begun operating several instruments and also begun reporting their data to AIRNow. Due to budget constraints, ADEQ closed its JLG Supersite nephelometer. A continuous $PM_{2.5}$ monitor operates at the site but is not reported to AIRNow.

No other data from any ADEQ monitoring network is being submitted to AIRNow.

ADEQ's Data Collection System (DCS) was modified several years ago to produce XML files in AIRNow format, when AIRNow was updating its system. However, AIRNow decided not to add the capability to accept XML files. ADEQ has no plans at this time to make modifications to DCS for AIRNow reporting.

5.0 MONITORING PLAN QUALITY ASSURANCE

EPA specifies the quality assurance requirements for SLAMS, SPMs, and PSD air monitoring programs in 40 CFR 58 Appendix A. Data quality objectives, measurement quality objective and indicators, quality control (QC) checks for the monitors, calculations for data quality assessments, and data reporting requirements are part of the Air Assessment Section's (AAS) quality management system.

5.1 The Quality System

All environmental data operations (EDOs) contain some level of uncertainty, or error, associated with them. The total measure of uncertainty is the sum of measurement error, which occurs in the data collection process, and population uncertainty, which relates to the representativeness of samples. ADEQ follows EPA's quality system approach which uses data quality objectives (DQOs) which are developed prior to sampling in a program's or project's planning phase. DQOs specify the amount of tolerable error that is not to be exceeded in order to make decisions using the air assessment data collected for each program's or project's specific purpose. To help meet DQOs, measurement quality objectives (MQOs), or performance constraints applied to air monitoring instruments, are used to keep measurement uncertainty within acceptable limits. Population uncertainty is controlled by proper site selection.

ADEQ serves as the Primary Quality Assurance Organization (PQAO) for the air monitoring stations it owns and operates. Being a PQAO streamlines Quality Assurance (QA) efforts by allowing meaningful measurement assessments to take place in a shorter period of time, by allowing expensive assessments such as collocated precision sampling and EPA-required performance evaluation (PE) audits such as Performance Evaluation Program (PEP) and National Performance Audit Program (NPAP) to take place at less sites and for results to be aggregated at higher levels that are representative of additional ADEQ sites.

As a PQAO, ADEQ uses precision and bias data from air monitoring instruments to assess how well we are achieving our established DQOs. Precision is defined as the measure of mutual agreement among individual measurements of the same property usually under prescribed similar conditions, and it is the random component of error. Precision data are generated from collocated sites and QC checks performed by Air Monitoring Unit (AMU). Bias is the systematic or persistent distortion of a measurement process which causes error in one direction. It is determined by estimating the positive and negative deviation from the true value as a percentage of the true value. Bias data are generated from EPA and in-house PE audits.

The measurement uncertainty among all ADEQ stations monitoring for the same pollutant is expected to be reasonably homogeneous, as a result of common factors existing between those stations. Common factors typically include:

- stations being operated by a common team of field operators and according to a common set of field procedures (standard operating procedure (SOP)),
- common calibration facilities and standards,
- use of a common quality assurance project plan,

- oversight by a common quality assurance organization, and
- support by a common management, laboratory, or headquarters.

5.1.1 ADEQ Quality Assurance Staff

The QA Team is currently composed of two full-time employees dedicated to QA/QC activities. The QA/QC Lead is a member of ADEQ's agency level QA team which is chaired by the agency's QA/QC and Laboratory Services Manager. The QA/QC Lead participates in technical assistance document (TAD) development with the EPA Office of Air Quality Planning and Standards (OAQPS) when possible. Information concerning changes to TADs is communicated to the QA Coordinator and AMU staff so that AAS is able to comment on pertinent QA changes that affect air monitoring quality, logistics, and resources. The QA Coordinator manages the PE audit program. In addition, the QA Coordinator frequently interacts with air monitoring representatives from the tribes and industrial sources for public outreach or compliance purposes.

The QA Team provides oversight and guidance on air monitoring activities to help ensure EPA's QA requirements and/or best work practices are met. The QA Team primarily interacts with staff from the AMU and Air Filter Laboratory (AFL) both of which are within the AAS.

The QA Team has numerous responsibilities that include, but are not necessarily limited to:

- coordinating the preparation of quality documents such as Quality Assurance Program Plans (QAPrP or QAPP) and/or Quality Assurance Project Plans (QAPjP or QAPPs) and SOPs for operating air monitoring equipment, sample handling, and sample processing,
- conducting Technical Systems Audits (TSAs) of ADEQ air monitoring programs and laboratory services,
- monitoring third-party laboratory performance on TSAs conducted by EPA,
- conducting PE audits on ADEQ, source, and Pinal County Air Quality Control District (PCAQCD) monitors, and
- reviewing documents such as chain-of-custody forms, data forms, and instrument performance forms that relate to DQOs.

For detailed information on the QA Team's activities, see the Annual Audit Report.

5.1.2 ADEQ Quality Documents

ADEQ has an agency-level Quality Management Plan (QMP) that is managed by the QA/QC Manager who reports to the General Services Section in the Administrative Services Division. In 2007, the QA/QC Manager submitted a QMP to EPA Region 9. Currently, the QMP is undergoing revision. The QMP describes the quality management processes ADEQ uses to maintain a quality management system that supports programs involving environmental data or technology. The QMP is an "Umbrella" document which details in broad terms the strategies used to carry out QA/QC in environmental data collection activities.

Per Region 9 guidance, AAS submitted a QAPrP to EPA Region 9 in November 2001, which was never approved. This document provided a broad overview of all of the air monitoring programs AAS

operates. This document is being replaced by individual QAPPs which provide more detail for each major air monitoring program. QAPjPs are developed for environmental data operations of limited scope and duration, such as special studies, which have known beginning and end dates. These can be more abbreviated documents. Since such projects involve multipollutant monitoring, these QAPjPs should refer to the appropriate QAPP for the pollutant to reduce duplication of effort.

In early 2010, the QA Team updated a schedule for managing new and existing QAPPs. The team's goal is to complete two QAPPs per year in addition to accomplishing other QA tasks. In 2010, AAS is revising the *National Air Toxics Trends Stations, Air Toxics Monitoring Program, & Photochemical Assessment Monitoring Stations QAPP* which was approved by EPA Region 9 in February 2008. The QA Team will also coordinate the development of a new QAPP for the new Pb monitoring program. The QA Coordinator will audit the new Pb sampler and ADEQ will participate in EPA's PEP audit program for these samplers.

Based on communication with EPA, it is not necessary to develop a specific QAPP for NCore. The instruments used in the NCore program will be addressed in several program specific QAPPs that include, but may not be limited to: the $PM_{2.5,}$ PM_{10}, Gaseous Pollutants, and Meteorological QAPPs. The QA Coordinator will manage PE audits on these instruments.

AAS follows the EPA's QAPP for the $PM_{2.5}$ STN monitoring program. In late 2009, a new URG 3000 sampler was added for the collection of elemental and organic carbon. The QA Coordinator will conduct PE audits on the SuperSASS and URG 3000 four times per year (quarterly) per instrument. An SOP for the URG 3000 is needed and planned for completion in 2010.

SOPs for air monitors are provided in QAPPs as well as at monitoring sites for technicians and operators. AAS SOPs are being revised to follow EPA's format provided in the *Guidance for Preparing Standard Operating Procedures (SOPs) EPA QA/G-6*. The QA/QC Lead is drafting a new in-house guidance procedure for SOP management. The goal is to ensure each SOP contains all pertinent procedures from each Unit within AAS so that all procedures are transparent for staff. This change is expected to improve the usability of each SOP while streamlining review efforts.

5.2 Measurement Quality Checks – Precision and Bias Measurements

AMU QC checks and QA PE audits generate data used to assess the quality of the ambient air quality data collected by AAS. The QC checks are used to assess precision, or imprecision actually, introduced into air quality data by the monitor system. The PE audits generate data used to assess the amount of bias introduced into air quality data by the monitor. For particulate matter monitors, collocated sampling generates precision data as well. The information gleaned from precision and bias data is important for data certification and user purposes. This QA information is provided via the AMP 255 report which is generated from the EPA's AQS. The Annual Audit Report and the annual Certification Letter contain more information on the AMP 255 report.

The precision and bias data are reviewed for QA purposes by AMU and Data Management and Quality Assurance Unit (DM&QA) staff to determine the quality of the ambient air data collected. Following reviews, the data are uploaded to the AQS database per 40 CFR 58 requirements for criteria pollutants.

To date, the national air monitoring programs not currently accepting/requiring this precision and bias data include the CSN, NATTS, and PAMS.

5.2.1 Particulate Monitors – Manual Methods – PM_{10}

ADEQ currently operates one type of filter-based PM_{10} samplers, which are partisols. All dichots samplers have been removed and are no longer used in any of ADEQ's monitoring networks. Flow rate verifications are checked once every four weeks and instrument calibrations are performed every six months by AMU staff. The QA Auditor performs PE audits on these samplers once every six months.

Concentration data from seven sites are reported to AQS in standard and local conditions. All sites are designated as SLAMS except Bethune. Section 3.3.1 of CFR Part 58 Appendix A indicates that 15 percent of the sites in a network must be collocated. The collocated monitors must be within four meters of each other and at least one meter apart for flow rates less than 200 liters/min. ADEQ's has seven sites and according to the rule would need one collocated site. Currently ADEQ runs two collocated samplers, at Payson Well Site and Paul Spur Chemical Lime Plant, which complies with these requirements. All concentrations from the collocated samplers are reported to the AQS with parameter occurrence code (POC) 2. Collocated samples are collected every sixth day for precision measurements.

5.2.2 Particulate Monitors – Manual Methods – $PM_{2.5}$

The $PM_{2.5}$ network must include collocated sampling at 15 percent of the monitoring sites operated by the reporting agency. If the area has less than four sampling sites at least one must have a precision measurement. ADEQ currently runs six $PM_{2.5}$ site, requiring one collocated site. This requirement is met with the collocation at Nogales Post Office site.

ADEQ's six sites are designated as SLAMS. Concentrations are reported to AQS. All concentrations from the collocated monitors are reported as POC 2.

Collocated samples are collected every sixth day to ensure an adequate number of precision measurements. Flow rate verifications are performed every four weeks and calibrations are performed once every six months by AMU. PE audits are conducted once every six months by QA. All precision and bias measurements are reported to the AQS. PEP audits are conducted on $PM_{2.5}$ monitors by EPA. The PEP audit results are used for measuring bias and are reported to AQS. The ADEQ network has more than five sites, which requires eight PEP audits distributed evenly over four quarters. All samplers should be audited within six years.

5.2.3 Gas Monitors – SO_2, O_3, CO, NO_2

One-point zero span checks are conducted biweekly and multipoint calibrations are performed quarterly by AMU for all gas monitors. Multi-point PE audits are performed annually by QA. Both measurements are reported to the AQS. NPAP are conducted by EPA annually for precision measurements. NPAP results are reported to AQS. Beginning in July 2010 these audits will increase and be conducted on a semi-annual basis.

All shelters for the gas monitors contain temperature probes. The shelter temperature is checked daily via the DCS to verify proper operating conditions for the monitors. Shelter temperatures are required to be 20º to 30º C. Shelter temperature probes audited once every six months by QA.

5.2.4 Air Toxics Monitors

ADEQ's JLG Supersite in Phoenix is a designated air monitoring station for the NATTS. AMU conducts verifications and calibrations on the samplers used to collect PM_{10} metals, Polycyclic Aromatic hydrocarbons (PAHs), and hexavalent chrome. Calibrations occur once every six months and verifications occur on a monthly or quarterly basis. QA conducts PE audits on the same samplers once every six months. The VOC sampler is currently calibrated annually by ATEC and certified annually by ERG. The carbonyl sampler is currently calibrated annually by ATEC and will start being certified annually in 2010 by either ATEC or ERG.

5.2.5 Meteorological Equipment

Meteorological equipment is audited by the QA Team annually. The meteorological equipment at the designated NCore site will be audited every six months.

5.3 Calculations and Reporting

ADEQ submits the required AQS precision and bias report (AMP 255) along with the Data Completeness Report to Region 9 in the annual Certification Letter per certification guidelines. As stated above, all collocated particulate mater (PM) measurements are submitted quarterly to AQS as POC 2. AQS then calculates the precision statistics. The gaseous biweekly checks are submitted quarterly as precision records. Audit information for both PM monitors and gas monitors are also submitted quarterly.

5.4 ADEQ AQD Audit Responsibilities

The QA Team conducts PE audits of AAS monitors, PCAQCD monitors, and some source monitors whose measurements are used for determining NAAQS compliance.

5.4.1 Internal Technical System Audits

In 2009, the QA Team conducted TSAs of the Southern Regional Office (SRO) and Northern Regional Office (NRO) staff and operators. In 2010, the QA Team will provide support and assistance to AMU in addressing the findings and recommendations from the TSAs.

To date, the QA Coordinator conducts TSAs on 11 IMPROVE samplers operating throughout the state annually. These TSAs are limited to evaluating site conditions and instrument performance with occasional operator interaction. Six of the 11 samplers are "protocol" samplers meaning they are owned and operated by ADEQ. The other five samplers are owned and operated by EPA. Currently, AAS does not receive funds for the TSAs provided on EPA IMPROVE samplers. This will be reviewed in 2010 to determine if ADEQ can continue to support these unfunded audits.

In late 2009, the QA/QC Lead initiated the startup of an Air Toxics Team whose members include technicians from AMU, the QA Coordinator, and the data management lead. The purpose of this team is to prepare for a technical system audit and to update the NATTS/ATMP/PAMS QAPP and instrument SOPs.

5.4.2 ADEQ Rankings in EPA Program Reports

In early 2009, the QA Team reviewed the report of EPA's PEP audit program. DM&QA staff began investigating what changes may have occurred within the $PM_{2.5}$ network to cause a shift in program performance over the last nine years. Based on EPA's Three-Year Quality Assurance Reports for the SLAMS $PM_{2.5}$ Ambient Air Monitoring Program covering years 1999 through 2007, ADEQ's $PM_{2.5}$ network fell from a high rating to a low rating for bias results. Three areas are under review to identify and eliminate source(s) of error occurring in the network in order to reverse this trend. The program elements under review include: the sampler and impactor combination, the AFL gravimetric weighing process, and the PEP audit and data assessment process. To date, AFL has participated in two round-robins in the Gravimetric Inter-Laboratory Comparison Study conducted by the EPA's National Air and Radiation Environmental Laboratory (NAREL) and scored well on each. Further network evaluation will continue in 2010.

5.4.3 Technical Assistance Document Development

In 2010, the process of verifying flow standards used by AMU and QA will undergo review. This review was initiated by the QA/QC Lead's involvement as a reviewer on a new flow standard TAD by OAQPS. Currently, most AMU and QA flow standards are certified, or verified, annually. The calibrators used by QA for criteria pollutant gases and the O_3 standard are checked twice per year. All gas and flow rate standards used by AMU and QA Team are traceable to the National Institute of Standards and Technology (NIST) flow standard.

5.5 EPA Audit Responsibilities

EPA Headquarters and Region 9 each have responsibilities for auditing ADEQ's ambient air monitoring program.

5.5.2 PEP and NPAP Audits

In 2010, ADEQ will continue to participate in the EPA NPAP and the PM PEP audits. ADEQ consented to have EPA use a portion of ADEQ's grant funds to pay for these audit programs through IFC Consultants. NPAP and PEP audits are expected to occur in 2010 as in previous years. Also, PEP for Pb will begin this year and the cost for this will be covered by EPA this year.

5.5.2 Technical System Audits

In September 2009, EPA Region 9 conducted a comprehensive TSA on ADEQ's air monitoring program. Findings and recommendations from the TSA will be addressed in 2010 when the final report

is received. EPA Region 9 is required to conduct TSAs on the ADEQ monitoring program every three years.

In April 2010, ADEQ underwent a TSA of the NATTS program. The TSA was conducted by RTI, a contractor for EPA. Findings and recommendations from the TSA will be addressed in 2010 when the final report is received.

Appendix A – Definitions and Abbreviations

AAAD	Air Assessment Ambient Database
AAS	Air Assessment Section
ADEQ	Arizona Department of Environmental Quality
AFL	Air Filter Lab
AMU	Air Monitoring Unit
Auto GC/MS	Automated Gas Chromatograph Mass Spectrometer
AQS	Air Quality System (EPA database)
BAM	Beta Attenuation Monitor
Bext	Total Light Extinction
Bscat	Light Scattering
CAA	Clean Air Act
CBSA	Combined Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSN	Chemical Speciation Network
DCS	Data Collection System
DM&QA	Data Management and Quality Assurance Unit
DQO	Data Quality Objective
E-BAM	Environmental Proof - Beta Attenuation Monitor
EDO	Environmental Data Operation
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
HAP	Hazardous Air Pollutants
IMPROVE	Interagency Monitoring of PROtected Visual Environments
MCAQD	Maricopa County Air Quality Department
MET	Meteorological Measurements (wind, temperature, relative humidity)
MQO	Measurement Quality Objective
MSA	Metropolitan Statistical Area
$\mu g/m^3$	Micrograms per Cubic Meter
NAAQS	National Ambient Air Quality Standard
NAREL	National Air and Radiation Environmental Laboratory
NATA	National Air Toxics Assessment
NATTS	National Air Toxics Trends Station
NCore	National Core multipollutant monitoring stations
NIST	National Institute of Standards and Technology
NM	National Monument
NO_2	Nitrogen Dioxide
NOx	Nitrogen oxides measured in two ranges; 0-1 ppm and trace level 0-0.2 ppm
NOy	Trace Level Nitrogen Oxides
NPAP	National Performance Audit Program
NPS	National Park Service
NRO	Northern Regional Office
NWS	National Weather Service

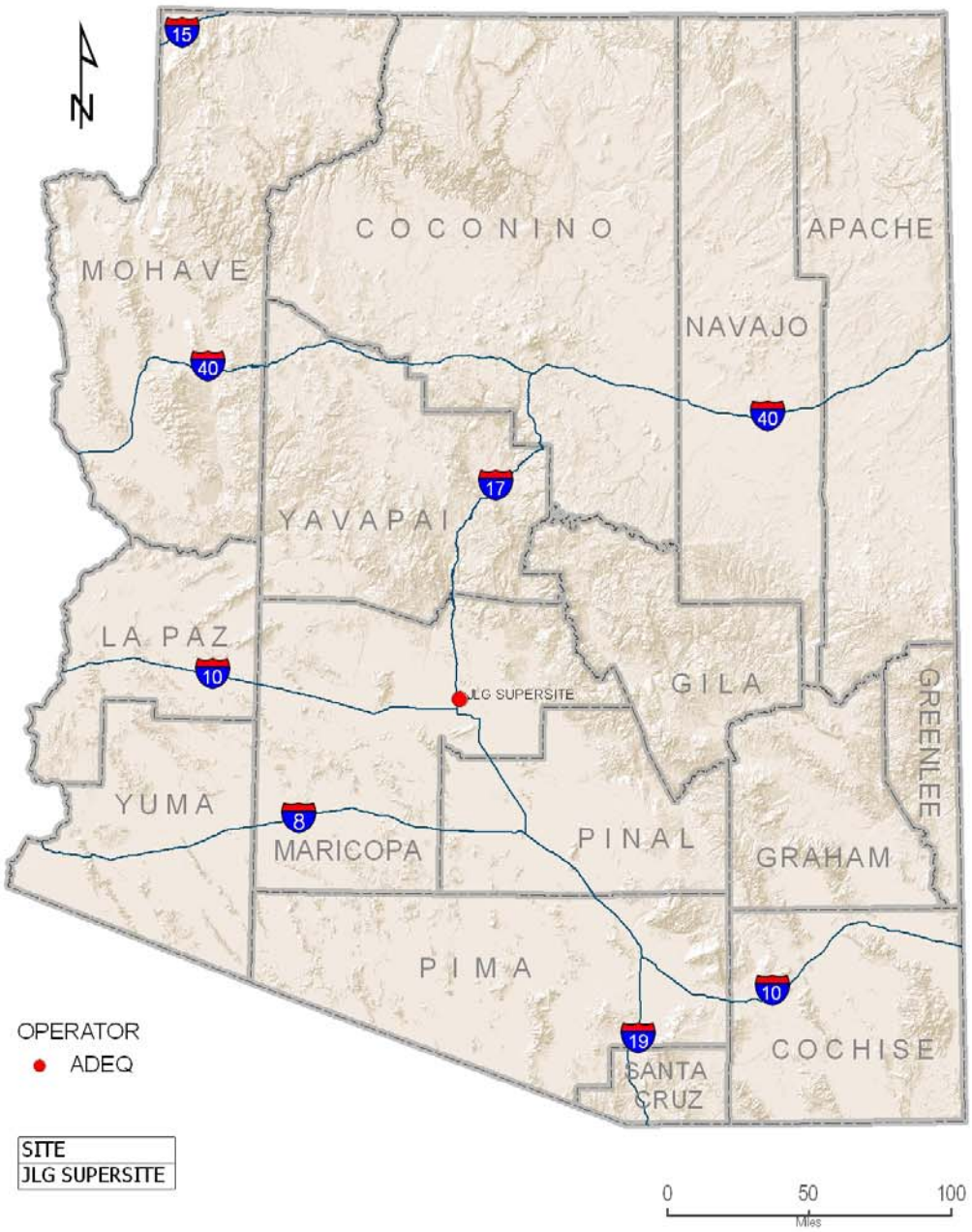
O_3	Ozone
OAQPS	Office of Air Quality Planning and Standards
PAHs	Polyaromatic Hydrocarbons
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
PCAQCD	Pinal County Air Quality Control District
PDEQ	Pima County Department of Environmental Quality
PE	Performance Evaluation
PEP	Performance Evaluation Program
PM	Particulate Matter
PM_{10}	Particulate Matter < 10 microns
$PM_{10-2.5}$	Coarse Particulate Matter 2.5 to 10 microns aerodynamic diameter
$PM_{2.5}$	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
QA	Quality Assurance
QAPP	Quality Assurance Program and/or Project Plan
QAPjP	Quality Assurance Program Plan
QAPrP	Quality Assurance Project Plan
QC	Quality Control
QMP	Quality Management Plan
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
SO_2	Sulfur Dioxide
SOP	Standard Operating Procedure
SPM	Special Purpose Monitor
SRO	Sothern Regional Office
STN	Speciation Trends Network
TAD	Technical Assistance Document
TEOM	Tapered Element Oscillating Microbalance
TSA	Technical System Audit
USFS	United States Forest Service
VOC	Volatile Organic Compound
WASBAQS	Western Arizona Sonora Border Air Quality Study

Appendix B – Network Maps

There are ten maps in this section illustrating the location of ADEQ and Source monitors:

- CO Network
- NO_2 Network
- Ozone Network
- SO_2 Network
- Pb Network
- PM_{10} Network
- $PM_{2.5}$ Network
- Meteorological Network
- Visibility Network
- Class I Wilderness areas

