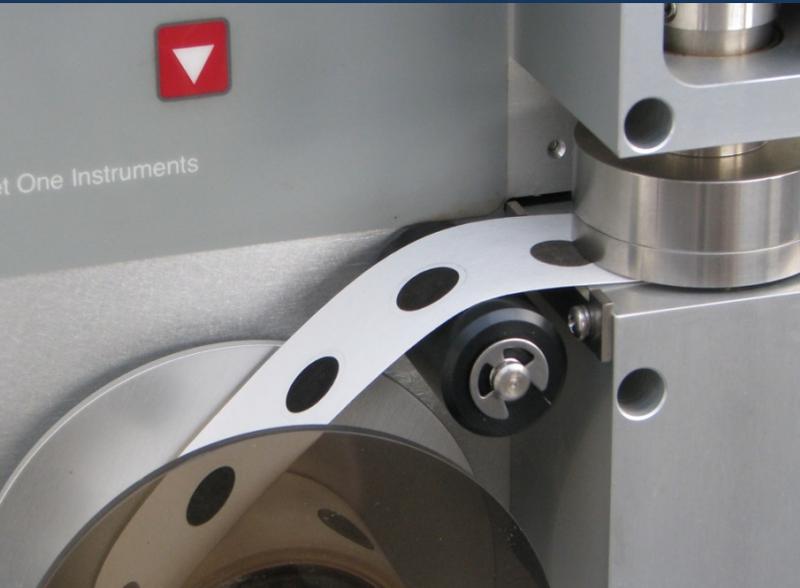


FINAL

2014 AIR MONITORING NETWORK PLAN



Maricopa County
Air Quality Department

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ACKNOWLEDGEMENTS

In 2014, the Maricopa County Air Quality Department's Air Monitoring Division maintained 25 ambient air monitoring sites throughout Maricopa County. The division has eighteen team members including: one manager, two technician supervisors, two engineers, one quality assurance officer, one data analyst, and eleven technicians.

The division would especially like to thank all of its personnel and the department's atmospheric scientist for their excellent job in helping to maintain Maricopa County's air monitoring program. They are: Ben Davis, Gary Ensminger, Robert Dyer, Ceresa Stewart, Nikki Peterson, Casey Bryan, John Neff, Tom Shorb, Chris Hernandez, Hugh Tom, Steve Sample, Daniel Daniels, Robert Sawicki, Reynaldo Santillano, Larry Seals, Alex Herrera, Freddie Alejandro, Tom Dubishar, David Dubiel, and Ron Pope, respectfully.

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Last, we would like to thank the United States Environmental Protection Agency's Region 9 personnel for their guidance and support regarding our air monitoring program. The department respectfully submits this 2014 Air Monitoring Network Plan to Region 9 for review.



2014 Maricopa County Air Monitoring Team

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KEY TO ACRONYMS AND TERMS

98th percentile	The 98 th percentile is defined in <i>40 CFR Part 50 Appendix N</i> as “the smallest daily value out of a year of PM _{2.5} mass monitoring data below which no more than 98 percent of all daily values fall using the ranking and selection method specified in section 4.5(a) of this appendix”.
ADEQ:	Arizona Department of Environmental Quality
ADT:	Average Daily Traffic count
aka:	Also known as
AMD:	Air Monitoring Division
AMNP:	Air Monitoring Network Plan. The plan provides information regarding the establishment and maintenance of the County’s air quality surveillance system that consists of a network of SLAMS monitoring stations and SPM monitoring stations.
Analyzer:	A monitor that samples the air and produces near real-time data without collecting a sample that must be analyzed.
ANSI:	American National Standards Institute
AQI:	Air Quality Index. An index that applies to each criteria pollutant and shows the concentration of each pollutant relative to its respective standard. When the AQI reaches 101, the pollutant’s concentration has exceeded the NAAQS.
AQS:	The Air Quality System, sometimes defined as the Air Quality Subsystem. The U.S. EPA’s ambient air database.
ASQ:	American Society for Quality
Attainment:	This refers to an area being in compliance with a NAAQS and the U.S. Clean Air Act. After several years of no violations of a NAAQS, the EPA can classify a geographic area as in attainment for a particular CP.
AWT:	Average Weekday Traffic count
BAM:	Beta Attenuation Monitor. A continuous particulate measuring instrument used previously by MCAQD to measure PM ₁₀ .
CAA:	Clean Air Act
CASAC:	Clean Air Scientific Advisory Committee
CBSA:	Core-Based Statistical Area – is defined by the U.S. Office of Management and Budget as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least 10,000 in population, plus adjacent counties having a high degree of social and economic integration.
CFR:	The <i>Code of Federal Regulations</i> are published annually and contain the codification of the general and permanent rules published in the <i>Federal Register</i> by the executive departments and agencies of the Federal Government. An <i>eCFR</i> is a free electronic version; however, it is not the legal version.
Class I:	Federally designated parks or wilderness areas with mandated visibility protection.
CP:	Criteria pollutant, or the Central Phoenix site, depending upon context

CO:	Carbon monoxide, a criteria pollutant
Collocated:	The practice of establishing a second pollutant monitor within a specified distance and of a specified type at a monitoring site for QA purposes.
Continuous monitor:	A method of monitoring air pollutants that is continually measuring the quantity of the pollutant, either gaseous or particulate. Continuous monitors are analyzers that can obtain real-time or short-term averages of pollutants. Continuous monitors may also be referred to as “automated” monitors.
Criteria Pollutants:	Six pollutants (CO, O ₃ , NO ₂ , Pb, PM, and SO ₂) that have NAAQS established by the U.S. EPA.
CSA:	Combined Statistical Area - is defined by the U.S. Office of Management and Budget as when very large cities combine two or more CBSAs, these larger areas are referred to as combined statistical areas
CSN:	The chemical speciation network. A nationwide, research air monitoring network designed to ferret-out the chemical constituents of PM _{2.5} and to discern trends in PM _{2.5} pollution. This program is managed by the U.S. EPA Office of Air Quality Planning and Standards (OAQPS).
Delta T:	Difference between two levels of temperature measurements. Delta T is measured in the MCAQD network at heights of 2 and 10 meters. A higher temperature at the upper level indicates a temperature inversion.
Design Value:	A design value is a statistic that describes the air quality status of a given area relative to the level of the NAAQS. For a concentration-based standard, the air quality design value is simply the standard-related test statistic. The design value of a pollutant monitoring network is the highest sample value in the network used to compare to the NAAQS; i.e., the 24-hour PM _{2.5} design value for the network is the monitor with the highest 3-year average of the 98 th percentile.
EBAM:	E-Beta Attenuation Monitor is a rugged, portable, battery or solar-operated analyzer that is suitable for obtaining and reporting continuous measurements of particulate matter in remote locations. EBAMs are often equipped with wind speed and direction instrumentation as well. EBAMs are particularly useful for temporary measurements of PM related to an event.
EPA R9:	Environmental Protection Agency Region 9
EE:	Exceptional Event – a high CP pollution event that is considered to be uncontrollable and caused by natural sources of pollution or an event that is not expected to recur at a given location. An EE can apply to any CP, but historical in Maricopa County, almost all EEs are related to high PM ₁₀ events.
Event:	Generally refers to a high pollution day where a NAAQS was exceeded
Exceedance:	Generally refers to a high pollution day where a NAAQS was exceeded
FDMS-TEOM:	Filter Dynamics Measurement System-Tapered Element Oscillating Microbalance. A continuous particulate analyzer used by MCAQD to measure PM _{2.5} .
FEM:	Federal Equivalency Method. An EPA-approved method of sampling and analyzing the ambient air for an air pollutant, i.e., includes the monitor and its operating firmware and procedure(s). An FEM must pass required testing found in <i>40 CFR Part 53</i> and show CP data produced are similar to the Federal Reference Method (FRM). Continuous particulate matter and some gaseous analyzers are FEMs.