CO Network

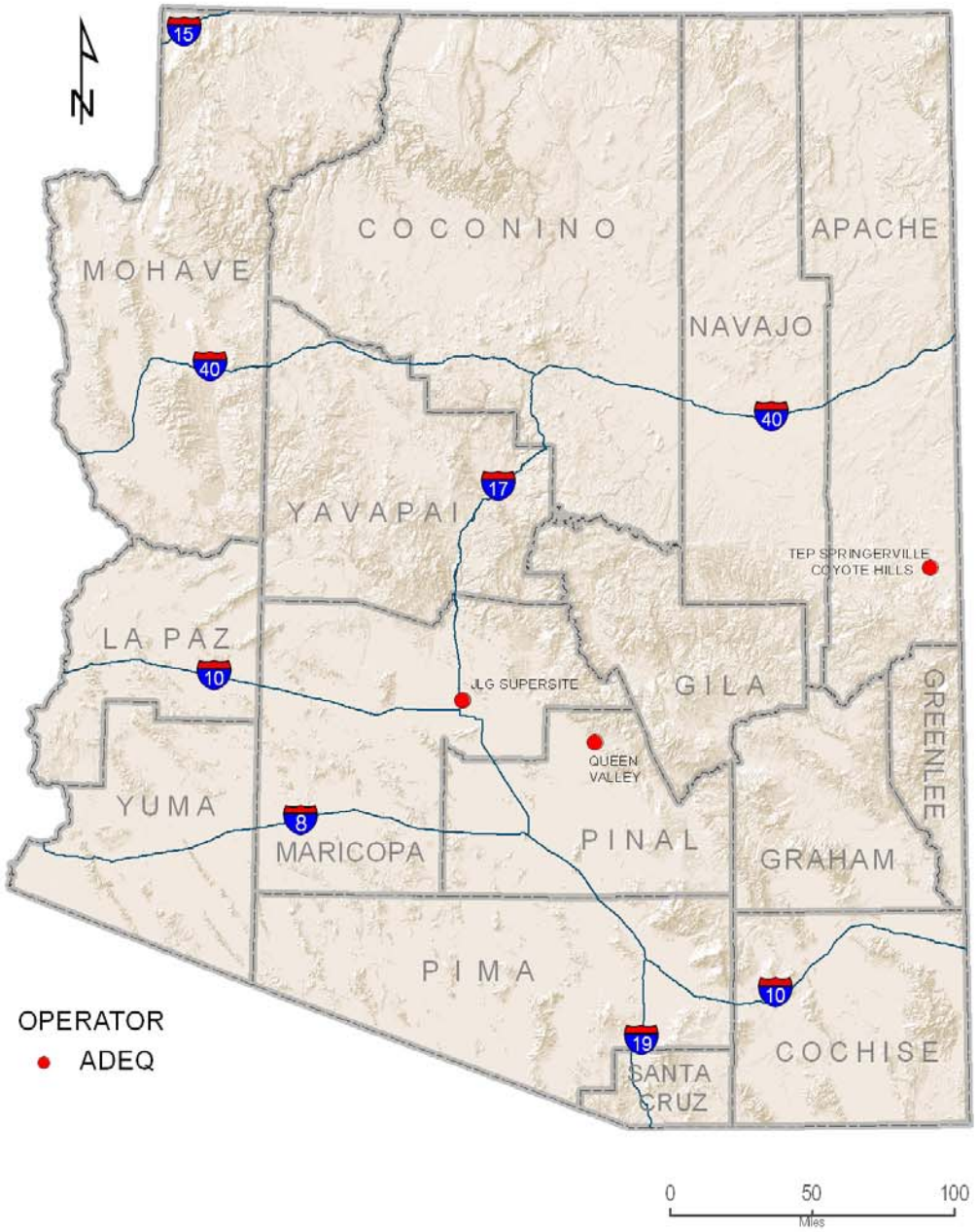


Source: AAD

ADEQ Arizona Department of Environmental Quality

May 04, 2010 Author - N Caroli

NO2 Network



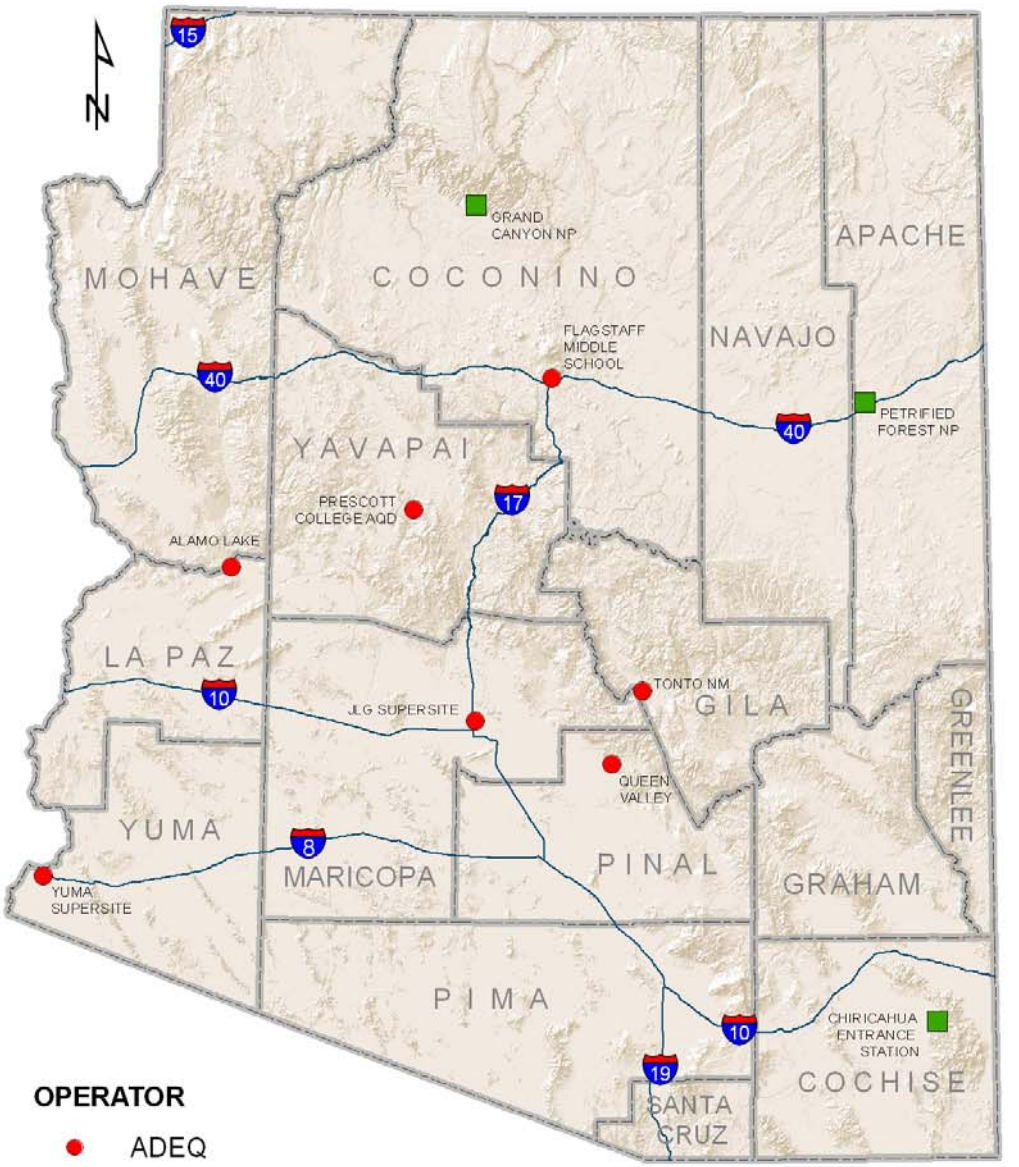
SITE	PARAMETERS
JLG SUPERSITE	NOX, REACTIVE NOX - SEASONAL
QUEEN VALLEY	REACTIVE NOX - SEASONAL
TEP - SPRINGERVILLE - COYOTE HILLS	NOX

Source: AAAD

ADEQ Arizona Department of Environmental Quality

May 04, 2010 Author - N Caroli

O_3 Network



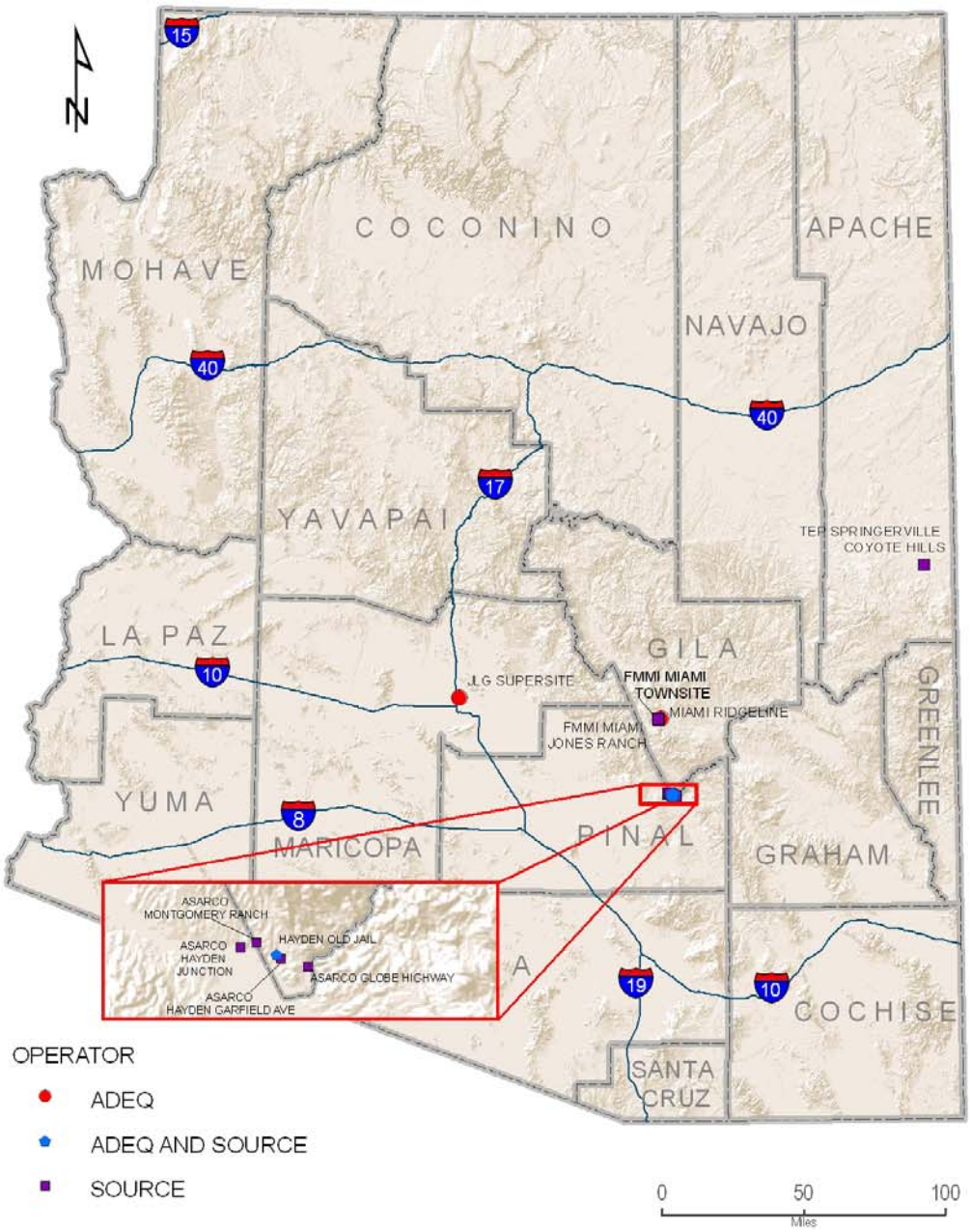
SITE	OPERATOR
ALAMO LAKE	ADEQ
FLAGSTAFF MIDDLE SCHOOL	ADEQ
JLG SUPERSITE	ADEQ
PRESCOTT COLLEGE AQD	ADEQ
QUEEN VALLEY	ADEQ
TONTO NM	ADEQ
YUMA SUPERSITE	ADEQ
GRAND CANYON NP	SOURCE
PETRIFIED FOREST NP	SOURCE
CHIRICAHUA ENTRANCE STATION	SOURCE

Source: AAAD

ADEQ Arizona Department of Environmental Quality

May 25, 2010 Author - N Caroli

SO_2 Network



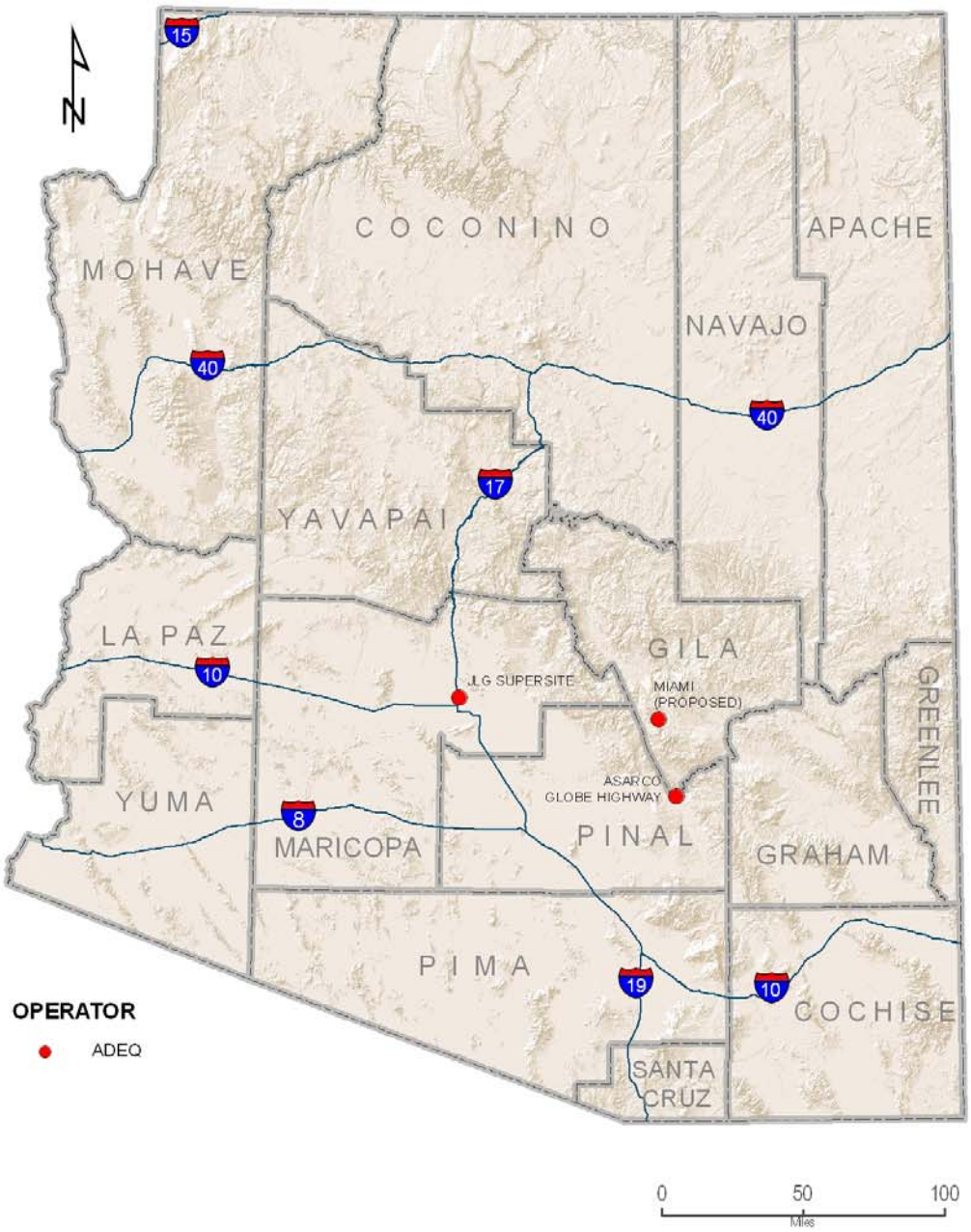
SITE
ASARCO GLOBE HIGHWAY
ASARCO HAYDEN GARFIELD AVE
ASARCO HAYDEN JUNCTION
ASARCO MONTGOMERY RANCH
FMMI MIAMI JONES RANCH
FMMI MIAMI TOWNSITE
HAYDEN OLD JAIL
JLG SUPERSITE
MIAMI RIDGELINE
TEP SPRINGERVILLE COYOTE HILLS

Source: AAAD

ADEQ Arizona Department of Environmental Quality

April 01, 2010 Author - N Caroli

Pb Network



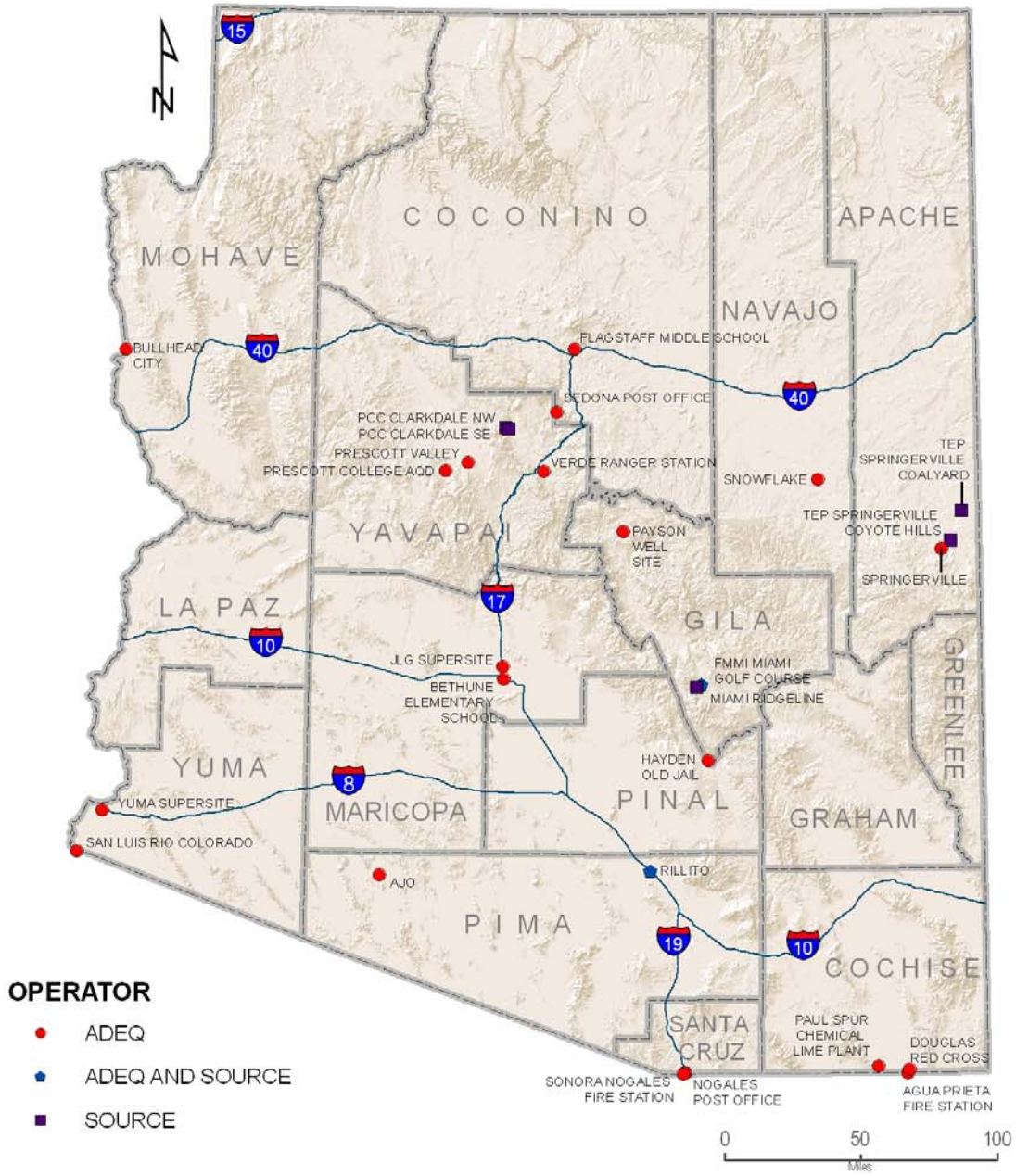
SITE
ASARCO GLOBE HIGHWAY
JLG SUPERSITE
MIAMI (PROPOSED)

Source: AAAD

ADEQ Arizona Department of Environmental Quality

May 24, 2010 Author - N Caroli

PM_{10} Network



SITE	PARAMETERS
AGUA PRIETA FIRE STATION	PM10
AJO	PM10
BETHUNE ELEMENTARY SCHOOL	PM10
BULLHEAD CITY	PM10
DOUGLAS RED CROSS	PM10
FLAGSTAFF MIDDLE SCHOOL	PM10, EBAM-PM10
FMMI MIAMI GOLF COURSE	PM10, COLLOCATED
HAYDEN OLD JAIL	PM10
JLG SUPERSITE	PM10
MIAMI RIDGELINE	PM10
NOGALES POST OFFICE	PM10
PAUL SPUR CHEMICAL LIME PLANT	PM10, COLLOCATED
PAYSON WELL SITE	PM10, COLLOCATED
PCC CLARKDALE NW	PM10

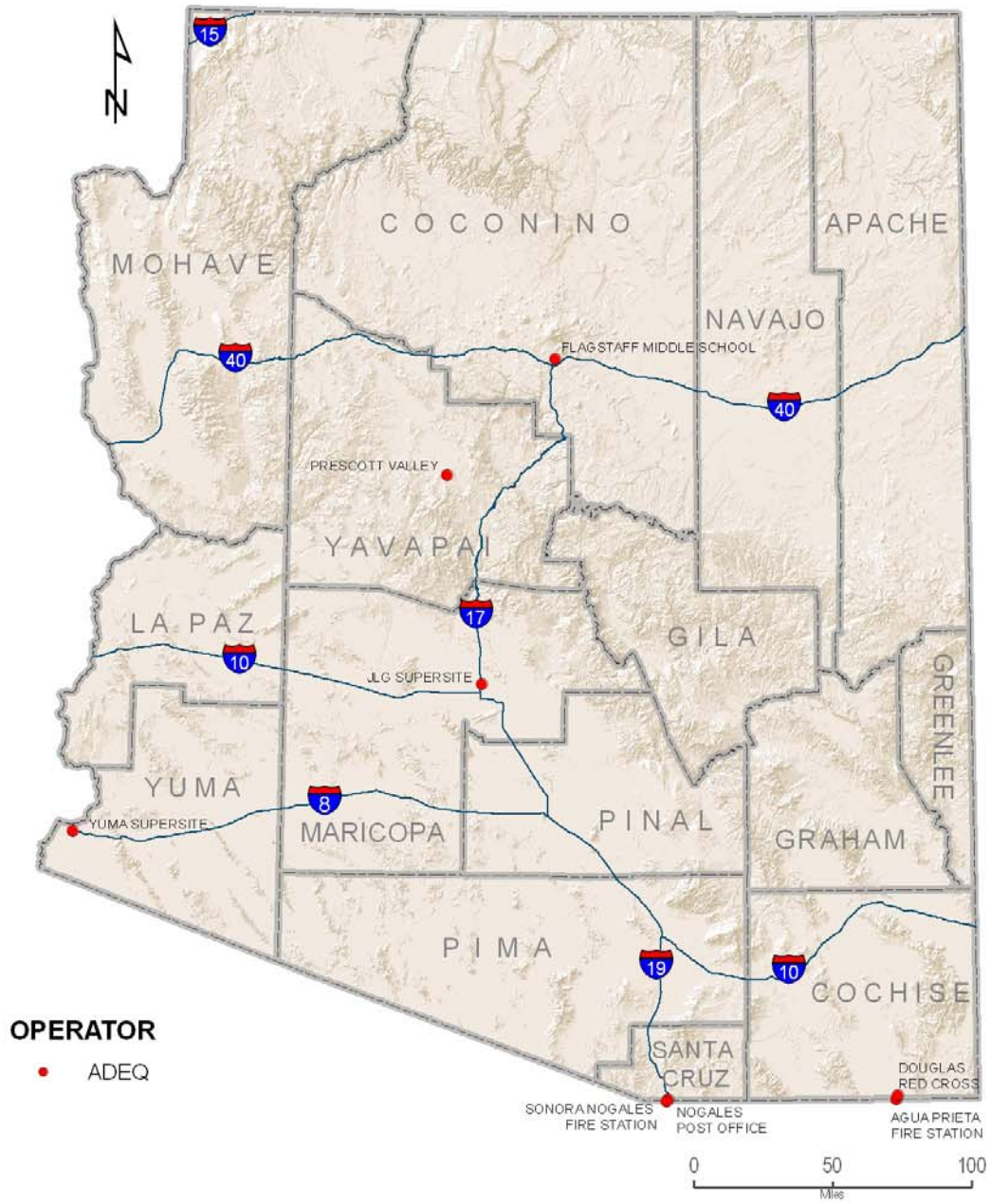
SITE	PARAMETERS
PCC CLARKDALE SE	PM10
PRESCOTT COLLEGE AQD	EBAM-PM10
PRESCOTT VALLEY	PM10
RILLITO	PM10
SAN LUIS RIO COLORADO	PM10
SEDONA POST OFFICE	EBAM-PM10
SNOWFLAKE	EBAM-PM10,
SONORA NOGALES FIRE STATION	PM10
SPRINGERVILLE	EBAM-PM10
TEP SPRINGERVILLE COALYARD	PM10
TEP SPRINGERVILLE COYOTE HILLS	PM10
VERDE RANGER STATION	EBAM-PM10
YUMA SUPERSITE	PM10

Source: AAAD

ADEQ Arizona Department of Environmental Quality

May 27, 2010 Author - N Caroli

$PM_{2.5}$ Network



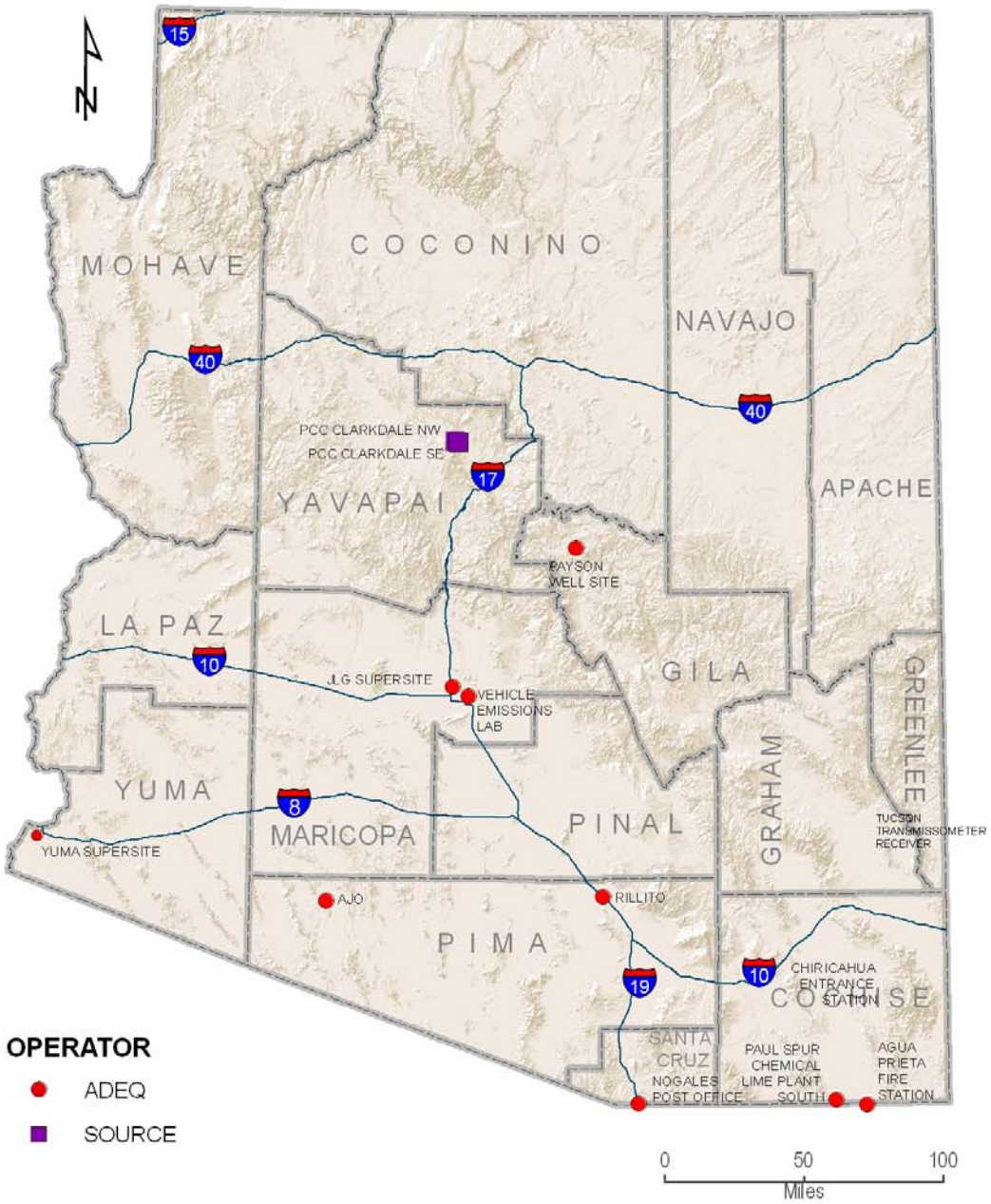
SITE	PARAMETERS	SITE	PARAMETERS
AGUA PRIETA FIRE STATION	PM2.5	NOGALES POST OFFICE	PM2.5, COLLOCATED
DOUGLAS RED CROSS	PM2.5	PRESCOTT VALLEY	PM2.5
FLAGSTAFF MIDDLE SCHOOL	PM2.5	SONORA NOGALES FIRE STATION	PM2.5
JLG SUPERSITE	PM2.5	YUMA SUPERSITE	PM2.5

Source: AAAD

ADEQ Arizona Department of Environmental Quality

Mary 21, 2010 Author - N Caroli

Meteorological Network



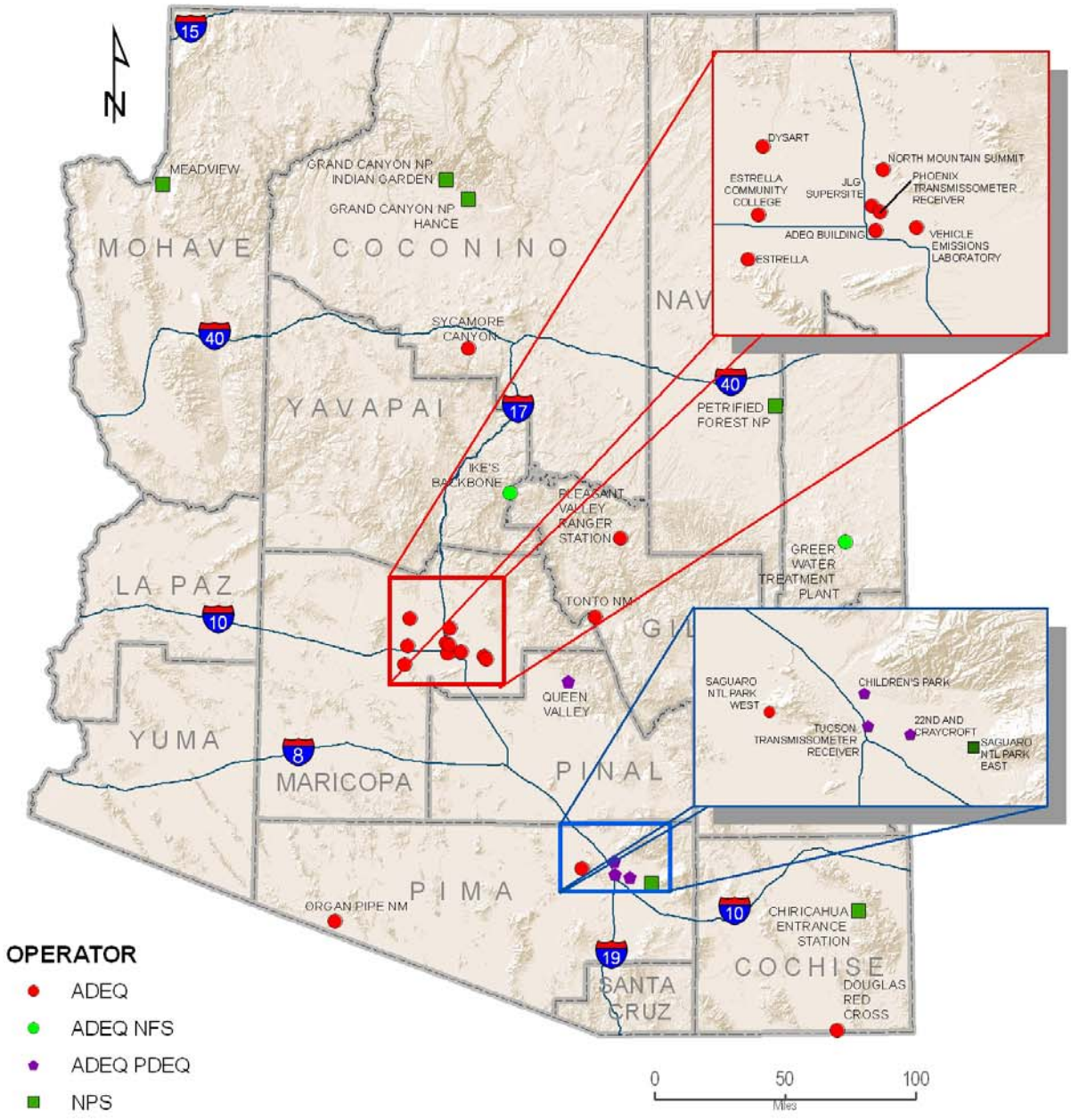
NAME	PARAMETERS	NAME	PARAMETERS
AGUA PRIETA FIRE STATION	WIND, TEMP/RH	RILLITO	WIND, TEMP/RH
AJO	WIND	VEHICLE EMISSIONS LABORATORY	WIND, DELTA TEMP, HORIZ & UV SOLAR
JLG SUPERSITE	WIND, TEMP/RH	PCC CLARKDALE NW	WIND, RH
NOGALES POST OFFICE	WIND	PCC CLARKDALE SE	WIND, RH
PAUL SPUR CHEMICAL LIME PLANT SOUTH	WIND	YUMA SUOERSITE	TEMP/RH, WIND
PAYSON WELL SITE	WIND, TEMP/RH		

Source: AAAD

ADEQ Arizona Department of Environmental Quality

May 25, 2010 Author - N Caroli

Visibility Network



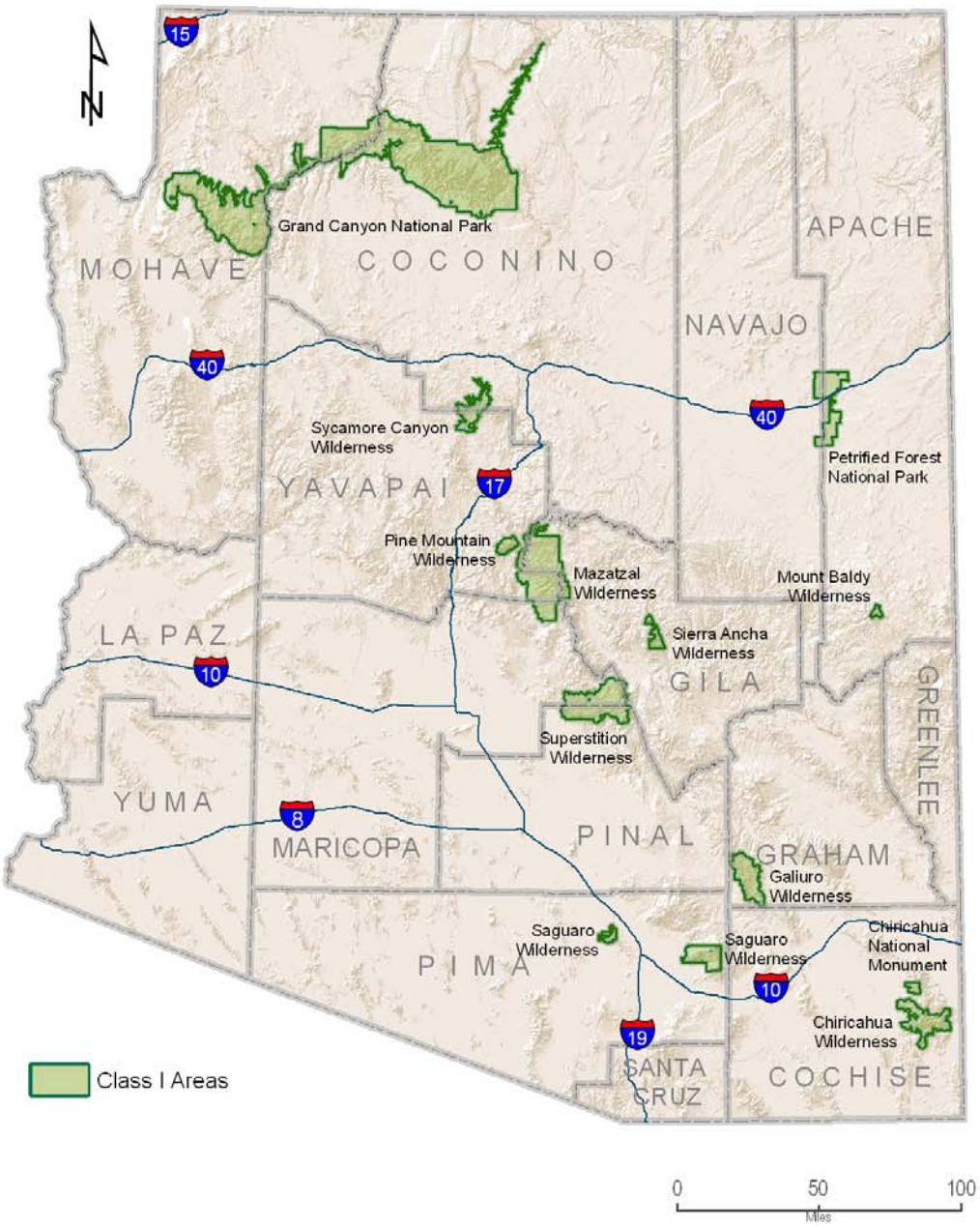
URBAN VISIBILITY NETWORK			
SITE	PARAMETERS	SITE	PARAMETERS
22ND AND CRAYCROFT	BSCAT	MEADVIEW	AEROSOL
ADEQ BUILDING	VISIMAGE	NORTH MOUNTAIN SUMMIT	VISIMAGE
CHILDRENS PARK	BSCAT	ORGAN PIPE NATIONAL MONUMENT	AEROSOL
CHIRICAHUA ENTRANCE STATION	AEROSOL	PETRIFIED FOREST NATIONAL PARK	AEROSOL
DOUGLAS RED CROSS	AEROSOL	PHOENIX TRANSMISSOMETER RECEIVER	BEXT
DYSART	BSCAT	PLEASANT VALLEY RANGER STATION	AEROSOL
ESTRELLA	BSCAT	QUEEN VALLEY	AEROSOL
ESTRELLA COMMUNITY COLLEGE	VISIMAGE 2	SAGUARO NATIONAL PARK - EAST	AEROSOL
GRAND CANYON NATIONAL PARK - HANCE CAMP	AEROSOL	SAGUARO NATIONAL PARK - WEST	AEROSOL
GRAND CANYON NATIONAL PARK - INDIAN GARDENS	AEROSOL	SYCAMORE CANYON	AEROSOL
GREER WATER TREATMENT PLANT	AEROSOL	TONTO NATIONAL MONUMENT	AEROSOL
IKE'S BACKBONE	AEROSOL	TUCSON TRANSMISSOMETER RECEIVER	BEXT
JLG SUPERSITE	AEROSOL, BSCAT	VEHICLE EMISSIONS LABORATORY	BSCAT

Source: AAAD

ADEQ Arizona Department of Environmental Quality

May 25, 2010 Author - N Caroli

Class I Areas



ADEQ Arizona Department of Environmental Quality

May 5, 2010 Author - N Caroli

ADEQ - AirNOW			
Parameter	Bscat/PM2.5	Bscat/PM2.5	Bscat/PM2.5
CBSA	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale
Site monitor located	Dysart	Estrella	Vehicle Emissions Laboratory
Monitor location at site	Tower	Tower	Tower
Monitoring objective	Population	Population	Visibility
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor type	Nephelometer	Nephelometer	Nephelometer
Analysis method	Light Scatter with correlation to PM2.5	Light Scatter with correlation to PM2.5	Light Scatter with correlation to PM2.5
Make of monitor	Optec	Optec	Optec
Model of monitor	NGN 2	NGN 2	NGN 2
Method code	--	--	--
Monitor start date	6/16/2003	2/11/2003	6/25/2003
Sampling schedule	Continuous	Continuous	Continuous
Sampling duration	Hourly	Hourly	Hourly
Sampling season	All year	All year	All year
In climate controlled shelter	N	N	N
Probe height from ground	6 m	6 m	5 m
Distance from closest obstruction	30 m	25 m	30 m
Distance from trees	--	5 m	50 m
Unrestricted airflow degrees	360°	360°	360°
Monitor audit frequency	Annual	Annual	Annual

ADEQ - E-BAM - PM10						
CBSA	Flagstaff	Prescott	Flagstaff	Show Low	None	Prescott
Site monitor located	Flagstaff Middle School	Prescott College AQD	Sedona Post Office	Snowflake	Springerville	Verde Ranger Station
Monitor location at site	Rooftop	Rooftop	Rooftop	--	Rooftop	Metal Platform
Monitoring objective	Population	Population	Population	Population	Population	Population
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	E-BAM	E-BAM	E-BAM	E-BAM	E-BAM	E-BAM
Analysis method	Beta Ray Attenuation	Beta Ray Attenuation	Beta Ray Attenuation	Beta Ray Attenuation	Beta Ray Attenuation	Beta Ray Attenuation
Make of monitor	Met One	Met One	Met One	Met One	Met One	Met One
Model of monitor	E-BAM	E-BAM	E-BAM	E-BAM	E-BAM	E-BAM
Method code	--	--	--	--	--	--
Monitor start date	7/3/2007	12/5/2006	12/5/2006	--	9/24/2008	1/1/2008
Sampling schedule	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling duration	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
Sampling season	All year	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N	N
Probe height from ground	6 m	6 m	2 m	--	8 m	3.5 m
Distance from closest obstruction	10 m	--	13 m	--	--	--
Distance from trees	15 m	7 m	15 m	--	30 m	30 m
Unrestricted airflow degrees	300°	250°	360°	--	250°	360°
Flow rate verification frequency	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly

ADEQ - Meteorology - Temp/RH					
CBSA	Phoenix-Mesa-Scottsdale	Payson	Pima	Phoenix-Mesa-Scottsdale	Yuma
Site monitor located	JLG Supersite	Payson Well Site	Rillito	Vehicle Emissions Laboratory	Yuma Supersite
Monitor location at site	Tower	Tower	Tower	Tower	Tower
Monitoring objective	Population	Population	Source	Population	Population
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	Probe	Probe	Probe	Probe	Probe
Analysis method	None	None	None	None	None
Make of monitor	Rotronics	Vaisala	Vaisala	Rotronics	Vaisala
Model of monitor	MP101A	HMP 45C	HMP 45C	MP101A	HMP 45C
Method code	--	--	--	--	--
Monitor start date	1/15/2010	6/19/2003	3/30/2010	6/30/2003	3/17/2010
Sampling schedule	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling duration	Hourly	Hourly	Hourly	Hourly	Hourly
Sampling season	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N
Probe height from ground	2 m	3 m	2 m	5 m	2 m
Probe distance from structure	--	1 m	1 m	1 m	1 m
Distance from closest obstruction	8 m	7 m	1 m	30 m	1 m
Distance from trees	5 m	5 m	18 m	50 m	--
Unrestricted airflow degrees	210°	250°	360°	360°	220°
Monitor audit frequency	Annual	Annual	Annual	Annual	Annual

ADEQ - Meteorology - Wind								
CBSA	Tucson	Phoenix-Mesa-Scottsdale	Nogales	Sierra Vista-Douglas	Payson	Tucson	Phoenix-Mesa-Scottsdale	Yuma
Site monitor located	Ajo	JLG Supersite	Nogales Post Office	Paul Spur Chemical Lime Plant South	Payson Well Site	Rillito	Vehicle Emissions Laboratory	Yuma Supersite
Monitor location at site	Tower	Tower	Pole	Tower	Tower	Tower	Tower	Tower
Monitoring objective	Population	Population	Population	Source	Population	Source	Population	Population
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Middle	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	Anemometer	Anemometer	Anemometer	Anemometer	Anemometer	Anemometer	Anemometer	Anemometer
Analysis method	None	None	None	None	None	None	None	None
Make of monitor	RM Young	RM Young	RM Young	RM Young	RM Young	RM Young	RM Young	RM Young
Model of monitor	5103	5103	5103	5103	5103	5103	5103	5103
Method code	40	40	40	40	40	40	40	40
Monitor start date	6/11/2003	2/12/2003	6/13/2003	12/16/1997	5/30/1991	1/8/2004	5/11/1999	3/17/2010
Sampling schedule	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling duration	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
Sampling season	All year	All year	All year	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N	N	N	N
Probe height from ground	10 m	10 m	12 m	10 m	10 m	8 m	10 m	10 m
Distance from closest obstruction	--	8 m	--	--	7 m	20 m	30 m	50 m
Distance from trees	35 m	5 m	20 m	--	5 m	20 m	50 m	--
Unrestricted airflow degrees	360°	360°	360°	360°	360°	360°	360°	360°
Monitor audit frequency	Annual	Biannual	Annual	Annual	Annual	Annual	Annual	Annual