Filter-based sampler:	A method of monitoring particulate pollution that involves exposing a pre-weighed filter to a specific flow rate for a prescribed period of time, usually midnight to midnight, or 1440 minutes. The filters are then post-weighed to determine the mass of particulates per volume, e.g. $\mu\text{g}/\text{m}^3$.
FRM:	Federal Reference Method. An EPA-approved method of sampling and analyzing the ambient air for an air pollutant, i.e., includes the monitor and its operating firmware and procedure(s). An FRM must pass required testing found in <i>40 CFR Part 53</i> and show CP data produced are accurate based on acceptable precision and bias limits. These methods are the baseline that all other methods reference, e.g. Federal Equivalency Methods (FEM).
HAPs:	Hazardous air pollutants. An airborne chemical that has been listed in the federal Clean Air Act and has an associated standard or process requirement determined for it.
MAG:	Maricopa Association of Governments
MCAQCED:	Maricopa County Air Quality Compliance and Enforcement Division
MCAQD:	Maricopa County Air Quality Department
MO:	monitoring organization
Monitor:	Monitor is a term that refers to an instrument, sampler, analyzer, or other device that measures or assists in the measurement of atmospheric air pollutants and which is acceptable for use in ambient air surveillance under the applicable provisions of <i>40 CFR Part 58 Appendix C</i> .
$\mu\text{g}/\text{m}^3$:	micrograms per cubic meter
μm:	micrometers
MSA:	Metropolitan Statistical Area is designated by the U.S. Office of Management and Budget as a geographical area based on the concept of a core area with a large population nucleus, plus adjacent communities having a high degree of economic and social integration within that core. Metropolitan and micropolitan statistical areas are the two categories of CBSAs. Metropolitan areas have populations greater than 50,000, and micropolitan areas have populations between 10,000 and 50,000. The AMD operates air monitoring stations within the Phoenix-Mesa MSA, which includes portions of Maricopa and Pinal County.
NAAQS:	National Ambient Air Quality Standards. Health and welfare-based standards established by the U.S. EPA that set permissible airborne concentration limits for the CPs.
NATTS:	National Air Toxics Trend Stations. A nationwide research air monitoring program designed to measure toxic air pollutant trends. This program is managed by the U.S. EPA Office of Air Quality Planning and Standards (OAQPS).
NCORE:	<u>National Core</u> multi-pollutant site. A national network of multi-pollutant monitoring sites used to represent the nation as a whole. There are currently ~75 NCORE sites (1-3 per state plus Washington D.C., Virgin Islands, and Puerto Rico) located in both urban and rural areas. This program is managed by the U.S. EPA Office of Air Quality Planning and Standards (OAQPS).
Network:	All stations of a given type or types
NO₂:	Nitrogen dioxide. The indicator compound used to gauge the ambient concentration of NO _x .

NO_x:	Nitrogen oxide(s), a criteria pollutant. The sum of nitric oxide (NO), NO ₂ , and other nitrogen-containing compounds.
Nonattainment:	This refers to being an area not being in compliance with a NAAQS and the U.S. Clean Air Act. After several years of violating a NAAQS, the EPA can classify a geographic area as being in nonattainment for a particular CP.
O₃:	Ozone, a criteria pollutant
OAQPS:	The U.S. EPA Office of Air Quality Planning and Standards located in Research Triangle Park, N.C., which serves as EPA “Headquarters” for ambient air monitoring guidance and the NAAQS reviews.
PAMS:	Photochemical Ambient Monitoring Stations. A nationwide research air monitoring program designed to measure specific airborne chemicals that are known to be “precursor pollutants” that form ozone when combined with ultraviolet light and heat. This program is managed by the U.S. EPA Office of Air Quality Planning and Standards (OAQPS).
PCAQCD:	Pinal County Air Quality Control District
Pb:	Lead, a criteria pollutant
PM:	Particulate matter, also known as “particulates”, project manager, or preventative maintenance depending on context
PM_{2.5}:	Particulate matter 2.5 micrometers in aerometric diameter or smaller, a criteria pollutant. PM _{2.5} is also referred to as “fine” particulate matter.
PM₁₀:	Particulate matter 10 micrometers in aerometric diameter or smaller, a criteria pollutant
PM_{10-2.5} and/or PM_c:	“Coarse” particulate matter is less than 10 micrometers, but recently, has come to mean PM ₁₀ minus PM _{2.5} , not currently regulated as a lone a criteria pollutant.
ppb:	parts per billion
ppm:	parts per million
PQAO:	Primary quality assurance organization - a monitoring organization (MO) or other organization that is responsible for a set of air monitoring stations that monitor the same pollutant and for which data quality assessments can be pooled. Each criteria pollutant sampler/monitor at a monitoring station in the SLAMS and SPM networks must be associated with one, and only one, primary quality assurance organization.
Primary Standard:	The portion of the NAAQS designed to protect public health.
QA:	Quality assurance – generally refers to the administrative or managerial processes in place to verify that quality control activities are successfully carried out by personnel and that data produced meet specified quality requirements prior to use, i.e., written guidance documents, program oversight activities, etc.
QC:	Quality control – generally refers to the technical activities in place to produce high quality data, i.e., air monitoring instruments operate within specified criteria, data collection from sites, etc.
Quality System:	The overall system of technical activities that measure the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer. (see <i>ANSI/ASQ E4-2004</i>)