ADEQ - SPM - Mexico								
Parameter	PM10	PM2.5	Temp/RH	Wind	PM10	PM2.5	PM10	PM2.5
CBSA	None	None	None	None	None	None	None	None
Site monitor located	Agua Prieta Fire Station	Agua Prieta Fire Station	Agua Prieta Fire Station	Agua Prieta Fire Station	Sonora Nogales Fire Station	Sonora Nogales Fire Station	San Luis Rio Colorado	San Luis Rio Colorado
Monitor location at site	Rooftop	Rooftop	Rooftop	Rooftop	Metal Platform	Metal Platform	Platform	Platform
Monitoring objective	Population	Population	Population	Population	Population	Population	Population	Population
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	Partisol 2000	Partisol 2000	Probe	Anemometer	Partisol 2000	Partisol 2000	Partisol Dichot	Partisol Dichot
Analysis method	Gravimetric	Gravimetric	None	None	Gravimetric	Gravimetric	Gravimetric	Gravimetric
Make of monitor	Thermo	Thermo	Vaisala	RM Young	Thermo	Thermo	Thermo	Thermo
Model of monitor	2000 F	2000 F	HMP 45C	5103	2000 F	2000 F	2000 D	2000 D
Method code	126	126	--	--	126	126	--	--
Monitor start date	4/11/2010	4/11/2010	12/18/1998	12/18/1998	4/11/2010	4/11/2010	6/15/2009	6/15/2009
Sampling schedule	1 in 6	1 in 6	Continuous	Continuous	1 in 6	1 in 6	1 in 6	1 in 6
Sampling duration	24 hour	24 hour	Hourly	Hourly	24 hour	24 hour	24 hour	24 hour
Sampling season	All year	All year	All year	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N	N	N	N
Probe height from ground	7 m	7 m	8 m	10 m	3 m	3 m	3 m	4 m
Probe distance from structure	--	--	--	--	3 m	3 m	20m	20m
Distance from closest obstruction	30 m	30 m	30 m	30 m	3 m	3 m	50 m	50 m
Distance from trees	20 m	20 m	20 m	20 m	--	--	5 m	5 m
Unrestricted airflow degrees	360°	360°	360°	360°	250°	250°	360°	360°
Monitor audit frequency	Every 3 Months	Every 3 Months	--	--	Every 3 Months	Every 3 Months	Every 3 Months	Every 3 Months
Flow rate verification frequency	Every 3 Months	Every 3 Months	--	--	Every 3 Months	Every 3 Months	Every 3 Months	Every 3 Months

IMPROVE									
CBSA	Sierra Vista-Douglas	Sierra Vista-Douglas	Flagstaff	Flagstaff	Apache	Flagstaff	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Lake Havasu City-Kingman
Site monitor located	Chiricahua Entrance Station	Douglas Red Cross	Grand Canyon National Park - Hance Camp	Grand Canyon National Park - Indian Gardens	Greer Water Treatment Plant	Ike's Backbone	JLG Supersite	JLG Supersite	Meadview
Monitor location at site	Shelter	Platform	Shelter	Shelter	Shelter	Shelter	Metal Roof	Metal Roof	Shelter
Monitoring objective	Visibility	Visibility	Visibility	Visibility	Visibility	Visibility	Population	Population	Background
Spatial scale	Regional	Regional	Regional	Regional	Regional	Regional	Neighborhood	Neighborhood	Regional
Monitor type	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE collocated	IMPROVE
Analysis method	Various	Various	Various	Various	Various	Various	Various	Various	Various
Make of monitor	Various	Various	Various	Various	Various	Various	Various	Various	Various
Model of monitor	Various	Various	Various	Various	Various	Various	Various	Various	Various
Method code	--	--	--	--	--	--	--	--	--
Monitor start date	4/2/2000	6/2/2004	4/26/2000	7/1/2000	2/29/2000	4/2/2000	4/25/2001	4/25/2001	2/1/2003
Sampling schedule	1 in 3	1 in 3	1 in 3	1 in 3	1 in 3	1 in 3	1 in 3	1 in 3	1 in 3
Sampling duration	24 hour	24 hour	24 hour	24 hour	24 hour	24 hour	24 hour	24 hour	24 hour
Sampling season	All Year	All Year	All year	All year	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N	N	N	N	N
Probe height from ground	4 m	3 m	*	4 m	4 m	4 m	5.5 m	5.5 m	*
Probe distance from structure	1 m	2 m	*	2 m	1 m	1 m	--	--	*
Distance from closest obstruction	10 m	10 m	*	--	150 m	7 m	8 m	8 m	*
Distance from trees	10 m	10 m	*	6 m	50 m	18 m	5 m	5 m	*
Unrestricted airflow degrees	360°	300°	*	300°	360°	360°	210°	210°	*
Dist. between collocated monitors	--	--	--	--	--	--	2 m	2 m	--
Monitor audit frequency	--	Annual	--	--	Annual	Annual	Annual	Annual	--
Flow rate verification frequency	--	--	--	--	--	--	Annual	Annual	--
Protocol site	--	Y	--	--	--	--	Y	Y	--

* Information not available

IMPROVE - continued

CBSA	Tucson	None	Payson	Phoenix-Mesa-Scottsdale	Tucson	Tucson	Flagstaff	Payson
Site monitor located	Organ Pipe National Monument	Petrified Forest National Park	Pleasant Valley Ranger Station	Queen Valley	Saguaro National Park East	Saguaro National Park West	Sycamore Canyon	Tonto National Monument
Monitor location at site	Shelter	Shelter	Shelter	Rooftop	Shelter	Shelter	Shelter	Shelter
Monitoring objective	Background	Visibility	Visibility	Visibility	Visibility	Visibility	Visibility	Visibility
Spatial scale	Regional	Regional	Regional	Urban	Regional	Regional	Regional	Regional
Monitor type	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE
Analysis method	Various	Various	Various	Various	Various	Various	Various	Various
Make of monitor	Various	Various	Various	Various	Various	Various	Various	Various
Model of monitor	Various	Various	Various	Various	Various	Various	Various	Various
Method code	--	--	--	--	--	--	--	--
Monitor start date	1/14/2003	4/3/2000	2/10/2000	4/30/2001	6/4/1988	4/18/2001	4/13/2000	4/3/2000
Sampling schedule	1 in 3	1 in 3	1 in 3	1 in 3	1 in 3	1 in 3	1 in 3	1 in 3
Sampling duration	24 hour	24 hour	24 hour	24 hour	24 hour	24 hour	24 hour	24 hour
Sampling season	All year	All year	All year	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N	N	N	Y
Probe height from ground	5 m	*	4 m	6 m	*	4 m	4 m	5 m
Probe distance from structure	1.5 m	*	1.5 m	1 m	*	1 m	1 m	1.5 m
Distance from closest obstruction	7 m	*	--	30 m	*	--	25 m	--
Distance from trees	15 m	*	10 m	4 m	*	15 m	15 m	6 m
Unrestricted airflow degrees	360°	*	360°	360°	*	360°	360°	360°
Dist. between collocated monitors	--	--	--	--	--	--	--	--
Monitor audit frequency	Annual	--	Annual	Annual	--	Annual	Annual	Annual
Flow rate verification frequency	--	--	--	--	--	--	--	--
Protocol site	Y	--	--	Y	--	Y	--	--

NAAQS - NCore						
Parameter	CO Trace	NOy	NOx	O3	SO2 Trace	PM10-2.5
CBSA	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale
Site monitor located	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Monitor location at site	Shelter	Shelter	Shelter	Shelter	Shelter	Shelter
Monitoring objective	Population	Population	Population	Population	Population	Population
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	CO Analyzer	Trace Reactive NOx	NOx Analyzer	O3 Analyzer	SO2 Analyzer	BAM
Analysis method	Gas Filter Correlation	Chemilumin-escence	Chemilumin-escence	UV Photometric	Pulsed Fluorescence	Difference Method
Make of monitor	Thermo	Thermo	Thermo	Thermo	Ecotech	Met One
Model of monitor	48C	42C TL	42C	49C	43C	1020
Method code	54	574	74	47	60	185
Monitor start date	--	--	7/1/1993	7/1/1993	--	--
Sampling schedule	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling duration	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
Sampling season	All year	All year	All year	All year	All year	All year
In climate controlled shelter	Y	Y	Y	Y	Y	N
Probe height from ground	5 m	5 m	5 m	5 m	5 m	--
Probe distance from structure	2 m	7 m	--	2 m	2 m	--
Distance from closest obstruction	8 m	8 m	8 m	8 m	8 m	--
Distance from trees	5 m	5 m	5 m	5 m	5 m	--
Unrestricted airflow degrees	210°	210°	210°	210°	210°	--
Monitor audit frequency	Annual	Annual	Annual	Annual	Annual	Biannual
Flow rate verification frequency	--	--	--	--	--	Monthly
One-point QC check frequency	Every 2 weeks	Every 2 weeks	Every 2 weeks	Every 2 weeks	Every 2 weeks	--
PEP audit monitor?	--	--	--	--	--	--
NPAP audit monitor?	--	--	--	Y	--	--

NCore continued						
Parameter	PM2.5	PM2.5	PM2.5 Speciation	PM2.5 Speciation	Temp/RH	Wind
CBSA	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale
Site monitor located	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Monitor location at site	Metal Roof	Metal Roof	Metal Roof	Metal Roof	Tower	Tower
Monitoring objective	Population	Population	Population	Population	Population	Population
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	Partisol 2000	BAM	Speciation FRM/SASS	Speciation FRM/URG	Probe	Anemometer
Analysis method	Gravimetric	Beta Ray Attenuation	Various	Various	None	None
Make of monitor	R & P	Met One	Met One	URG	Rotronics	RM Young
Model of monitor	2000 F	1020	Super SASS	3000N	MP101A	5103
Method code	145	170	811/812/813	838/839/840/841/842/826	21	40
Monitor start date	--	--	2/21/2000	10/1/2009	1/15/2010	2/12/2003
Sampling schedule	1 in 3	Continuous	1 in 3	1 in 3	Continuous	Continuous
Sampling duration	24 hour	Hourly	24 hour	24 hour	Hourly	Hourly
Sampling season	All year	All year	All year	All year	All year	All year
In climate controlled shelter	N	Y	N	N	N	N
Probe height from ground	5 m	5 m	5 m	5 m	2 m	10 m
Probe distance from structure	--	--	--	--	--	--
Distance from closest obstruction	8 m	8 m	8 m	8 m	8 m	8 m
Distance from trees	5 m	5 m	5 m	5 m	5 m	5 m
Unrestricted airflow degrees	210°	210°	210°	210°	210°	360°
Monitor audit frequency	Biannual	Biannual	Quarterly	Quarterly	Biannual	Biannual
Flow rate verification frequency	Monthly	Monthly	Every 2 weeks	Every 2 weeks	--	--
One-point QC check frequency	--	--	--	--	--	--
PEP audit monitor?	Y	--	--	--	--	--
NPAP audit monitor?	--	--	--	--	--	--

PAMS						
Parameter	NOx	O3	Carbonyl	Carbonyl	VOC	O3
CBSA	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale
Site monitor located	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	Queen Valley
Monitor location at site	Shelter	Shelter	Shelter	Shelter	Shelter	Shelter
Monitoring objective	Population	Population	Population	Population	Population	Transport
Spatial scale	Neighborhood	Urban	Urban	Urban	Urban	Urban
Monitor type	NOx Analyzer	O3 Analyzer	Carbonyl Cartridge Sampler	Carbonyl Cartridge Sampler	Canister Sampler	O3 Analyzer
Analysis method	Chemilumin-escence	UV Photometric	TO-11A	TO-11A	Lab Analysis	UV Photometric
Make of monitor	Thermo	Thermo	ATEC	ATEC	Met One	Thermo
Model of monitor	42C	49C	8000	8000	8001	49C
Method code	74	47	202	202	--	47
Monitor start date	7/1/1993	7/1/1993	5/15/1999	5/15/1999	6/1/2009	1/1/1998
Sampling schedule	Continuous	Continuous	1 in 6	1 in 6	1 in 6	Continuous
Sampling duration	Hourly	Hourly	24 hour	3 - 3 hour	24 hour	Hourly
Sampling season	All Year	All Year	All year	All year	June - Aug.	April – Oct.
In climate controlled shelter	Y	Y	Y	Y	Y	Y
Probe height from ground	5 m	5 m	5 m	5 m	4.5 m	5 m
Probe distance from structure	--	--	--	--	--	--
Distance from closest obstruction	8 m	8 m	8 m	8 m	8 m	30 m
Distance from trees	5 m	5 m	5 m	5 m	5 m	3 m
Unrestricted airflow degrees	210°	210°	210°	210°	210°	360°
Monitor audit frequency	Annual	Annual	Annual	Annual	--	Annual
One-point QC check frequency	Every 2 weeks	Every 2 weeks	Annual	Annual	Annual	Every 2 weeks
NPAP audit monitor?	Y	Y	--	--	--	Y

PAMS continued						
Parameter	NOy Trace	VOC	Delta Temp	Total Horizontal Solar Radiation	Ultraviolet Solar Radiation	Wind Profiler
CBSA	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale
Site monitor located	Queen Valley	Queen Valley	Vehicle Emissions Laboratory	Vehicle Emissions Laboratory	Vehicle Emissions Laboratory	Vehicle Emissions Laboratory
Monitor location at site	Shelter	Shelter	Tower	Tower	Tower	Ground
Monitoring objective	Transport	Transport	Population	Population	Population	Population
Spatial scale	Urban	Urban	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	Trace Reactive NOx - Seasonal	Canister Sampler	Delta Temp System	Pyranometer	Ultraviolet Sensor	Wind Profiler
Analysis method	Chemilumin-escence	Lab Analysis	None	None	None	None
Make of monitor	Thermo	Met One	RM Young	Li-Cor	Epply	Vaisala
Model of monitor	42C TL	8001	RTD 7627	LI - 200S2	TUVR	LAP-3000
Method code	574	--	810	11	11	--
Monitor start date	1/1/1998	6/1/2010	8/20/2004	6/18/1999	8/20/2004	1/1/1998
Sampling schedule	Continuous	1 in 6	Continuous	Continuous	Continuous	Continuous
Sampling duration	Hourly	24 hour	Hourly	Hourly	Hourly	Hourly
Sampling season	April – Oct.	June – Aug.	All year	All year	All year	All year
In climate controlled shelter	Y	Y	N	N	N	N
Probe height from ground	5 m	5 m	2 m & 9 m	5 m	5 m	--
Probe distance from structure	--	--	1 m	0.5 m	0.5 m	--
Distance from closest obstruction	30 m	30 m	30 m	30 m	35 m	5 m
Distance from trees	3 m	3 m	50 m	50 m	50 m	50 m
Unrestricted airflow degrees	360°	360°	360°	360°	360°	360°
Monitor audit frequency	Annual	Every 3 Years	Annual	--	--	--
One-point QC check frequency	Every 2 weeks	--	--	--	--	--
NPAP audit monitor?	--	--	--	--	--	--

NAAQS - SLAMS - CO	
CBSA	Phoenix-Mesa-Scottsdale
Site monitor located	JLG Supersite
Monitor location at site	Shelter
Monitoring objective	Population
Spatial scale	Neighborhood
Monitor type	CO Analyzer
Analysis method	Gas Filter Correlation
Make of monitor	Thermo
Model of monitor	48C
Method code	54
Monitor start date	12/11/2002
Sampling schedule	Continuous
Sampling duration	Hourly
Sampling season	All Year
In climate controlled shelter	Y
Probe height from ground	5 m
Distance from closest obstruction	8 m
Distance from trees	5 m
Unrestricted airflow degrees	210°
Monitor audit frequency	Annual
One-point QC check frequency	Every 2 weeks
NPAP audit monitor?	Y

NAAQS - SLAMS - NO2	
CBSA	Phoenix-Mesa-Scottsdale
Site monitor located	JLG Supersite
Monitor location at site	Shelter
Monitoring objective	Population
Spatial scale	Neighborhood
Monitor type	NOx Analyzer
Analysis method	Chemilumin-escence
Make of monitor	Thermo
Model of monitor	42C
Method code	74
Monitor start date	7/1/1993
Sampling schedule	Continuous
Sampling duration	Hourly
Sampling season	All Year
In climate controlled shelter	Y
Probe height from ground	5 m
Distance from closest obstruction	8 m
Distance from trees	5 m
Unrestricted airflow degrees	210°
Monitor audit frequency	Annual
One-point QC check frequency	Every 2 weeks
NPAP audit monitor?	Y

NAAQS - SLAMS - O3							
CBSA	None	Flagstaff	Phoenix-Mesa-Scottsdale	Prescott	Phoenix-Mesa-Scottsdale	Payson	Yuma
Site monitor located	Alamo Lake	Flagstaff Middle School	JLG Supersite	Prescott College AQD	Queen Valley	Tonto National Monument	Yuma Supersite
Monitor location at site	Shelter	Shelter	Shelter	Shelter	Shelter	Shelter	Shelter
Monitoring objective	Transport	Population	Population	Population	Transport	Transport	Population
Spatial scale	Regional	Neighborhood	Urban	Neighborhood	Urban	Regional	Neighborhood
Monitor type	O3 Analyzer	O3 Analyzer	O3 Analyzer	O3 Analyzer	O3 Analyzer	O3 Analyzer	O3 Analyzer
Analysis method	UV Photometric	UV Photometric	UV Photometric	UV Photometric	UV Photometric	UV Photometric	UV Photometric
Make of monitor	Thermo	Thermo	Thermo	Thermo	Thermo	Thermo	Thermo
Model of monitor	49C	49C	49C	49C	49C	49C	49C
Method code	47	47	47	47	47	47	47
Monitor start date	5/20/2005	3/13/2008	7/1/1993	3/25/2008	1/1/1998	5/22/2002	5/6/2008
Sampling schedule	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling duration	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
Sampling season	April – Oct.	April – Oct.	All Year	April – Oct.	April – Oct.	April – Oct.	April – Oct.
In climate controlled shelter	Y	Y	Y	Y	Y	Y	Y
Probe height from ground	5 m	10 m	5 m	6 m	5 m	6 m	5 m
Probe distance from structure	2 m	0.5 m	--	--	--	2 m	2 m
Distance from closest obstruction	7 m	--	8 m	--	30 m	--	35 m
Distance from trees	12 m	15 m	5 m	12 m	3 m	4 m	--
Unrestricted airflow degrees	360°	360°	210°	250°	360°	360°	360°
Monitor audit frequency	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Flow rate verification frequency	--	--	--	--	--	--	--
One-point QC check frequency	Every 2 weeks	Every 2 weeks	Every 2 weeks	Every 2 weeks	Every 2 weeks	Every 2 weeks	Every 2 weeks
NPAP audit monitor?	--	--	Y	--	Y	Y	--

NAAQS - SLAMS - SO2			
CBSA	Payson	Phoenix-Mesa-Scottsdale	Payson
Site monitor located	Hayden Old Jail	JLG Supersite	Miami Ridgeline
Monitor location at site	Shelter	Shelter	Shelter
Monitoring objective	Source	Population	Source
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor type	SO2 Analyzer	SO2 Analyzer	SO2 Analyzer
Analysis method	Pulsed Fluorescence	Pulsed Fluorescence	Pulsed Fluorescence
Make of monitor	Thermo	Thermo	Thermo
Model of monitor	43C	43C	43C
Method code	60	60	60
Monitor start date	1/1/1975	3/3/2005	10/5/1995
Sampling schedule	Continuous	Continuous	Continuous
Sampling duration	Hourly	Hourly	Hourly
Sampling season	All year	All year	All year
In climate controlled shelter	Y	Y	Y
Probe height from ground	7 m	5 m	4 m
Probe distance from structure	2 m	--	2 m
Distance from closest obstruction	3 m	8 m	5 m
Distance from trees	15 m	5 m	5 m
Unrestricted airflow degrees	360°	210°	180°
Monitor audit frequency	Annual	Annual	Annual
One-point QC check frequency	Every 2 weeks	Every 2 weeks	Every 2 weeks
NPAP audit monitor?	Y	Y	Y

NAAQS - SLAMS - Pb		
CBSA	Payson	Payson
Site monitor located	ASARCO – Globe Highway	ASARCO – Globe Highway
Monitor location at site	Platform	Platform
Monitoring objective	Source	Source
Spatial scale	Middle	Middle
Monitor type	TSP	TSP
Monitor analysis method	High-Vol	High-Vol
Lab analysis method	Inductively Coupled Argon Plasma-Optical Emission Spectrometry	Inductively Coupled Argon Plasma-Optical Emission Spectrometry
Make of monitor	Tisch	Tisch
Model of monitor	TE-5170-BL	TE-5170-BL
Method code	802/109	802/109
Monitor start date	--	--
Sampling schedule	1 in 6	1 in 6
Sampling duration	24 hour	24 hour
Sampling season	All year	All year
In climate controlled shelter	N	N
Probe height from ground	--	--
Probe distance from structure	--	--
Distance from closest obstruction	--	--
Distance from trees	4 m	4 m
Unrestricted airflow degrees	360°	360°
Dist. between collocated monitors	2 m	2 m
Monitor audit frequency	Quarterly	Quarterly
Flow rate verification frequency	Every 12 days	Every 12 days