RRNS:	Rapid Response Notification System - a communication tool used by MCAQD to manage high pollution events by alerting residents, intergovernmental personnel, and stakeholders of increasing PM concentrations.
Sampler:	A monitor that collects a physical sample for analysis.
Secondary Standard:	The portion of the NAAQS designed to protect public welfare and the environment.
SIP:	State Implementation Plan. SIPs are a collection of state and local regulations and plans to achieve healthy air quality under the Clean Air Act.
Site:	A site is a geographic location. One or more air monitoring stations may be located at a site.
SLAMS:	State and Local Air Monitoring Station. The SLAMS consist of a network of approximately 5,000 monitoring stations nationwide whose size and distribution is largely determined by the needs of State and local air pollution control agencies to meet their respective State implementation plan (SIP) requirements. Other types of monitoring stations include: NCORE (national core) and SPM (special purpose). Currently, AMD does not operate an NCORE station, and we only operate one SPM site.
SO₂:	Sulfur dioxide, a criteria pollutant
SPM:	Special Purpose Monitor. A special purpose monitor provides data for special studies needed by the State and local agencies to support SIPs and other air program activities. The SPMs are not permanently established as part of a particular pollutant's monitoring station(s); their location can be adjusted easily to accommodate changing needs and priorities.
SSI:	Size Selective Inlet. The inlet used on high- and low volume particulate samplers and analyzers to determine the size of particles sampled or measured by the monitor. The particle size separation process usually employs impaction, filtration, or cyclonic flow.
Station:	A station may comprise a single CP monitor, or a group of monitors with a shared objective, located at a particular site.
TEOM:	Tapered Element Oscillating Microbalance. A continuous FEM PM analyzer used by MCAQD to measure PM ₁₀ and/or PM _{2.5} concentrations, depending upon the instrument model and sample inlet configuration.
tpy:	tons per year
UATMP:	Urban Air Toxics Monitoring Program. A nationwide research air monitoring program designed to measure toxic air pollutants within urban areas. This program is managed by the U.S. EPA Office of Air Quality Planning and Standards (OAQPS).
U.S. EPA:	United States Environmental Protection Agency
VOC:	Volatile organic compound. VOCs are chemical compounds that can easily vaporize and enter the atmosphere. There are many natural and artificial sources of VOCs; solvents and gasoline make up some of the largest artificial sources. VOCs will react with NO _x in the presence of sunlight to create ground-level O ₃ pollution.
Volume:	The amount of air sampled onto a filter or other medium, or into a collection device such as a canister. Volume is calculated by multiplying the sampler's flowrate and the time period sampled, usually in minutes. The amount of data in a file or database.

ABSTRACT

In 2014, the Maricopa County Air Quality Department (MCAQD) Air Monitoring Division (AMD) successfully operated a robust air quality surveillance system that monitored for regulated ambient air pollutants as per *40 CFR Parts 50 and 58*. This plan documents how the system performed during 2014. The data generated by the system are intended for regulatory compliance determinations regarding regulated ambient air pollutants. Data met EPA's requirements of quality, which must occur before data can be used in this capacity. Notable accomplishments included the startup of our first near-road air monitoring station, which opened in February 2014. Significant advances occurred with establishing our second near-road monitoring station, which is scheduled to open in 2015.

The plan describes changes that need to be made to monitors, stations, and/or sites. In 2014, we did not request any waivers from air monitoring regulations, except for air monitoring waivers when access to a site prevented data collection for an extended period of time. When data collection interruptions occurred due to temporary or permanent site shutdowns, we made personnel at the Environmental Protection Agency's Region 9 (EPA R9) office aware of the situation immediately. Notably, our Higley site's location was closed in November 2014 due to the landowner needing use of their property, which housed the air monitoring station. We requested to suspend monitoring at this site until a suitable replacement location could be identified and established. We are working to secure a replacement site as close as possible to the previous geographic location so the same population is represented. There were no other waivers requested from regulatory requirements or to suspend air monitoring in 2014.

The department also performed specialized air monitoring projects that included, but were not limited to: collecting particulate filter samples for chemical speciation over the 2014 Thanksgiving, Christmas and New Year's holidays, planning a temporary air monitoring network for the 2015 Superbowl, and establishing temporary monitoring for emergency events.

Department personnel maintained successful working relationships with regulatory agency representatives, customers, and stakeholders. We provided our data to personnel from these groups as requested, and we responded to calls from the public regarding air monitoring questions. In late 2014, ADEQ decommissioned their gravimetric laboratory, and now, we process and weigh Arizona Department of Environmental Quality's (ADEQ) filter samples. Last, we assisted Pinal County Air Quality Control District (PCAQCD) and the Fort McDowell Yavapai Nation by temporarily loaning air monitors to them for special projects or to prevent data interruption due to their monitor being non-operational; however this information is not covered in detail. We continued to enhance our air monitoring website for the public's benefit as well.

INTRODUCTION TO THE AIR MONITORING NETWORK PLAN

Each year, MCAQD produces a comprehensive Air Monitoring Network Plan (AMNP) that provides vital information regarding the air monitoring surveillance system in place for Maricopa County. The EPA requires each air monitoring organization (MO) operating within the U.S and its territories to submit their plan on July 1st following a 30-day public comment period by way of *40 CFR Part 58, Subpart B §58.10(a)(1)*. This year's AMNP was submitted to EPA R9 in September 2015.

The AMNP is preliminary to our annual data certification for EPA R9, and it helps us review and assess the quality of our data before submitting it for certification. The plan's secondary purpose is to inform the public of air pollutants that can potentially affect human health; thereby empowering our citizens and visitors with the ability to make informed decisions regarding their daily activities and lifestyles.

The plan describes our air monitoring system, which can be referred to as a conglomeration of six criteria pollutant (CP) networks, or a single, broad network that includes all 25 monitoring sites. It includes an abundance of information regarding each CP network's operation and data findings as well as brief information regarding special purpose and/or research-driven air monitoring. The plan's information includes, but is not limited to:

- Descriptions of air monitoring sites, i.e., site type and objective, spatial scale represented, geographic coordinates, and Air Quality System (AQS) site identification number;
- Each monitoring station's EPA classification, operating (sampling) schedule, the monitoring method in operation, and any laboratory analytical method used for analyzing physical samples if applicable;
- The population each monitor represents, e.g., Metropolitan Statistical Area (MSA), Core-based Statistical Area (CBSA), or the Combined Statistical Area (CSA);
- Information showing each monitor's siting and operating criteria met applicable regulatory requirements found in *40 CFR Part 58 - Appendices A (quality assurance), C (special purpose monitors), D (comparability of data to the National Ambient Air Quality Standards), and E (currently reserved)*;
- Confirmation that data generated are or are not of suitable quality for comparison to the NAAQS, i.e., regulations that establish the ambient limit(s) for each CP;
- Required design value criteria, which are metrics used to determine how many monitoring stations/monitors are required to operate within a CP network;
- Three years of data from each station plus required statistical analyses;
- The NAAQS compliance status of each CP and how MCAQD plans to review and address a violating monitor;
- Any proposed changes, e.g., additions, relocations, and discontinuations to monitors, stations, and/or sites within the next 18 months;
- Any proposed changes to the monitoring or analytical methods employed by the County's surveillance system;
- Any requests for waivers from specific air monitoring requirements; and
- Public comments received regarding the draft AMNP and MCAQD's responses to the comments as requested by EPA R9.

The MCAQD first produces a draft AMNP and solicits public comments on the draft. Following the public comment period, the MCAQD amends the draft as needed. Then, the AMNP is sent to EPA R9 for review and approval, or disapproval. The EPA R9 completes the review process within 120 days of receiving the plan, and the EPA R9 administrator, or their representative, must specifically approve the requests for network changes and waivers. If the plan is not approved, then the MCAQD addresses the concerns presented by EPA R9 personnel, and resubmits the revised plan. Once the plan is approved, MCAQD posts it on our website, and the EPA makes it available to other MOs through the EPA's [Ambient Monitoring Technology Information Center \(AMTIC\) website](#).

The map below shows the location of MCAQD's air monitoring sites discussed in this year's plan (see Figure 1).