NAAQS - SLAMS - PM10							
CBSA	Tucson	Lake Havasu City-Kingman	Sierra Vista-Douglas	Flagstaff	Payson	Phoenix-Mesa-Scottsdale	Nogales
Site monitor located	Ajo	Bullhead City	Douglas Red Cross	Flagstaff Middle School	Hayden Old Jail	JLG Supersite	Nogales Post Office
Monitor location at site	Metal Platform	Rooftop	Metal Platform	Rooftop	Rooftop	Shelter	Rooftop
Monitoring objective	Population	Population	Population	Population	Source	Population	Population
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	TEOM	Partisol 2000	Partisol 2000	Partisol 2000	TEOM	BAM	Partisol 2000
Analysis method	Tapered Element Oscillating Microbalance Technology	Gravimetric	Gravimetric	Gravimetric	Tapered Element Oscillating Microbalance Technology	Beta Ray Attenuation	Gravimetric
Make of monitor	R & P	R & P	R & P	R & P	R & P	--	R & P
Model of monitor	1400AB	2000 F	2000 F	2000 F	1400AB	1020	2000 F
Method code	79	126	126	126	79	--	126
Monitor start date	2/19/2009	9/2/2003	4/1/2004	4/1/2004	3/3/2009	--	8/27/2003
Sampling schedule	Continuous	1 in 6	1 in 6	1 in 6	Continuous	Continuous	1 in 6
Sampling duration	Hourly	24 hour	24 hour	24 hour	Hourly	Hourly	24 hour
Sampling season	All Year	All year	All year	All year	All year	All year	All year
In climate controlled shelter	Y	N	N	N	N	Y	N
Probe height from ground	4 m	8 m	4 m	6 m	6 m	--	7 m
Probe distance from structure	--	--	--	--	--	--	--
Distance from closest obstruction	7 m	7 m	10 m	10 m	3 m	8 m	8 m
Distance from trees	35 m	--	>10 m	15 m	15 m	5 m	6 m
Unrestricted airflow degrees	360°	360°	300°	300°	360°	210°	300°
Dist. between collocated monitors	--	--	--	--	--	--	--
Monitor audit frequency	Biannual	Biannual	Biannual	Biannual	Biannual	Biannual	Biannual
Flow rate verification frequency	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly

NAAQS - SLAMS - PM10 continued							
CBSA	Sierra Vista-Douglas	Sierra Vista-Douglas	Payson	Payson	Prescott	Tucson	Yuma
Site monitor located	Paul Spur Chemical Lime Plant	Paul Spur Chemical Lime Plant	Payson Well Site	Payson Well Site	Prescott Valley	Rillito	Yuma Supersite
Monitor location at site	Metal Platform	Metal Platform	Metal Platform	Metal Platform	Rooftop	Metal Platform	Shelter
Monitoring objective	Source	Source	Population	Population	Population	Source	Population
Spatial scale	Middle	Middle	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	Partisol 2000	Partisol 2000	Partisol 2000	Partisol 2000	Partisol 2000	TEOM	TEOM
Analysis method	Gravimetric	Gravimetric	Gravimetric	Gravimetric	Gravimetric	Tapered Element Oscillating Microbalance Technology	Tapered Element Oscillating Microbalance Technology
Make of monitor	R & P	R & P	R & P	R & P	R & P	R & P	R & P
Model of monitor	2000 F	2000 F	2000 F	2000 F	2000 F	1400 AB	1400 AB
Method code	126	126	126	126	126	79	79
Monitor start date	7/20/2005	6/28/2005	1/16/2005	5/13/2009	12/28/2007	4/1/2010	12/1/2009
Sampling schedule	1 in 6	1 in 6	1 in 6	1 in 6	1 in 6	Continuous	Continuous
Sampling duration	24 hour	24 hour	24 hour	24 hour	24 hour	Hourly	Hourly
Sampling season	All year	All year	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N	N	Y
Probe height from ground	4 m	4 m	3 m	3 m	7 m	5 m	5 m
Probe distance from structure	--	--	--	--	--	--	2 m
Distance from closest obstruction	50 m	50 m	12 m	12 m	20 m	4 m	50 m
Distance from trees	5 m	5 m	5 m	5 m	--	20 m	--
Unrestricted airflow degrees	320°	320°	300°	300°	360°	360°	360°
Dist. between collocated monitors	1.5 m	1.5 m	2 m	2 m	--	--	--
Monitor audit frequency	Biannual	Biannual	Biannual	Biannual	Biannual	Biannual	Biannual
Flow rate verification frequency	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly

NAAQS - SLAMS - PM2.5								
CBSA	Sierra Vista-Douglas	Flagstaff	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Nogales	Nogales	Prescott	Yuma
Site monitor located	Douglas Red Cross	Flagstaff Middle School	JLG Supersite	JLG Supersite	Nogales Post Office	Nogales Post Office	Prescott Valley	Yuma Supersite
Monitor location at site	Metal Platform	Rooftop	Metal Roof	Shelter	Rooftop	Rooftop	Rooftop	Platform
Monitoring objective	Population	Population	Population	Population	Population	Population	Population	Population
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor type	Partisol 2000	Partisol 2000	Partisol 2000	BAM	Partisol 2000	Partisol 2000	Partisol 2000	Partisol 2000
Analysis method	Gravimetric	Gravimetric	Gravimetric	Beta Ray Attenuation	Gravimetric	Gravimetric	Gravimetric	Gravimetric
Make of monitor	R & P	R & P	R & P	--	R & P	R & P	R & P	R & P
Model of monitor	2000 F	2000 F	2000 F	1020	2000 F	2000 F	2000 F	2000 F
Method code	143	143	143	--	143	143	143	143
Monitor start date	4/1/2004	9/16/2003	--	--	9/26/2003	9/26/2003	1/1/2008	1/1/2010
Sampling schedule	1 in 6	1 in 6	1 in 3	Continuous	1 in 6	1 in 6	1 in 6	1 in 6
Sampling duration	24 hour	24 hour	24 hour	Hourly	24 hour	24 hour	24 hour	24 hour
Sampling season	All year	All year	All Year	All year	All year	All year	All Year	All year
In climate controlled shelter	N	N	N	Y	N	N	N	N
Probe height from ground	4 m	6 m	5 m	--	7 m	7 m	7 m	5 m
Distance from closest obstruction	8 m	10 m	8 m	8 m	8 m	8 m	20 m	50 m
Distance from trees	>10 m	15 m	5 m	5 m	10 m	10 m	--	--
Unrestricted airflow degrees	300°	300°	210°	210°	300°	300°	360°	360°
Dist. between collocated monitors	--	--	--	--	2 m	2 m	--	--
Monitor audit frequency	Biannual	Biannual	Biannual	Biannual	Biannual	Biannual	Biannual	Biannual
Flow rate verification frequency	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
PEP audit monitor?	Y	Y	Y	--	Y	Y	--	--
Changes in next 18 months?	--	--	--	--	--	--	--	--

NAAQS - SPM		
Parameter	PM10	PM10
CBSA	Phoenix-Mesa-Scottsdale	Nogales
Site monitor located	Bethune Elementary School	Nogales Post Office
Monitor location at site	Metal Structure	Rooftop
Monitoring objective	Population	Population
Spatial scale	Neighborhood	Neighborhood
Monitor type	Partisol 2000	BAM
Analysis method	Gravimetric	Beta Ray Attenuation
Make of monitor	R & P	Met One
Model of monitor	2000 F	1020
Method code	126	122
Monitor start date	7/3/2005	2/2/2004
Sampling schedule	1 in 6	Continuous
Sampling duration	24 hour	Hourly
Sampling season	All year	All year
In climate controlled shelter	N	Y
Probe height from ground	4 m	7 m
Distance from closest obstruction	15 m	8 m
Distance from trees	10-20 m	12 m
Unrestricted airflow degrees	360°	300°
Monitor audit frequency	Biannual	Biannual
Flow rate verification frequency	Monthly	Monthly

STN		
Parameter	PM2.5 Speciated	PM2.5 Speciation
CBSA	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale
Site monitor located	JLG Supersite	JLG Supersite
Monitor location at site	Metal Roof	Metal Roof
Monitoring objective	Population	Population
Spatial scale	Neighborhood	Neighborhood
Monitor type	Speciation FRM/ SASS	Speciation FRM/URG
Analysis method	Various	Various
Make of monitor	Met One	URG
Model of monitor	Super SASS	3000N
Method code	811/812/813	838/839/840/841/842/826
Monitor start date	2/21/2000	10/1/2009
Sampling schedule	1 in 6	1 in 3
Sampling duration	24 hour	24 hour
Sampling season	All year	All year
In climate controlled shelter	N	N
Probe height from ground	5 m	5 m
Distance from closest obstruction	8 m	8 m
Distance from trees	5 m	5 m
Unrestricted airflow degrees	210°	210°
Monitor audit frequency	Biannual	Quarterly
Flow rate verification frequency	Every 2 weeks	Every 2 weeks

TOXICS - NATTS							
Parameter	VOC	VOC	Carbonyl	Carbonyl	Hexavalent Chromium	SVOC	PM10 Metal Speciation
CBSA	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale
Site monitor located	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Monitor location at site	Shelter	Shelter	Shelter	Shelter	Metal Roof	Shelter	Metal Roof
Monitoring objective	Population	Population	Population	Population	Population	Population	Population
Spatial scale	Urban	Urban	Urban	Urban	Urban	Urban	Neighborhood
Monitor type	VOC Canister Sampler	VOC Canister Sampler	Carbonyl Cartridge Sampler	Carbonyl Cartridge Sampler	Toxic Air Sampler	PUF	Partisol 2000
Analysis method	TO15/TO14	TO15/TO14	TO-11A	TO-11A	CARB Method	Lab Analysis	Gravimetric
Make of monitor	Tisch Environmental	Tisch Environmental	ATEC	ATEC	Xontech	Tisch Environmental	R & P
Model of monitor	2200	2200	8000	8000	924	TE-1000BL	2000 F
Method code	101/126	101/126	202	202	921	118	126/202
Monitor start date	6/6/2001	6/6/2001	5/15/1999	5/15/1999	1/1/2006	7/8/2007	1/1/2005
Sampling schedule	1 in 6	1 in 6	1 in 6	1 in 6	1 in 6	1 in 6	1 in 6
Sampling duration	24 hour	24 hour	24 hour	24 hour	24 hour	24 hour	24 hour
Sampling season	All year	All year	All year	All year	All year	All year	All year
In climate controlled shelter	Y	Y	Y	Y	N	N	N
Probe height from ground	5 m	5 m	5 m	5 m	5 m	4.5 m	5 m
Probe distance from structure	--	--	--	--	--	--	--
Distance from closest obstruction	8 m	8 m	8 m	8 m	8 m	8 m	8 m
Distance from trees	5 m	5 m	5 m	5 m	5 m	5 m	5 m
Unrestricted airflow degrees	210°	210°	210°	210°	210°	210°	210°
Monitor audit frequency	Annual	Annual	Annual	Annual	Biannual	Biannual	Biannual
Flow rate verification frequency	--	--	--	--	--	--	Monthly
One-point QC check frequency	Annual	Annual	Annual	Annual	--	Monthly	--

TOXICS - UATMP	
Parameter	Toxics
CBSA	Phoenix-Mesa-Scottsdale
Site monitor located	South Phoenix
Monitor location at site	Shelter
Monitoring objective	Population
Spatial scale	Neighborhood
Monitor type	Multiport Canister Sampler
Analysis method	TO15
Make of monitor	ATEC
Model of monitor	8001
Method code	--
Monitor start date	8/5/2001
Sampling schedule	1 in 12
Sampling duration	24 hour
Sampling season	May-Aug.
In climate controlled shelter	Y
Probe height from ground	6 m
Probe distance from structure	2 m
Distance from closest obstruction	12 m
Distance from trees	10 m
Unrestricted airflow degrees	250°
Monitor audit frequency	Annual
One-point QC check frequency	--

Visibility - Urban Haze - Camera					
CBSA	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale
Site monitor located	ADEQ Building	Banner Mesa Medical Center	Estrella Mountain Community College	Estrella Mountain Community College	North Mountain
Monitor location at site	Rooftop	Rooftop	Rooftop	Rooftop	Tower
Monitoring objective	Visibility	Visibility	Visibility	Visibility	Visibility
Spatial scale	Urban	Urban	Urban	Urban	Urban
Monitor type	High Res Digital Camera	High Res Digital Camera	High Res Digital Camera	High Res Digital Camera	High Res Digital Camera
Analysis method	None	None	None	None	None
Make of monitor	Olympus	Olympus	Olympus	Olympus	Olympus
Model of monitor	SP500UZ	SP500UZ	SP500UZ	SP500UZ	SP500UZ
Method code	--	--	--	--	--
Monitor start date	6/9/2003	6/10/2003	3/12/2003	3/12/2003	7/1/2003
Sampling schedule	Every 15 min.	Every 15 min.	Every 15 min.	Every 15 min.	Every 15 min.
Sampling duration	1 min.	1 min.	1 min.	1 min.	1 min.
Sampling season	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N

Visibility - Urban Haze - Nephelometer					
CBSA	Tucson	Tucson	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale
Site monitor located	22nd St./Craycroft	Children's Park	Dysart	Estrella	Vehicle Emissions Laboratory
Monitor location at site	Tower	Tower	Tower	Tower	Tower
Monitoring objective	Visibility	Visibility	Population	Population	Population
Spatial scale	Urban	Urban	Neighborhood	Neighborhood	Neighborhood
Monitor type	Nephelometer	Nephelometer	Nephelometer	Nephelometer	Nephelometer
Analysis method	Light Scatter	Light Scatter	Light Scatter with correlation to PM2.5	Light Scatter with correlation to PM2.5	Light Scatter with correlation to PM2.5
Make of monitor	Optec	Optec	Optec	Optec	Optec
Model of monitor	NGN 2	NGN 2	NGN 2	NGN 2	NGN 2
Method code	--	--	--	--	--
Monitor start date	1/1/2001	1/1/2003	6/16/2003	2/11/2003	6/30/2003
Sampling schedule	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling duration	Hourly	Hourly	Hourly	Hourly	Hourly
Sampling season	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N
Probe height from ground	5 m	5 m	6 m	6 m	5 m
Distance from closest obstruction	5 m	--	--	--	30 m
Distance from trees	30 m	4 m	--	5 m	50 m
Unrestricted airflow degrees	360°	360°	360°	360°	360°
Monitor audit frequency	Annual	Annual	Annual	Annual	Annual

Visibility - Urban Haze - Transmissometer				
CBSA	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Tucson	Tucson
Site monitor located	Phoenix Transmissometer Receiver	Phoenix Transmissometer Transmitter	Tucson Transmissometer Receiver	Tucson Transmissometer Transmitter
Monitor location at site	Rooftop	Rooftop	Rooftop	Rooftop
Monitoring objective	Urban Haze	Urban Haze	Urban Haze	Urban Haze
Spatial scale	Urban	Urban	Urban	Urban
Monitor type	Transmissometer Receiver	Transmissometer Transmitter	Transmissometer receiver	Transmissometer Transmitter
Analysis method	Light Attenuation	Light Attenuation	Light Attenuation	Light Attenuation
Make of monitor	Optec	Optec	Optec	Optec
Model of monitor	LVP-2	LVP-2	LVP-2	LVP-2
Method code	--	--	--	--
Monitor start date	12/1/1992	12/1/1992	1/1/1992	1/1/1994
Sampling schedule	Continuous	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N

Visibility - Urban Haze - Temp/RH (for Nephelometers)							
CBSA	Tucson	Tucson	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Phoenix-Mesa-Scottsdale	Tucson	Phoenix-Mesa-Scottsdale
Site monitor located	22nd St. /Craycroft	Children's Park	Dysart	Estrella	Phoenix Transmissometer Receiver	Tucson Transmissometer Receiver	Vehicle Emissions Laboratory
Monitor location at site	Tower	Tower	Tower	Tower	Rooftop	Rooftop	Tower
Monitoring objective	Visibility	Visibility	Population	Population	Urban Haze	Urban Haze	Population
Spatial scale	Urban	Urban	Neighborhood	Neighborhood	Urban	Urban	Neighborhood
Monitor type	Probe	Probe	Probe	Probe	Probe	Probe	Probe
Analysis method	None	None	None	None	None	None	None
Make of monitor	Vaisala	Vaisala	Rotronics	Rotronics	Rotronics	Vaisala	Rotronics
Model of monitor	HMP 45C	HMP 45C	MP101A	MP101A	MP101A	HMP 45C	MP101A
Method code	--	--	--	--	--	--	--
Monitor start date	6/23/2003	6/17/2003	7/16/2003	2/11/2003	6/9/2003	1/1/1994	6/30/2003
Sampling schedule	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling duration	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
Sampling season	All year	All year	All year	All year	All year	All year	All year
In climate controlled shelter	N	N	N	N	N	N	N
Probe height from ground	5 m	5 m	6 m	6 m	36 m	*	5 m
Probe distance from structure	1 m	1 m	1 m	1 m	1 m	*	1 m
Distance from closest obstruction	6 m	--	--	--	5 m	*	30 m
Distance from trees	30 m	4 m	--	5 m	--	*	50 m
Unrestricted airflow degrees	360°	360°	360°	360°	360°	*	360°
Monitor audit frequency	Annual	Annual	Annual	Annual	Annual	--	Annual

Appendix D – Site Review Data Tables

Note: Some measurements are rounded and/or estimations.

Each monitoring site where ADEQ operates ambient air instruments is described in this section. The parameters that are currently measured at the sites are listed with the start date for the parameter and not the monitor. See Appendix C for descriptions for the current monitor information.

AQS ID	ADEQ ID	SITE NAME	PAGE
04-021-8001	16394	Queen Valley	116
04-019-0020	16499	Rillito	117
04-019-0021	16474	Saguaro National Park East	118
04-019-9000	16475	Saguaro National Park West	119
80-026-8012	113221	San Luis Rio Colorado	120
04-005-1010	16512	Sedona Post Office	121
	139655	Snowflake	122
80-026-0005	16399	Sonora Nogales Fire Station	123
04-013-4003	16377	South Phoenix	124
	135133	Springerville	125
04-005-8103	16476	Sycamore Canyon	126
04-007-0010	16447	Tonto National Monument	127
	16826	Tucson Transmissometer Receiver	128
	16655	Tucson Transmissometer Transmitter	129
04-013-9998	16363	Vehicle Emissions Laboratory	130
	138696	Verde Ranger Station	131
04-027-8011	11319	Yuma Supersite	132

22nd St./Craycroft

Site Purpose: monitor urban haze.

The site is located in southeast Tucson at a city storage yard for waste containers and is jointly operated by ADEQ and PDEQ. The surrounding area includes a large covered water reservoir to the north and in general is predominantly residential, with some commercial activity that lines nearby arterial routes. The major pollutant source is vehicular traffic at the intersection of 22nd Street and Craycroft Road, which lies about 360 meters northeast of the site.

Site Information			
AQS ID	04-019-1011	ADEQ ID	16410
Address	1237 S. Beverly Ave. Tucson, AZ 85711		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	32.2040
Surrounding Area	Residential	Longitude	-110.8780
Distance to road	264 m – N	Elevation	787 m
Traffic count	51,239 – 22nd St.	Site Established Date	01/01/1973

Monitoring Information			
Pollutant/Atmospheric parameter	Bscat	Temp/RH	
Network or Program	Urban Haze	Urban Haze	
Spatial Scale	Urban	Urban	
Parameter start date at site	01/01/2001	03/15/2001	

Site Photos

Aerial view of 22nd St./Craycroft

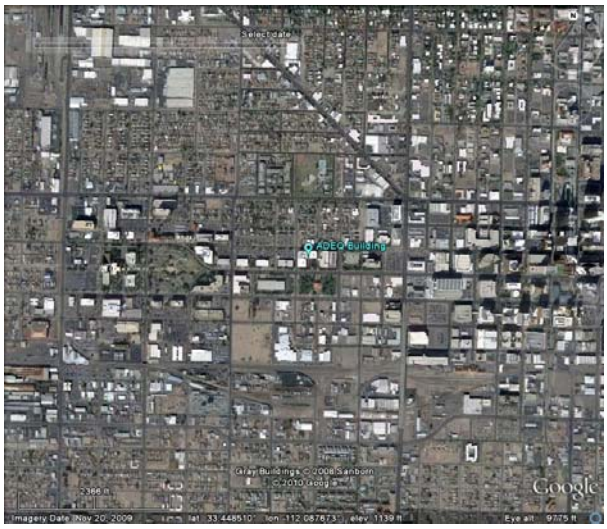
Photo taken from Pima County Network Assessment 2008 – date unknown

ADEQ Building
Site Purpose: monitor urban haze. The high-resolution digital camera sits on the northeast corner of the building and points toward Camelback Mountain, which lies 13.4 kilometers to the northeast. The pictures of the local view are updated every 15 minutes and can be viewed on the internet at http://www.phoenixvis.net/came1/index.html. The area between the site and Camelback Mountain is primarily residential with some commercial areas.

Site Information			
AQS ID	None	ADEQ ID	21737
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
Distance to road	84 m – S	Elevation	329 m
Traffic count	10,852 – Washington St.	Site Established Date	06/09/2003

Monitoring Information			
Pollutant/Atmospheric parameter	Visibility		
Network or Program	Urban Haze		
Spatial Scale	Urban		
Parameter start date at site	06/09/2003		

Site Photos



Aerial view of ADEQ Building


Camera on rooftop of ADEQ Building – 4/2010

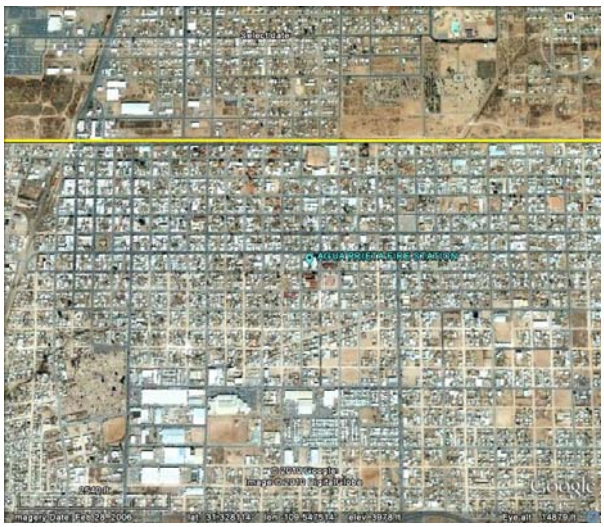
Agua Prieta Fire Station
Site Purpose: special purpose monitoring. The site is located approximately 640 meters south of the Arizona/Mexico border. The surrounding area is primarily residential, but experiences a large amount of particulate pollution due to the use of wood and oil fires by the residents and local businesses.

Site Information			
AQS ID	80-026-1000	ADEQ ID	16361
Address	Calle 6 & Ave. 15 Agua Prieta, Sonora, Mexico		
County	Sonora	Groundcover	Rooftop
CBSA	None	Latitude	31.3283
Surrounding Area	Residential	Longitude	-109.5472
Distance to road	6 m – W	Elevation	1,200 m
Traffic count	n/a	Site Established Date	01/01/1995

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}	$PM_{2.5}$	Wind
Network or Program	ADEQ-SPM	ADEQ-SPM	ADEQ-SPM
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	01/01/1995	04/11/2010	12/18/1998

Monitoring Information			
Pollutant/Atmospheric parameter	Temp/RH		
Network or Program	ADEQ-SPM		
Spatial Scale	Neighborhood		
Parameter start date at site	12/18/1998		

Site Photos



Aerial view of Agua Prieta Fire Station

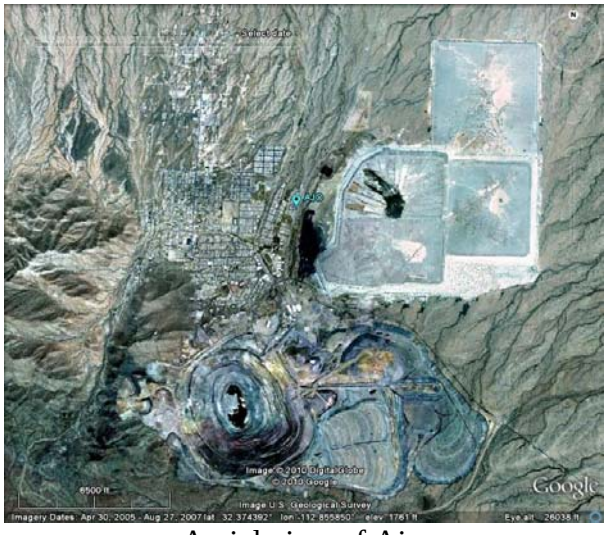
Roof of Aqua Prieta Fire Station – 12/2004

Ajo
Site Purpose: NAAQS compliance network. 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 south. To the east lies the stabilized tailings pile associated with the Ajo mining operation which closed in 1985.

Site Information			
AQS ID	04-019-0001	ADEQ ID	16316
Address	1211 Well Rd. Ajo, AZ 85321		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	32.3820
Surrounding Area	Residential/Commercial	Longitude	-112.8575
Distance to road	109 m – E	Elevation	515 m
Traffic count	500 – Ajo Well Rd. 1	Site Established Date	07/01/1969

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}	Wind	
Network or Program	SLAMS	ADEQ-MET	
Spatial Scale	Neighborhood	Neighborhood	
Parameter start date at site	01/01/1987	07/01/1969	

Site Photos



Aerial view of Ajo


Ajo fenced area and meteorological tower – 03/2009

Alamo Lake
Site Purpose: NAAQS compliance network and AQI forecasting. The site was established to replace the Hillside site and is located in Alamo Lake State Park, which is approximately 49,000 meters north of Wenden, AZ. The surrounding area consists of mostly desert, with a lake about 1,000 meters to the northeast. A small water pump/storage tank (1,000 gallon) lies 7 meters to the east of the instruments.

Site Information			
AQS ID	04-012-8000	ADEQ ID	34961
Address	Alamo Lake State Park		
County	La Paz	Groundcover	Gravel
CBSA	None	Latitude	34.2439
Surrounding Area	Desert	Longitude	-113.5586
Distance to road	30 m – E	Elevation	403 m
Traffic count	230 – Alamo Rd.	Site Established Date	05/20/2005

Monitoring Information			
Pollutant/Atmospheric parameter	O_3		
Network or Program	SLAMS		
Spatial Scale	Regional		
Parameter start date at site	05/20/2005		

Site Photos

Regional view of Alamo Lake


Alamo Lake shelter with water tanks to the east – 09/2008

ASARCO – Globe Highway
Site Purpose: NAAQS compliance network and a source permit requirement. This site is the location for the Pb monitoring in Hayden. ASARCO mine also maintains a sulfur dioxide analyzer at the site.

Site Information			
AQS ID	None	ADEQ ID	16593
Address	SR 77 Winkelman, AZ 85292		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	33.002
Surrounding Area	Residential	Longitude	-110.765
Distance to road	5 m – W	Elevation	602 m
Traffic count	n/a	Site Established Date	01/01/1975

Monitoring Information			
Pollutant/Atmospheric parameter	Pb		
Network or Program	SLAMS		
Spatial Scale	Middle		
Parameter start date at site	--		

Site Photos

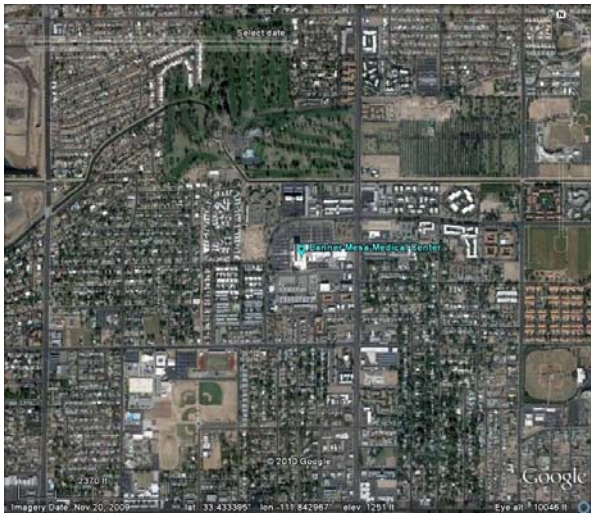
Aerial view of ASARCO Globe Highway


Shelter, tower, and TSP monitors at Globe Highway Site – 7/20/2010

Banner Mesa Medical Center
Site Purpose: monitor urban haze. The high-resolution digital camera points to the Superstition Mountains, which lie 32,000 meters east of the site. The pictures of the local views are updated every 15 minutes and can be viewed on the internet at http://www.phoenixvis.net/supm1/index.html. The area between the site and the mountains is primarily residential, with some commercial areas.

Site Information			
AQS ID	None	ADEQ ID	19489
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
Distance to road	20 m – N	Elevation	454 m
Traffic count	32,760 – Country Club Dr.	Site Established Date	06/10/2003

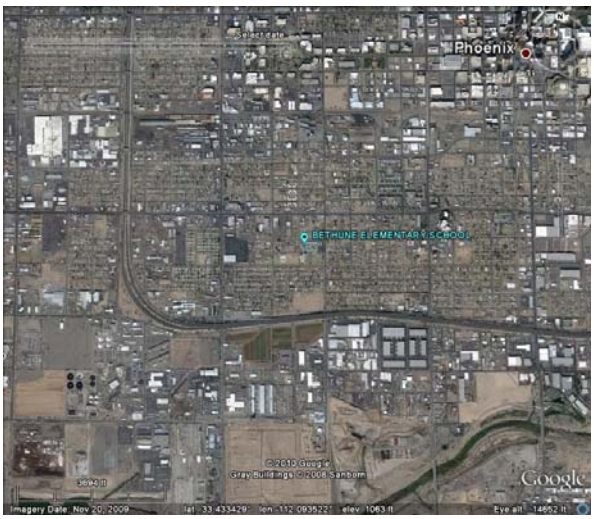
Monitoring Information			
Pollutant/Atmospheric parameter	Visibility		
Network or Program	Urban Haze		
Spatial Scale	Urban		
Parameter start date at site	06/10/2003		

Site Photos	
 Aerial view of Banner Mesa Medical Center	No Photo

Bethune Elementary School
Site Purpose: special purpose. In November of 2004 the monitor was moved from the rooftop of the school to ground level on the northwest side of the school. The surrounding area is primarily residential and is 1,400 meters south from downtown Phoenix. I-17 is 570 meters to the south.

Site Information			
AQS ID	04-013-8006	ADEQ ID	17786
Address	1310 S. 15th Ave. Phoenix, AZ 85007		
County	Maricopa	Groundcover	Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4349
Surrounding Area	Residential	Longitude	-112.0930
Distance to road	5 m – N	Elevation	325 m
Traffic count	8,511 – 15th Ave.	Site Established Date	12/23/2002

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}		
Network or Program	NAAQS-SPM		
Spatial Scale	Neighborhood		
Parameter start date at site	01/03/2003		

Site Photos	
 Aerial view of Bethune Elementary School	 Fenced Bethune Elementary School on the north side of the school grounds – 02/2008

Bullhead City
Site Purpose: NAAQS compliance network. 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 400 meters. To the northeast/east, about 575 meters, is the Bullhead City Airport, which has daily commercial flights.

Site Information			
AQS ID	04-015-1003	ADEQ ID	16365
Address	990 Highway 95 Bullhead City, AZ 86429		
County	Mohave	Groundcover	Rooftop
CBSA	Lake Havasu City-Kingman	Latitude	35.1539
Surrounding Area	Commercial/Residential	Longitude	-114.5661
Distance to road	~30 m – W	Elevation	156 m
Traffic count	32,575 – SR 95	Site Established Date	11/01/1997

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}		
Network or Program	SLAMS		
Spatial Scale	Neighborhood		
Parameter start date at site	11/05/1997		

Site Photos

Aerial view of Bullhead City


Roof of Bullhead City Post Office looking south – 09/2008

Children's Park
Site Purpose: monitor urban haze. The site is a City of Tucson water well site positioned at the convergence of the Rillito River and Pima Wash. The site is jointly operated by ADEQ and PDEQ. The surrounding area consists of trees to the east and west, which may restrict the airflow to the monitors; residence to the north/northwest; county park trails to the north, northwest, and west; and heavy commercial activity to the south and east.

Site Information			
AQS ID	04-019-1028	ADEQ ID	16551
Address	400 W. River Rd. Tucson, AZ 85704		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	32.2950
Surrounding Area	Residential	Longitude	-110.9820
Distance to road	500 m – N	Elevation	697 m
Traffic count	34,350 – River Rd.	Site Established Date	08/01/1997

Monitoring Information			
Pollutant/Atmospheric parameter	Bscat	Temp/RH	
Network or Program	Urban Haze	Urban Haze	
Spatial Scale	Urban	Urban	
Parameter start date at site	01/01/2003	06/17/2003	

Site Photos

Aerial view of Children's Park


Photo of Children's Park taken from Pima County Network Assessment 2008 – date unknown

Chiricahua Entrance Station
Site Purpose: monitor regional haze and IMPROVE program. The site is operated by the NPS. The surrounding area is wilderness and desert. The Chiricahua National Monument lies 3,800 meters to the northeast.

Site Information			
AQS ID	04-003-8001	ADEQ ID	16679
Address	13063 E. Bonita Canyon Rd. Wilcox, AZ 85643		
County	Cochise	Groundcover	Dirt/Rocks
CBSA	Sierra Vista-Douglas	Latitude	32.0094
Surrounding Area	Desert	Longitude	-109.3891
Distance to road	99 m – E	Elevation	1,570 m
Traffic count	216 – Bonita Canyon Rd.	Site Established Date	01/01/1988

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	03/02/1988		

Site Photos

Regional view of Chiricahua Entrance Station


Chiricahua Entrance Station shelter and IMPROVE – 07/2008

Douglas Red Cross
Site Purpose: NAAQS compliance network. 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. Also, there is a second AQS ID 04-003-9000 for IMPROVE data.

Site Information			
AQS ID	04-003-1005	ADEQ ID	16503
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	-109.5396
Distance to road	30 m – N	Elevation	1,231 m
Traffic count	2,320 – 14th St.	Site Established Date	09/01/1998

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}	$PM_{2.5}$	Aerosol
Network or Program	SLAMS	SLAMS	IMPROVE
Spatial Scale	Neighborhood	Neighborhood	Regional
Parameter start date at site	09/02/1998	11/02/2000	06/02/2004

Site Photos

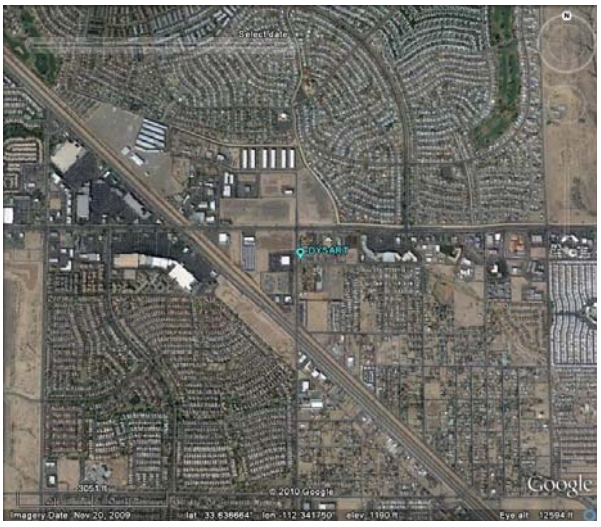
Aerial view of Douglas Red Cross

Douglas Red Cross fenced site – 07/20/2008

Dysart
Site Purpose: monitor urban haze and AQI forecasting/AIRNow program. The site is located in the Maricopa County Facility Maintenance Yard at the corner of Bell Road and Dysart Road and is shared with MCAQD. The surrounding area is commercial and residential.

Site Information			
AQS ID	04-013-4010	ADEQ ID	19550
Address	16825 N. Dysart Rd. Surprise, AZ 85374		
County	Maricopa	Groundcover	Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.6370
Surrounding Area	Commercial/Residential	Longitude	-112.3393
Distance to road	14 m – W	Elevation	357 m
Traffic count	51,673 – Bell Rd.	Site Established Date	01/01/2003

Monitoring Information			
Pollutant/Atmospheric parameter	Bscat/$PM_{2.5}$	Temp/RH	
Network or Program	Urban Haze/ AIRNow	Urban Haze	
Spatial Scale	Neighborhood	Neighborhood	
Parameter start date at site	01/01/2003	03/25/2003	

Site Photos	
 Aerial view of Dysart	 Dysart ADEQ Nephelometer tower attached to county shelter – 02/2008

Estrella
Site Purpose: monitor urban haze and AQI forecasting/AIRNow program. The site is located in the southeast corner of the Maricopa County Maintenance Yard at Estrella Park. The surrounding area consist of the Estrella Mountains to the east, south, and west; a golf course 256 meters to the west; and a mixture of open land, agricultural lands, residential, and commercial activity to the north.

Site Information			
AQS ID	04-013-8005	ADEQ ID	16506
Address	15099 W. Casey Abbott Rd. Goodyear, AZ 85338		
County	Maricopa	Groundcover	Grass/Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.3833
Surrounding Area	Desert/Recreation Area	Longitude	-112.3728
Distance to road	258 m – N	Elevation	277 m
Traffic count	910 – W. Vineyard Ave.	Site Established Date	01/01/1995

Monitoring Information			
Pollutant/Atmospheric parameter	Bscat/$PM_{2.5}$	Temp/RH	
Network or Program	Urban Haze/ AIRNow	Urban Haze	
Spatial Scale	Neighborhood	Neighborhood	
Parameter start date at site	12/18/2002	12/18/2002	

Site Photos

Aerial view of Estrella


Estrella Nephelometer tower – 02/2008

Estrella Mountain Community College
Site Purpose: monitor urban haze. One high-resolution digital camera points to the Estrella Mountains, which lies 11,000 meters to the southwest, and the other camera points to the White Tanks mountain range which is 20,000 meters northeast. The pictures of the local views are updated every 15 minutes and can be viewed on the internet at http://www.phoenixvis.net/esmo1/index.html. The area between the site and the mountain ranges is a mixture of residential, commercial, and agricultural uses.

Site Information			
AQS ID	None	ADEQ ID	21736
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
Distance to road	155 m – S	Elevation	305 m
Traffic count	7,280 – Thomas Rd.	Site Established Date	03/12/2003

Monitoring Information			
Pollutant/Atmospheric parameter	Visibility		
Network or Program	Urban Haze		
Spatial Scale	Urban		
Parameter start date at site	03/12/2003		

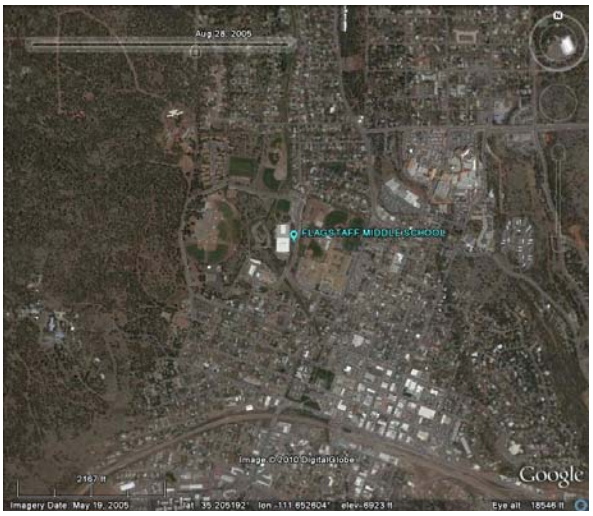
Site Photos	
 Aerial view of Estrella Mountain Community College	No photo

Flagstaff Middle School
Site Purpose: NAAQS compliance network and monitor smoke/public information. The site is west of Bonito Road on the rooftop of a 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.

Site Information			
AQS ID	04-005-1008	ADEQ ID	16707
Address	755 N. Bonito St. Flagstaff, AZ 86001		
County	Coconino	Groundcover	Rooftop
CBSA	Flagstaff	Latitude	35.2061
Surrounding Area	Residential	Longitude	-111.6528
Distance to road	70 m – E	Elevation	2,120 m
Traffic count	3,200 – N. Bonito St.	Site Established Date	10/29/1996

Monitoring Information			
Pollutant/Atmospheric parameter	O_3	PM_{10}	$PM_{2.5}$
Network or Program	SLAMS	SLAMS/ADEQ-E-BAM	SLAMS
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	03/13/2008	10/30/1996	09/09/1999

Site Photos



Aerial view of Flagstaff Middle School

Particulate monitors on roof of Flagstaff Middle School – 04/2008

Grand Canyon National Park - Hance Camp
Site Purpose: monitor regional haze and IMPROVE program. The site is operated by the NPS. The site is 183 meters south of East Rim Drive, 1,931 meters south of Grandview Point turnoff. The site is in a clearing surrounded by forest.

Site Information			
AQS ID	04-005-8102	ADEQ ID	16682
Address	West of SR 64 - Grand Canyon, AZ 86023		
County	Coconino	Groundcover	Dirt
CBSA	Flagstaff	Latitude	35.9731
Surrounding Area	Desert	Longitude	-111.9841
Distance to road	200 m – E	Elevation	2,235 m
Traffic count	6,579 – SR 64	Site Established Date	09/24/1997

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	09/24/1997		

Site Photos

Regional view of Grand Canyon NP - Hance Camp


Grand Canyon NP - Hance Camp shelter – date unknown

Grand Canyon National Park - Indian Gardens
Site Purpose: monitor regional haze and IMPROVE program. The site is owned by the NPS. The site is located in the Indian Gardens picnic area in the Grand Canyon, near the ranger station on the south side of the canyon along the Bright Angel Trail.

AQS ID	04-005-8101	ADEQ ID	16683
Address	Bright Angel Trail Grand Canyon, AZ 86023		
County	Coconino	Groundcover	Dirt/Rocks
CBSA	Flagstaff	Latitude	36.0778
Surrounding Area	Desert	Longitude	-112.1289
Distance to road	8,047 m – S	Elevation	1,183 m
Traffic count	1,250 – Entrance Road	Site Established Date	10/01/1989

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	10/04/1989		

Site Photos

Regional view of Grand Canyon NP - Indian Gardens


Grand Canyon NP - Indian Gardens IMPROVE monitor – 04/2008

Greer Water Treatment Plant
Site Purpose: monitor regional haze and IMPROVE program. The site is located in the Apache National Forest and is operated by ADEQ and the USFS. The surrounding area is forest with the town of Greer approximately 4,000 meters to the south/southwest.

Site Information			
AQS ID	04-001-8001	ADEQ ID	16323
Address	SR 260 & SR 373 Greer, AZ 85927		
County	Apache	Groundcover	Grass
CBSA	None	Latitude	34.0583
Surrounding Area	Forest	Longitude	-109.4400
Distance to road	1,600 m – N	Elevation	2,503 m
Traffic count	1,044 – SR 373	Site Established Date	01/01/2000

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	02/29/2000		

Site Photos

Aerial view of Greer Water Treatment Plant


Shelter and meteorological tower at Greer Water Treatment Plant – 09/2008

Hayden Old Jail
Site Purpose: NAAQS compliance network and a source permit requirement. The site is located at the old Hayden Jail building near the center of town. The surrounding area consists mainly of residential and commercial. ASARCO mine also maintains a sulfur dioxide analyzer at the site.

Site Information			
AQS ID	04-007-1001	ADEQ ID	16326
Address	Canyon Dr. & Kennecott Ave. Hayden, AZ 85235		
County	Gila	Groundcover	Building
CBSA	Payson	Latitude	33.0062
Surrounding Area	Residential	Longitude	-110.7864
Distance to road	5 m – E	Elevation	625 m
Traffic count	1,790 – Velasco Ave.	Site Established Date	01/01/1969

Monitoring Information			
Pollutant/Atmospheric parameter	SO_2	PM_{10}	
Network or Program	SLAMS	SLAMS	
Spatial Scale	Neighborhood	Neighborhood	
Parameter start date at site	01/01/1975	01/06/1986	

Site Photos

Aerial view of Hayden Old Jail


Roof of Hayden Old Jail – 08/2008

Ike's Backbone
Site Purpose: monitor regional haze and IMPROVE program. The site is operated by ADEQ and the USFS. The surrounding area is Tonto National Forest, which includes Mazatzal and Pine Mountain Wilderness areas with the Verde River and mountains nearby.

Site Information			
AQS ID	04-025-8104	ADEQ ID	16421
Address	Fossil Creek Rd. and Childs Rd. Strawberry, AZ 85544		
County	Coconino	Groundcover	Rocks/Plants
CBSA	Flagstaff	Latitude	34.3406
Surrounding Area	Forest	Longitude	-111.6825
Distance to road	n/a	Elevation	1,303 m
Traffic count	475 – Fossil Creek Rd.	Site Established Date	04/02/2000

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	04/02/2000		

Site Photos

Regional view of Ike's Backbone


Shelters and tower at Ike's Backbone – 12/2008

JLG Supersite
Site Purpose: NAAQS compliance network, PAMS, NATTS, STN, NCore, AIRNow, AQI forecasting, monitor urban haze, and meteorological support. 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 roughly 1,609 meters west.

Site Information			
AQS ID	04-013-9997	ADEQ ID	16328
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
Distance to road	8.5 m – E	Elevation	354 m
Traffic count	20,214 – Campbell Ave.	Site Established Date	07/01/1993

Monitoring Information			
Pollutant/Atmospheric parameter	CO	CO Trace	NOy
Network or Program	SLAMS	NCore	NCore
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	07/01/1993	01/01/2011	01/01/2011

Monitoring Information			
Pollutant/Atmospheric parameter	NO_2	O_3	SO_2
Network or Program	SLAMS/PAMS	SLAMS/PAMS/ NCore	SLAMS
Spatial Scale	Neighborhood	Neighborhood/ Urban	Neighborhood
Parameter start date at site	07/01/1993	07/01/1993	03/03/2005

Monitoring Information			
Pollutant/Atmospheric parameter	SO_2 Trace	VOC	Carbonyls
Network or Program	NCore	TOXICS - NATTS/ PAMS	TOXICS - NATTS/ PAMS
Spatial Scale	Neighborhood	Urban	Urban
Parameter start date at site	01/01/2011	05/15/1999	05/15/1999

Monitoring Information			
Pollutant/Atmospheric parameter	Hexavalent Chromium	SVOC	Pb PM_{10}
Network or Program	TOXIC - NATTS	TOXICS - NATTS	NCore
Spatial Scale	Urban	Urban	Neighborhood
Parameter start date at site	01/01/2006	07/08/2007	--

Monitoring Information			
Pollutant/Atmospheric parameter	$PM_{10-2.5}$	PM_{10}	PM_{10}/Metal Speciation
Network or Program	NCore	SLAMS	TOXICS – NATTS
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	--	07/01/1993	01/01/2005

Monitoring Information			
Pollutant/Atmospheric parameter	$PM_{2.5}$	$PM_{2.5}$ Speciated	Wind
Network or Program	SLAMS/NCore	STN	ADEQ-Met/NCore
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	01/01/1999	01/01/1999	07/01/1993

Monitoring Information			
Pollutant/Atmospheric parameter	Temp/RH	Aerosol	
Network or Program	NCore	IMPROVE	
Spatial Scale	Neighborhood	Neighborhood	
Parameter start date at site	01/15/2010	04/25/2001	

Site Photos

Aerial view of JLG Supersite


Eastern side of JLG Supersite – 09/2008

Meadview
Site Purpose: monitor regional haze and IMPROVE program. The site is located on the north end of Meadview, AZ, which is a small town near the Nevada/Arizona border, where the Grand Canyon meets Lake Mead. The surrounding area is primarily desert. To the southwest 64,400 meters is US 93, which is the closest highway to the site and about 96,560 meters to the southeast is downtown Kingman.