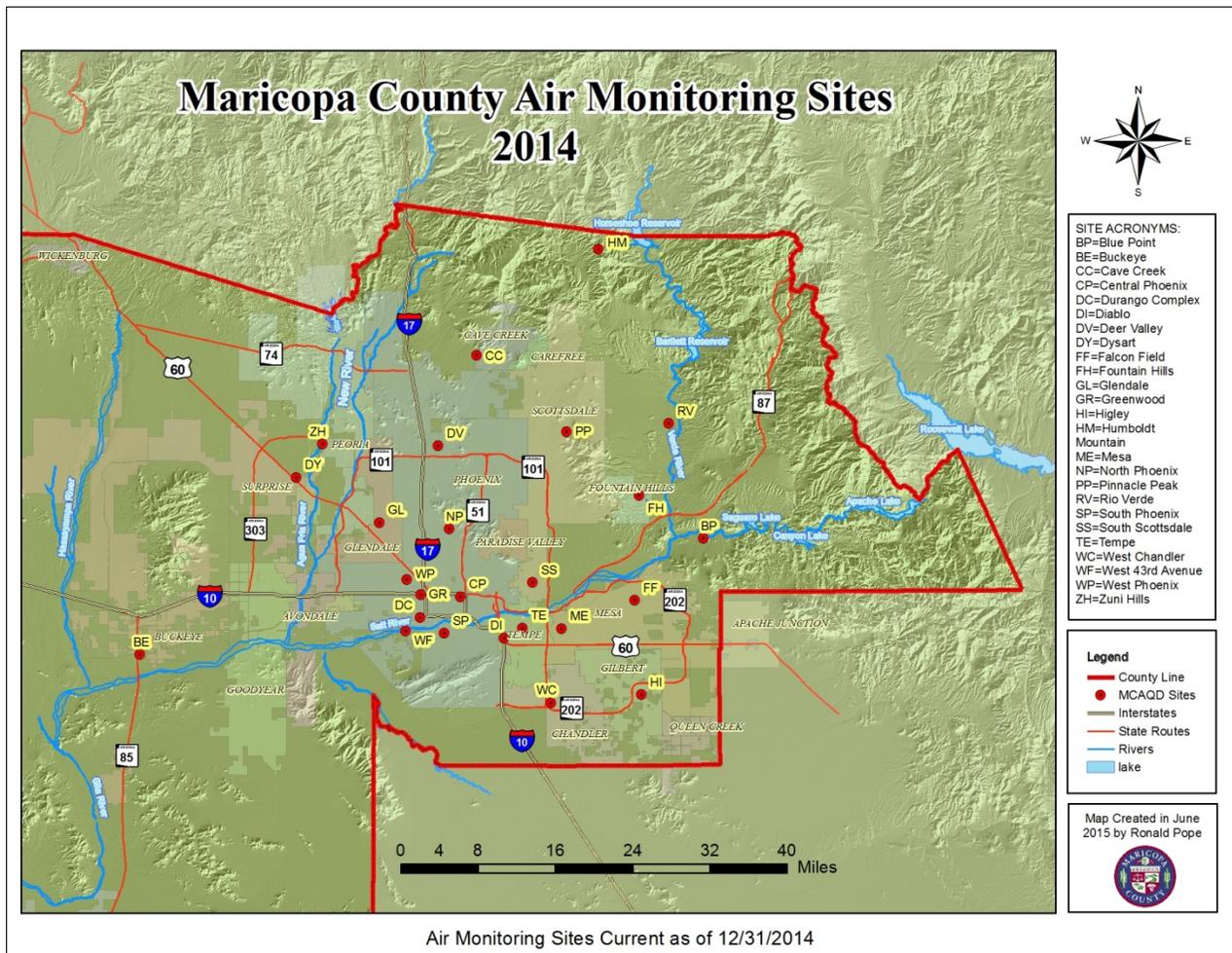


Figure 1. Air Monitoring Site Map

Overview of the Clean Air Act and Criteria Pollutants

Between the years 1900 and 1970, the emission of six principal ambient air pollutants increased significantly. The principal pollutants, referred to as CPs, occur throughout the U. S. The CPs are: carbon monoxide (CO), lead (Pb), nitrogen oxides (NO_x) with nitrogen dioxide (NO₂) used as the indicator compound, ozone (O₃), particulate matter ≤10 micrometers (PM₁₀) and ≤2.5 micrometers (PM_{2.5}), and sulfur dioxide (SO₂). Criteria pollutants are known to cause health problems, property damage, and harm the environment. These issues led to the Clean Air Act (CAA) being signed into law in 1970. The CAA, and its amendments, provides the framework for all pertinent State/Local/Tribal (S/L/T) organizations to assess and protect air quality through an air monitoring program. The MCAQD monitors for all six CPs.