Site Information			
AQS ID	04-015-9000	ADEQ ID	21298
Address	Pierce Ferry Rd. Meadview, AZ 86444		
County	Mohave	Groundcover	Gravel
CBSA	Lake Havasu City-Kingman	Latitude	36.0193
Surrounding Area	Desert/Residential	Longitude	-114.0684
Distance to road	100 m – E	Elevation	902 m
Traffic count	0 – Pierce Ferry Rd.	Site Established Date	09/04/1991

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	09/04/1991		

Site Photos

Regional view of Meadview


Photo of Meadview taken from IMPROVE website – date unknown

Miami Ridgeline
Site Purpose: NAAQS compliance network and a source permit requirement. The site is located inside the fence line on private property off of Linden Road and sits on the side of a north-south oriented ridge, which slopes in a northerly direction toward the town of Miami. The surrounding area is desert. Freeport McMoRan Copper and Gold Inc. also maintains a PM_{10} monitor at the site. The Freeport McMoRan smelter is 1,609 meters to the north of the site.

Site Information			
AQS ID	04-007-0009	ADEQ ID	16382
Address	4030 Linden St. Miami, AZ 85539		
County	Gila	Groundcover	Dirt
CBSA	Payson	Latitude	33.3992
Surrounding Area	Residential	Longitude	-110.8589
Distance to road	40 m – N	Elevation	1,085 m
Traffic count	510 – Loomis Ave.	Site Established Date	0/01/1991

Monitoring Information			
Pollutant/Atmospheric parameter	SO_2		
Network or Program	SLAMS		
Spatial Scale	Neighborhood		
Parameter start date at site	10/05/1995		

Site Photos

Aerial view of Miami Ridgeline


Fenced Miami Ridgeline site – 04/2008

Nogales Post Office
Site Purpose: NAAQS compliance network. 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.

Site Information			
AQS ID	04-023-0004	ADEQ ID	16511
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
Distance to road	14 m – NW	Elevation	1,176 m
Traffic count	7,199 – Morley Ave.	Site Established Date	01/01/1980

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}	$PM_{2.5}$	Wind
Network or Program	SLAMS/NAAQS-SPM	SLAMS/ADEQ-SPM	ADEQ-MET
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	01/01/1980	04/01/1999	01/01/1980

Site Photos

Aerial view of Nogales Post Office


Particulate monitors on roof of Nogales Post Office – 09/2008

North Mountain Summit
Site Purpose: monitor urban haze. The site is located on a mountain top in the North Mountain Recreation Area of Phoenix. The high-resolution digital camera points toward South Mountain, which lies 27,000 meters south. The pictures of the local views are updated every 15 minutes and can be viewed on the internet at http://www.phoenixvis.net/somt1/index.html. The surrounding area is desert recreation area to the north and west and residential with some commercial activity to the south and east.

Site Information			
AQS ID	None	ADEQ ID	16480
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
Distance to road	850 m – E	Elevation	625 m
Traffic count	28,210 – 7th St.	Site Established Date	07/01/2003

Monitoring Information			
Pollutant/Atmospheric parameter	Visibility		
Network or Program	Urban Haze		
Spatial Scale	Urban		
Parameter start date at site	07/01/2003		

Site Photos

Aerial view of North Mountain Summit


Camera located on tower at North Mountain Summit – 2008

Organ Pipe National Monument
Site Purpose: monitor regional haze and IMPROVE program. The site is owned by the NPS, who operates the monitor at the site. The site is located 1,000 meters south/southwest of the national monument visitor center, which is about 35,400 meter south of Why, AZ. The site is about 7 meters from a water pump house and lies about 540 meters east of a small mountain range. The surrounding area is predominately desert.

Site Information			
AQS ID	04-019-0005	ADEQ ID	16681
Address	SR 85 & Puerto Blanco Rd. Ajo, AZ 85321		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	31.9499
Surrounding Area	Desert	Longitude	-112.8010
Distance to road	400 m – E	Elevation	505 m
Traffic count	1,525 – SR 85	Site Established Date	01/01/1971

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	01/15/2003		

Site Photos

Regional view of Organ Pipe NM

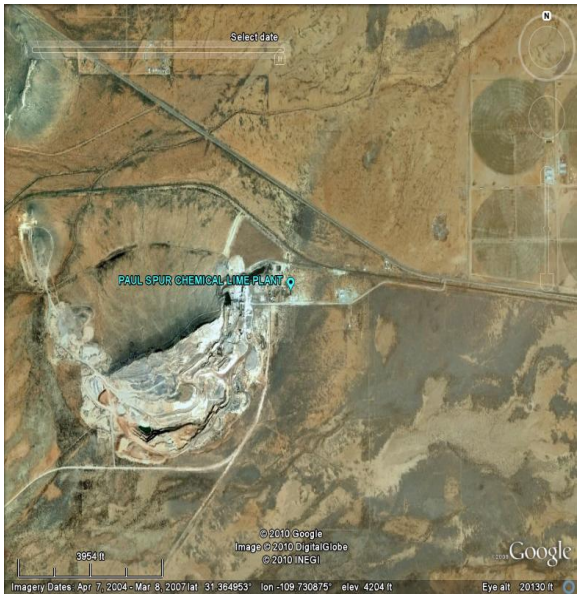
Shelter at Organ Pipe NM – 03/2008

Paul Spur Chemical Lime Plant
Site Purpose: NAAQS compliance network. The site is located about 3,500 meters north of the Arizona/Mexico boarder and is just south of SR 80 between Bisbee and Douglas. The surrounding area is predominately desert. The chemical lime plant is to the west/southwest.

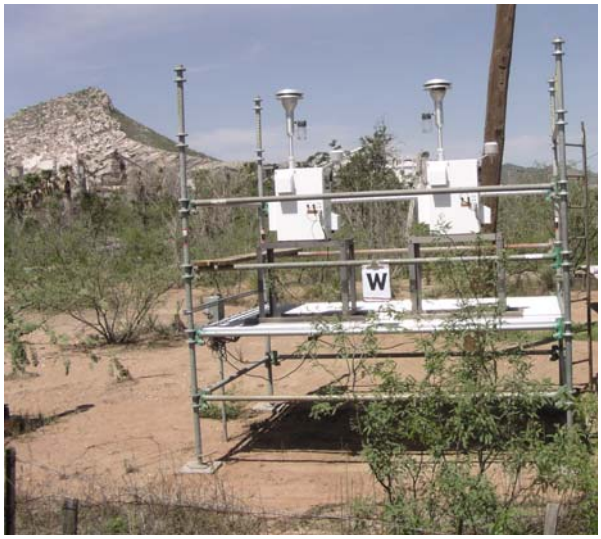
Site Information			
AQS ID	04-003-0011	ADEQ ID	16391
Address	SR 80 & Paul Spur Rd. Paul Spur, AZ 85603		
County	Cochise	Groundcover	Dirt
CBSA	Sierra Vista-Douglas	Latitude	31.3658
Surrounding Area	Desert	Longitude	-109.7309
Distance to road	50 m – S	Elevation	1,278 m
Traffic count	4,920 – SR 80	Site Established Date	02/21/1985

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}		
Network or Program	SLAMS		
Spatial Scale	Neighborhood		
Parameter start date at site	03/01/1985		

Site Photos



Aerial view of Paul Spur CLP



Particulate monitors on platform at Paul Spur CLP – 07/2008

Paul Spur Chemical Lime Plant South
Site Purpose: meteorological support. The site is located about 3,500 meters north of the Arizona/Mexico border and is just south of SR 80 between Bisbee and Douglas. The surrounding area is predominately desert. The chemical lime plant is to the north/northwest.

Site Information			
AQS ID	None	ADEQ ID	16392
Address	South of Stonridge Rd. Paul Spur, AZ 85603		
County	Cochise	Groundcover	Dirt/Grass
CBSA	Sierra Vista-Douglas	Latitude	31.3543
Surrounding Area	Desert	Longitude	-109.7376
Distance to road	20 m – N	Elevation	1,287 m
Traffic count	4,920 – SR 80	Site Established Date	12/21/1995

Monitoring Information			
Pollutant/Atmospheric parameter	Wind		
Network or Program	ADEQ-MET		
Spatial Scale	Middle		
Parameter start date at site	12/21/1995		

Site Photos

Aerial view of Paul Spur CLP South

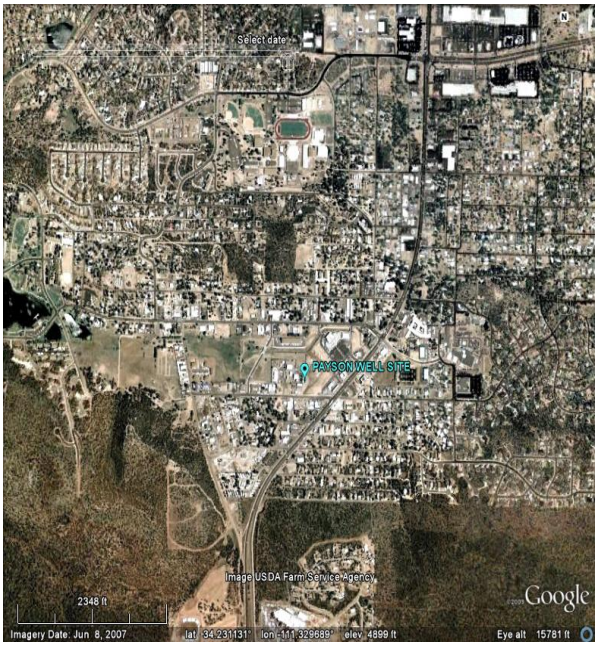
Meteorological tower at Paul Spur CLP South – 07/2008

Payson Well Site
Site Purpose: NAAQS compliance network. The site is located in the southern area of Payson, at a water well site. To the southeast of the site are two tanks. In general, the surrounding area is commercial with some residential land use. Directly to the west, on the other side of a metal fence, is an auto repair shop and 290 meters to the east is SR 87.

Site Information			
AQS ID	04-007-0008	ADEQ ID	16317
Address	204 W. Aero Dr. Payson, AZ 85541		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	34.2294
Surrounding Area	Residential/Commercial	Longitude	-111.3297
Distance to road	80 m – S	Elevation	1,501 m
Traffic count	1,724 – Aero Dr.	Site Established Date	01/01/1991

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}	Wind	Temp/RH
Network or Program	SLAMS	ADEQ-MET	ADEQ-MET
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	01/01/1991	05/30/1991	05/30/1991

Site Photos



Aerial view of Payson Well Site

Payson Well Site meteorological tower and particulate monitor on platform – 04/2008

Petrified Forest National Park
Site Purpose: monitor regional haze and IMPROVE program. The site is operated by the NPS and is located 1,609 meters north of park headquarters. The park sits along I-40 and the surrounding area is desert.

Site Information			
AQS ID	04-001-0012	ADEQ ID	16473
Address	I-40 & Petrified Forest Rd. Petrified Forest National Park, AZ		
County	Apache	Groundcover	Dirt
CBSA	None	Latitude	35.0770
Surrounding Area	Desert	Longitude	-109.7690
Distance to road	1,050 m – SW	Elevation	1,766 m
Traffic count	15,246 – I-40	Site Established Date	03/02/1988

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	03/02/1988		

Site Photos

Regional view of Petrified Forest NP

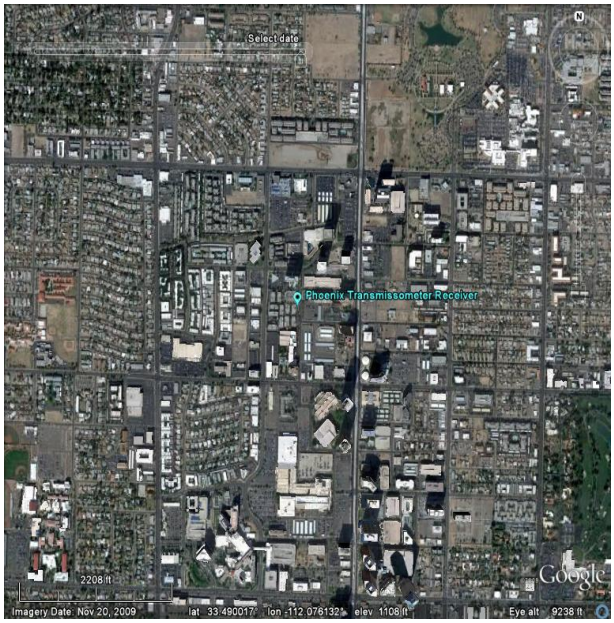

Photo of Petrified Forest NP taken from IMPROVE website – date unknown

Phoenix Transmissometer Receiver
Site Purpose: monitor urban haze. The site is located in downtown Phoenix on the rooftop of the Holiday Inn Hotel near 2nd Avenue and Osborn Road. The transmitter is located on top of the Phoenix Baptist Hospital 4,500 meters to the northwest. The area between the two sites is a mix of residential and commercial.

Site Information			
AQS ID	None	ADEQ ID	16829
Address	3600 N. 2nd Ave. Phoenix, AZ 85013		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4901
Surrounding Area	Commercial/Residential	Longitude	-112.0767
Distance to road	25 m – E	Elevation	337 m
Traffic count	1,5470 – Central Ave.	Site Established Date	12/01/1992

Monitoring Information			
Pollutant/Atmospheric parameter	Bext	Temp/RH	
Network or Program	Urban Haze	Urban Haze	
Spatial Scale	Urban	Urban	
Parameter start date at site	12/01/1992	12/01/1992	

Site Photos



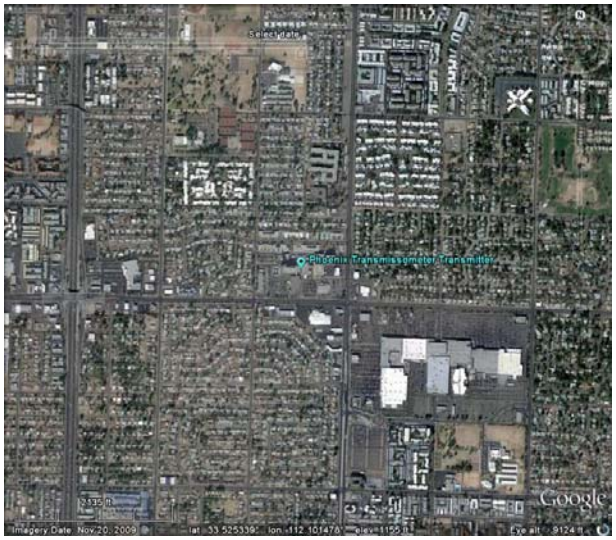
Aerial view of Phoenix Transmissometer Receiver


Phoenix Transmissometer Receiver on hotel rooftop – 11/2008

Phoenix Transmissometer Transmitter
Site Purpose: monitor urban haze. The transmitter is located on the rooftop of Phoenix Baptist Hospital at 19th Avenue and Bethany Home Road. The receiver is located on Holiday Inn Hotel 4,500 meters to the southeast. The area between the two sites is a mix of residential and commercial.

Site Information			
AQS ID	None	ADEQ ID	16330
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
Distance to road	120 m – S	Elevation	340 m
Traffic count	40,950 – Bethany Home Rd.	Site Established Date	12/01/1992

Monitoring Information			
Pollutant/Atmospheric parameter	Bext		
Network or Program	Urban Haze		
Spatial Scale	Urban		
Parameter start date at site	12/01/1992		

Site Photos	
 Aerial view of Phoenix Transmissometer Transmitter	No photo

Pleasant Valley Ranger Station
Site Purpose: monitor regional haze and IMPROVE program. The site is operated by ADEQ and the USFS. The site is located on a hilltop south of Young, AZ. The surrounding area is wilderness and desert. The site lies 1,160 meters to the south of SR 288.

Site Information			
AQS ID	04-007-8100	ADEQ ID	16446
Address	SR 288 & Old Cherry Rd. Young, AZ 85541		
County	Gila	Groundcover	Dirt
CBSA	Payson	Latitude	34.0908
Surrounding Area	Desert/Forest	Longitude	-110.9419
Distance to road	250 m – N	Elevation	1,587 m
Traffic count	143 – SR 288	Site Established Date	01/01/2000

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	02/10/2000		

Site Photos

Regional view of Pleasant Valley Ranger Station

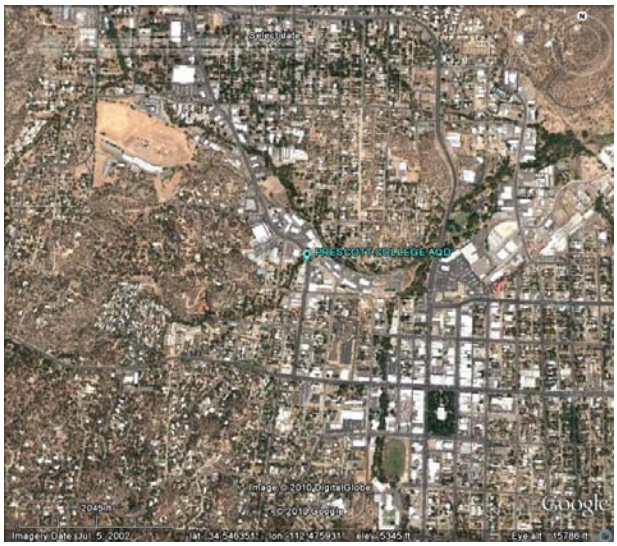
Shelter at Pleasant Valley Ranger Station – 08/2008

Prescott College AQD
Site Purpose: NAAQS compliance network and monitor smoke/public information. The site is located at Prescott College on the rooftop of the Mogollon Building (#307). The surrounding area is residential and commercial, with a high traffic street approximately 20 meters to the east and large trees to the west.

Site Information			
AQS ID	04-025-8033	ADEQ ID	133011
Address	330 Grove Ave., Prescott, AZ 86301		
County	Yavapai	Groundcover	Rooftop
CBSA	Prescott	Latitude	34.5467
Surrounding Area	Residential/Commercial	Longitude	-112.4761
Distance to road	8 m – E	Elevation	1,591 m
Traffic count	21,945 – Grove Ave.	Site Established Date	06/04/2007

Monitoring Information			
Pollutant/Atmospheric parameter	O_3	PM_{10}	
Network or Program	SLAMS	ADEQ-E-BAM	
Spatial Scale	Neighborhood	Neighborhood	
Parameter start date at site	03/25/2008	06/04/2007	

Site Photos



Aerial view of Prescott College AQD


E-BAM on roof of Prescott College AQD – date unknown

Prescott Valley
Site Purpose: NAAQS compliance network. The site is located on the Prescott Police Department building about 1,100 meters to the north of SR 69. The surrounding area is mostly residential with some areas of open desert.

Site Information			
AQS ID	04-025-2002	ADEQ ID	18392
Address	7601 E. Civic Cir. Prescott Valley, AZ 86314		
County	Yavapai	Groundcover	Rooftop
CBSA	Prescott	Latitude	34.5950
Surrounding Area	Residential	Longitude	-112.3310
Distance to road	25 m – S	Elevation	1,556 m
Traffic count	2,400 – Civic Circle N.	Site Established Date	11/08/1999

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}	$PM_{2.5}$	
Network or Program	SLAMS	SLAMS	
Spatial Scale	Neighborhood	Neighborhood	
Parameter start date at site	11/08/1999	12/28/2007	

Site Photos

Aerial view of Prescott Valley

Particulate monitors on rooftop of Prescott Police Department – 10/2008

Queen Valley
Site Purpose: NAAQS compliance network, PAMS network, monitor regional haze, AQI forecasting, and IMPROVE program. The site is operated by ADEQ and PCAQCD. The site is located 635 meters southeast of Queen Valley, AZ and the surrounding area is primarily desert on the far eastern outskirts of the Phoenix metropolitan area. This is a downwind PAMS type 3 site.

Site Information			
AQS ID	04-021-8001	ADEQ ID	16394
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
Distance to road	87 m – W	Elevation	668 m
Traffic count	1,284 – Queen Anne Dr.	Site Established Date	04/30/2001

Monitoring Information			
Pollutant/Atmospheric parameter	O_3	NOy Trace	VOC
Network or Program	SLAMS/PAMS	PAMS	PAMS
Spatial Scale	Urban	Urban	Urban
Parameter start date at site	05/20/2001	06/24/2002	05/20/2001

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Urban		
Parameter start date at site	04/30/2001		

Site Photos

Regional view of Queen Valley


Shelter and Nephelometer at Queen Valley site – 12/2007

Rillito
Site Purpose: NAAQS compliance network and a source permit requirement. In February of 2007 the site was moved from the Water St. location 91 meters southwest to its current location at a city water pumping station. The surrounding area is primarily residential and industrial, with I-10 approximately 250 meters to the east. Arizona Portland Cement Company also maintains PM_{10} monitors at the site.

Site Information			
AQS ID	04-019-0020	ADEQ ID	16499
Address	8840 W. Robinson St. Rillito, AZ 85653		
County	Pima	Groundcover	Dirt
CBSA	Tucson	Latitude	32.4143
Surrounding Area	Residential	Longitude	-111.1545
Distance to road	7 m – S	Elevation	626 m
Traffic count	2,634 – I-10 Frontage Rd.	Site Established Date	01/01/1974

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}	Wind	Temp/RH
Network or Program	SLAMS	ADEQ-MET	ADEQ-MET
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	01/01/1974	01/08/2004	3/30/2010

Site Photos

Aerial view of Rillito

Rillito meteorological tower and particulate monitors on platform – 05/2008

Saguaro National Park East
Site Purpose: monitor regional haze and IMPROVE program. The site is located within the Saguaro National Park East, 805 meters south of park headquarters and is operated jointly by PDEQ and NPS. The area surrounding the site is scattered residential to the west and desert to the east.

Site Information			
AQS ID	04-019-0021	ADEQ ID	16474
Address	3905 S. Old Spanish Trail Tucson, AZ 85730		
County	Pima	Groundcover	Dirt
CBSA	Tucson	Latitude	32.1740
Surrounding Area	Residential/Desert	Longitude	-110.7360
Distance to road	82 m – W	Elevation	938 m
Traffic count	6,198 – Old Spanish Tail	Site Established Date	06/04/1988

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	06/04/1988		

Site Photos

Regional view of Saguaro NP East


Photo of Saguaro NP East taken from IMPROVE website – date unknown

Saguaro National Park West
Site Purpose: monitor regional haze and IMPROVE program. The site is located within the Saguaro National Park West. The site is operated by PDEQ and NPS and PDEQ takes care of the ADEQ monitors. The area surrounding the site is residential to the northwest and south/southeast and desert to the northeast. The site lies approximately 17 kilometers southwest of I-10.

Site Information			
AQS ID	04-019-9000	ADEQ ID	16475
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
Distance to road	27 m – W	Elevation	718 m
Traffic count	1,889 – Mile Wide Rd.	Site Established Date	04/19/2001

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	04/19/2001		

Site Photos

Regional view of Saguaro NP West


Shelters and towers at Saguaro NP West site – 03/2003

San Luis Rio Colorado
Site Purpose: special purpose monitoring. The site is located at the Oomapas Well # 10 site at the corner of Av. Venustiano Carranza and C. 15 in San Luis Rio Colorado, Sonora, Mexico. The site is approximately 1,600 meters south of the Arizona-Mexico border. The surrounding area is mixed commercial and residential use. *Note this site was previously used the in WASBAQS study.

Site Information			
AQS ID	80-026-8012	ADEQ ID	113221
Address	Av. Venustiano Carranza and C. 15 in San Luis Rio Colorado, Sonora, Mexico		
County	Sonora	Groundcover	Dirt
CBSA	None	Latitude	32.4664
Surrounding Area	Commercial/Residential	Longitude	-114.7688
Distance to road	5 m – S & E	Elevation	41 m
Traffic count	n/a	Site Established Date	07/05/2009

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}		
Network or Program	ADEQ-SPM		
Spatial Scale	Neighborhood		
Parameter start date at site	07/05/2009		

Site Photos	
 Aerial view of San Luis Rio Colorado	No photo

Sedona Post Office

Site Purpose: monitor smoke/public information.

The site is located on the U.S. Post Office building and was established to assess particulate concentrations in the Sedona area. Currently the site is used for neighborhood monitoring of smoke. The surrounding area is commercial and residential to the south and mainly hills to the north, east, and west. The site is located northeast of the intersection of SR 179 and SR 89A.

Site Information			
AQS ID	04-005-1010	ADEQ ID	16512
Address	190 W. Highway 89A Sedona, AZ 86336		
County	Coconino	Groundcover	Rooftop
CBSA	Flagstaff	Latitude	34.8667
Surrounding Area	Commercial/Residential	Longitude	-111.765
Distance to road	45 m – S	Elevation	1,279 m
Traffic count	25,193 – SR 89A	Site Established Date	01/01/1992

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}		
Network or Program	ADEQ-E-BAM		
Spatial Scale	Neighborhood		
Parameter start date at site	01/01/1992		

Site Photos

Aerial view of Sedona Post Office


E-BAM on roof of Sedona Post Office – date unkown

Snowflake
Site Purpose: monitor smoke/public information. This site is the new location for the EBAM monitor at the court building in Snowflake. This site is used for neighborhood monitoring of smoke.

Site Information			
AQS ID	None	ADEQ ID	139655
Address	145 S Main St. Snowflake, AZ 85937		
County	Navajo	Groundcover	Rooftop
CBSA	ShowLow	Latitude	34.5076
Surrounding Area	Residential	Longitude	-110.0785
Distance to road	n/a	Elevation	1,711 m
Traffic count	n/a	Site Established Date	06/23/2010

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}		
Network or Program	ADEQ-E-BAM		
Spatial Scale	Neighborhood		
Parameter start date at site	2010		

Site Photos	
	
Aerial view of the town of Snowflake	E-BAM on roof in Snowflake – date unkown

Sonora Nogales Fire Station
Site Purpose: special purpose monitoring. The site is located on the rooftop of the Fire Station. Nogales, Sonora, Mexico is located just south, approximately 600 meters of the Arizona/Mexico border. The surrounding area is dense urban commercial and residential use.

Site Information			
AQS ID	80-026-0005	ADEQ ID	16399
Address	Diaz and Avenue Adolfo Lopez Mateos Nogales, Sonora, Mexico		
County	Sonora	Groundcover	Rooftop
CBSA	None	Latitude	31.3258
Surrounding Area	Commercial/Residential	Longitude	-110.9447
Distance to road	3 m – NE	Elevation	1,202 m
Traffic count	n/a	Site Established Date	11/01/1993

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}	$PM_{2.5}$	
Network or Program	ADEQ-SPM	ADEQ-SPM	
Spatial Scale	Neighborhood	Neighborhood	
Parameter start date at site	11/01/1993	04/11/2010	

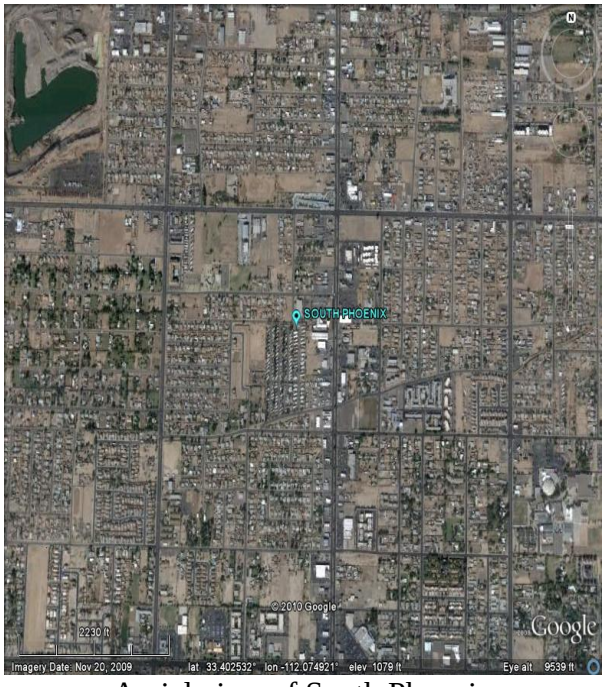
Site Photos	
 Aerial view of Sonora Nogales Fire Station	No photo

South Phoenix
Site Purpose: toxics network. The site is owned by MCAQD. ADEQ operates the toxics sampler at the site. 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	ADEQ ID	16377
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
Distance to road	83 m – W	Elevation	330 m
Traffic count	19,110 – Central Ave.	Site Established Date	01/01/1997

Monitoring Information			
Pollutant/Atmospheric parameter	Toxics		
Network or Program	TOXICS-UATMP		
Spatial Scale	Neighborhood		
Parameter start date at site	08/05/2001		

Site Photos



Aerial view of South Phoenix


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

Springerville
Site Purpose: monitor smoke/public information. The site is located on the roof of the Apache County Public Health Services District building. There is an open field to the south and west of the site, with SR 180/SR 260 to the east, and buildings to the north.

Site Information			
AQS ID	None	ADEQ ID	135133
Address	323 S. Mountain Ave., Springerville, AZ 85936		
County	Apache	Groundcover	Rooftop
CBSA	None	Latitude	34.1284
Surrounding Area	Residential/Commercial	Longitude	-109.2891
Distance to road	8 m – SW	Elevation	2,125 m
Traffic count	10,616 – S. Mountain Ave.	Site Established Date	09/24/2008

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}		
Network or Program	ADEQ-E-BAM		
Spatial Scale	Neighborhood		
Parameter start date at site	09/24/2008		

Site Photos

Aerial view of Springerville


Springerville E-BAM on roof of county building – 09/2008

Sycamore Canyon
Site Purpose: monitor regional haze and IMPROVE program. The site is located near the entrance to Camp Raymond Boy Scout Camp. Minimal obstructions exist in the area surrounding the site and no routine human activity occurs in the area surrounding the site. Sycamore Canyon Wilderness Area is 800 meters south of the site.

Site Information			
AQS ID	04-005-8103	ADEQ ID	16476
Address	Camp Kimball Rd. Flagstaff, AZ (Camp Raymond)		
County	Coconino	Groundcover	Dirt/Grass
CBSA	Flagstaff	Latitude	35.1406
Surrounding Area	Forest	Longitude	-111.9692
Distance to road	33 m – NW	Elevation	2,046 m
Traffic count	15,048 – I-40	Site Established Date	09/11/1991

Monitoring Information			
Pollutant/Atmospheric parameter	Aerosol		
Network or Program	IMPROVE		
Spatial Scale	Regional		
Parameter start date at site	09/11/1991		

Site Photos

Regional view of Sycamore Canyon


Shelter at Sycamore Canyon site – 09/2008

Tonto National Monument
Site Purpose: NAAQS compliance network, monitor regional haze, AQI forecasting, downwind transport from Phoenix area, and IMPROVE program. The site is jointly operated by ADEQ and USFS. The site is located at the base of Tonto National Monument, about 40 meters south of SR 188. The area surrounding the site is desert with Roosevelt Lake about 1,000 meters to the north in Tonto National Forest.

Site Information			
AQS ID	04-007-0010	ADEQ ID	16447
Address	South of SR 188 Roosevelt, AZ 85545		
County	Gila	Groundcover	Dirt/Rock
CBSA	Payson	Latitude	33.6547
Surrounding Area	Desert	Longitude	-111.1074
Distance to road	17 m – NE	Elevation	786 m
Traffic count	1,073 – SR 188	Site Established Date	04/23/1988

Monitoring Information			
Pollutant/Atmospheric parameter	O_3	Aerosol	
Network or Program	SLAMS	IMPROVE	
Spatial Scale	Urban	Urban	
Parameter start date at site	05/22/2002	04/23/1988	

Site Photos

Regional view of Tonto NM


Shelter at Tonto NM site – 03/2008

Tucson Transmissometer Receiver
Site Purpose: monitor urban haze. The site is operated by ADEQ and PCDEQ. The receiver is on the rooftop of the Pima County Health and Welfare building, while the transmitter is located on the Clinical Science Building at University of Arizona's Health Sciences Center. The two locations are approximately 1,100 meters apart, with residential, and commercial buildings in between.

Site Information			
AQS ID	None	ADEQ ID	16826
Address	150 W. Congress St. Tucson, AZ 85701		
County	Pima	Groundcover	Rooftop
CBSA	Tucson	Latitude	32.2217
Surrounding Area	Residential	Longitude	-110.9735
Distance to road	23 m – SE	Elevation	722 m
Traffic count	19,412 – Broadway Blvd.	Site Established Date	11/20/1992

Monitoring Information			
Pollutant/Atmospheric parameter	Bext	Temp/RH	
Network or Program	Urban Haze	Urban Haze	
Spatial Scale	Urban	Urban	
Parameter start date at site	11/20/1992	11/20/1992	

Site Photos

Aerial view of Tucson Transmissometer Receiver

Tucson Transmissometer Receiver on rooftop – date unknown

Tucson Transmissometer Transmitter
Site Purpose: monitor urban haze. The site is operated by ADEQ and PCDEQ. The transmitter is located on the rooftop of the Clinical Science Building at University of Arizona's Health Sciences Center, which is about 483 meters east of I-19. The receiver is on the rooftop of Pima County Health and Welfare building. The two locations are approximately 1,100 meters apart, with residential, and commercial between.

Site Information			
AQS ID	None	ADEQ ID	16655
Address	1501 N. Campbell Ave. Tucson, AZ 85719		
County	Pima	Groundcover	Rooftop
CBSA	Tucson	Latitude	32.2403
Surrounding Area	Residential/Commercial	Longitude	-110.9456
Distance to road	183 m – E	Elevation	786 m
Traffic count	40,256 – Campbell Ave.	Site Established Date	11/20/1992

Monitoring Information			
Pollutant/Atmospheric parameter	Bext		
Network or Program	Urban Haze		
Spatial Scale	Urban		
Parameter start date at site	11/20/1992		

Site Photos	
 Aerial view of Tucson Transmissometer Trasmitter	No Photo

Vehicle Emissions Laboratory
Site Purpose: AIR Now, AQI forecasting, PAMS, special study, monitor urban haze, and meteorological support. The site is located in the northwest corner of the Vehicle Emissions Laboratory property. The surrounding area is a both residential and commercial, with an open field directly to the north/northwest. The site is about 415 meters south of Red Mountain Freeway (Loop 202).

Site Information			
AQS ID	04-013-9998	ADEQ ID	16363
Address	600 N. 40th St. Phoenix, AZ 85008		
County	Maricopa	Groundcover	Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4553
Surrounding Area	Residential/Commercial	Longitude	-111.9961
Distance to road	66 m – E	Elevation	356 m
Traffic count	12,740 – 40th St.	Site Established Date	04/01/1987

Monitoring Information			
Pollutant/Atmospheric parameter	Bscat/$PM_{2.5}$	Wind	Temp/RH
Network or Program	SPM/AIRNow	ADEQ-MET	ADEQ-MET
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	06/25/2003	05/11/1999	05/11/1999

Monitoring Information			
Pollutant/Atmospheric parameter	Delta Temp	Ultraviolet Solar Radiation	Total Horizontal Solar Radiation
Network or Program	PAMS	PAMS	PAMS
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	05/11/1999	08/20/2004	06/18/1999

Monitoring Information			
Pollutant/Atmospheric parameter	Wind Profiler		
Network or Program	PAMS		
Spatial Scale	Neighborhood		
Parameter start date at site	01/01/1998		

Site Photos

Aerial view of Vehicle Emissions Laboratory

Wind profiler, meteorological tower, and shelter at VEL – 04/12/2005

Verde Ranger Station
Site Purpose: monitor smoke/public information The site is located at the Verde Ranger Station in Camp Verde. The monitor is located on a metal platform that is on a concrete slab surrounded by dirt and rocks. Ranger Station buildings are to the northeast and norhtwest and there are solar panels to the east of the monitor.

Site Information			
AQS ID	None	ADEQ ID	138696
Address	300 E. Highway 260 Camp Verde, AZ 86322		
County	Yavapai	Groundcover	Dirt
CBSA	Prescott	Latitude	34.5489
Surrounding Area	Residential/Desert	Longitude	-111.8472
Distance to road	70 m – S	Elevation	945 m
Traffic count	6,075 – SR 260	Site Established Date	01/01/2008

Monitoring Information			
Pollutant/Atmospheric parameter	PM_{10}		
Network or Program	ADEQ-E-BAM		
Spatial Scale	Neighborhood		
Parameter start date at site	01/01/2008		

Site Photos

Aerial view of Verde Ranger Station


E-BAM on platform at Verde Ranger Station – 2/2010

Yuma Supersite
Site Purpose: NAAQS compliance network and AQI forecasting. The site was reopened in 2008 to take the place of the Yuma Game & Fish site and is used to indicate ozone transport into the Phoenix metropolitan area from the Arizona/Mexico border. The particulate and the meteorological monitors have also been moved to this site to create one Yuma monitoring site. 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 kilometer to the northeast.

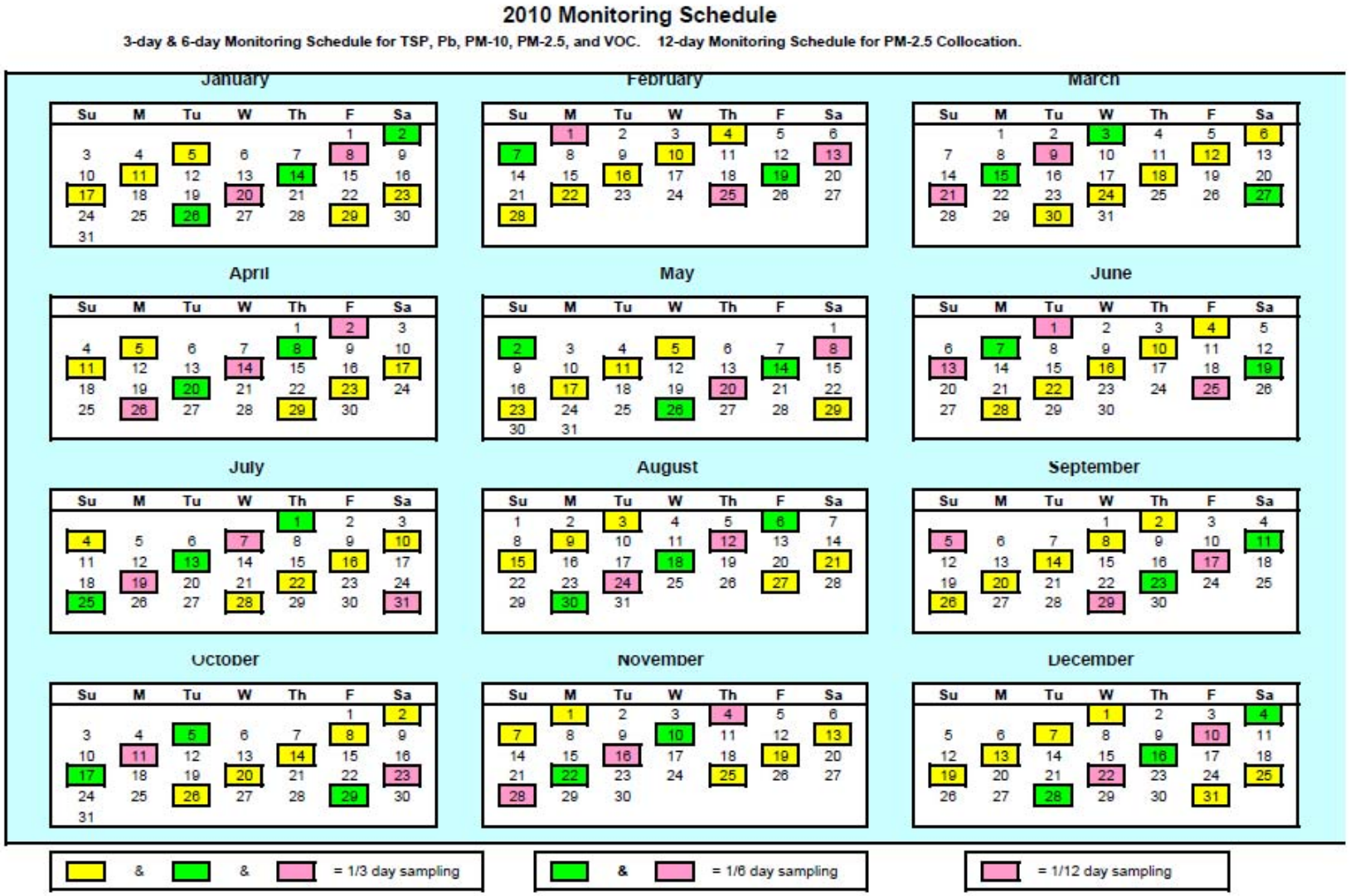
Site Information			
AQS ID	04-027-8011	ADEQ ID	113219
Address	2323 S. Arizona Ave. Yuma, AZ 85364		
County	Yuma	Groundcover	Rooftop
CBSA	Yuma	Latitude	32.6903
Surrounding Area	Commercial/Industrial	Longitude	-114.6144
Distance to road	91 m – W	Elevation	60 m
Traffic count	12,302 – Arizona Ave.	Site Established Date	02/01/2006

Monitoring Information			
Pollutant/Atmospheric parameter	O_3	PM_{10}	$PM_{2.5}$
Network or Program	SLAMS	SLAMS	SLAMS
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Parameter start date at site	05/06/2008	01/01/2010	01/01/2010

Monitoring Information			
Pollutant/Atmospheric parameter	Wind	Temp/RH	
Network or Program	ADEQ-MET	ADEQ-MET	
Spatial Scale	Neighborhood	Neighborhood	
Parameter start date at site	03/17/2010	03/17/2010	

Site Photos	
 Aerial view of Yuma Supersite	No Photo

Appendix E – 2010 EPA Monitoring Schedule



Appendix F – Rationale for Sitting ASARCO Hayden Pb at Globe Highway Site

ASARCO Hayden Pb monitor: Rationale for sitting ASARCO Hayden Pb monitor at Globe Highway Station based on discussion between ADEQ and EPA Region 9, March 31, 2010. The following was prepared by Region 9:

Source-oriented lead (Pb) monitoring is required for the ASARCO copper smelter in Hayden, Arizona. ADEQ chose the Globe Highway Station site after an analysis that considered source emission characteristics, past monitoring, and the topography and meteorology of the facility location.

A 1987 source apportionment study using the Chemical Mass Balance model concluded that 80% of the PM_{10} Pb came from process fugitive emissions within the smelter ("Source Apportionment of Suspended Particles and Toxic Elements in Hayden, Arizona, Final Report", NEA Inc., April 15, 1987). Direct observation by ADEQ staff confirmed that particulate plume emanates principally from the smelter building itself, rather than from other sources such as ore handling facilities or re-entrained dust from storage piles. Because of the high temperatures involved in the smelting process, this plume is buoyant and has substantial vertical velocity, reaching to 100 feet or more above ground level. Unlike for non-buoyant ground level plumes, the highest ground level concentrations from such a buoyant plume would not be expected to occur immediately adjacent to the facility.

Because the bulk of SO_2 emissions are also thought to be emitted as buoyant fugitives from the smelter building, 1970's monitoring of SO_2 is relevant for Pb. (Since the stack is 1,000 feet tall, SO_2 impacts from stack emissions occur farther away and are diluted by the time stack plume reaches the ground.) At that time SO_2 monitoring was conducted at twelve different monitor locations; Globe Highway Station was found to have the highest concentrations. Because of the similar emission characteristics of SO_2 and Pb fugitives, this suggests Globe Highway may also have the highest concentrations for Pb.

The ASARCO Hayden smelter is located in very complex terrain, with the Gila River making a winding semi-circle east to south of the facility, and intersected by the San Pedro River valley from the south. The facility itself is elevated relative to the valleys; there is a 200 foot hill just south of the facility, and mountains rising toward the north/northeast. The varied terrain causes complex wind flow. Within and adjacent to the river valleys, drainage winds tend to dominate at night under stable conditions, toward the west on the south and west of the facility, and toward the south on the east of the facility. However, given the buoyancy of the smelter building fugitive plume, and the facility's elevated location, emissions typically rise above these surface flows and would not be expected to result in high Pb concentrations. During the day under convective conditions, good vertical mixing causes polluted air to reach the ground. The vertical mixing also causes the flow to be coupled with winds aloft, which generally flow toward the east. As was the case for SO_2, these are the conditions expected to lead to high Pb concentrations and that also carry the plume east, toward the Globe Highway Station.

Should placement of another Pb-TSP monitor be possible, EPA supports placement west of the smelter building, to capture winds moving east to west over the smelter area.