The U.S. EPA regulates CPs using the National Ambient Air Quality Standards (NAAQS), which establish ambient limits for each CP using health-based criteria. One set of limits, called “primary standards,” are designed to protect public health, while another set called “secondary standards”, are designed to protect public welfare, i.e., the prevention of damage to property such as farm crops and buildings, preservation of national parks and monuments, and the protection of wildlife. The U.S. EPA’s Regional Offices oversee the enforcement of the CAA, and monitoring agencies operating within Arizona fall under the jurisdiction of EPA R9. The U.S. EPA Office of Air Quality Planning and Standards (OAQPS) oversees the air monitoring program nationwide and the review of the NAAQS.

The NAAQS are not static. The CAA requires that they undergo periodic review using the most recent scientific, health-based information available. Historically, when a NAAQS limit is changed, it is lowered and becomes more stringent, or “conservative”. Lowering a NAAQS limit occurs when it is considered necessary to better protect the public’s health and/or welfare. The NAAQS review is a lengthy process that assesses the science upon which each NAAQS is based as well as the standard itself. The Clean Air Scientific Advisory Committee (CASAC) provides independent advice to EPA concerning the need to change a standard. In addition, comments are accepted from health researchers, air quality professionals, and the public. More information regarding the [NAAQS review process](#) is available at EPA’s website.

The National Ambient Air Quality Standards

The NAAQS are geared toward improving air quality in geographical areas where the current quality is unacceptable as well as preventing air quality deterioration in geographical areas where the air is relatively free of pollution. Table 1 shows a summary of the current primary and secondary standards for each CP. Because each CP has different health effects and environmental damage potential, the NAAQS limit(s) are different for each pollutant. Some pollutants have standards for both long-term and short-term averaging times. The short-term standards are designed to protect against acute health effects, while the long-term standards are designed to protect against chronic health effects.

Table 1. National Ambient Air Quality Standards

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide		primary	8-hour	9 ppm	Not to be exceeded more than once per year on avg. over 3 years
			1-hour	35 ppm	
Lead		primary / secondary	Rolling 3-month average	0.15 $\mu\text{g}/\text{m}^3$	Not to be exceeded
Nitrogen Dioxide		primary	1-hour	100 ppb	98 th percentile of 1-hour daily maximum concentrations, avg. over 3 years
		primary / secondary	Annual	53 ppb	Annual Mean
Ozone		primary and secondary	8-hour	0.075 ppm	3-year avg. of the annual fourth highest daily max 8-hour avg.
Particulate Matter	PM _{2.5}	primary	Annual	12 $\mu\text{g}/\text{m}^3$	3-year avg. of the annual means
		secondary	Annual	15 $\mu\text{g}/\text{m}^3$	3-year avg. of the annual means
		primary / secondary	24-hour	35 $\mu\text{g}/\text{m}^3$	3-year avg. of the 98 th percentiles
	PM ₁₀	primary / secondary	24-hour	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		primary	1-hour	75 ppb	99 th percentile of 1-hour daily max., averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: Adapted from the table shown on the [EPA's NAAQS webpage](#).

The Air Quality Index

To better communicate current CP health risks to the public, EPA developed the Air Quality Index (AQI), a health risk communication tool that converts CP concentrations into six health-impact related color-coded indices based upon the NAAQS. The AQI communicates air quality conditions using the graduated color scheme shown on Table 2. The AQI can be used to provide an overall air quality value by combining multiple CP concentrations as well as an air quality value for each CP, except NO₂, which is the only CP that does not have an AQI association. The AQI values change throughout the day based on the current data.

Developing AQIs was furthered over the past few years by continuous analyzers replacing many of their sampler predecessors; thereby making data available electronically as it is generated. Currently, many MOs, including MCAQD, provide near real-time CP data to their agency’s website and/or the EPA’s website. It is worth noting that the AQI and air quality forecasts are based on preliminary data, i.e., data that have not passed quality assurance (QA) tests. Occasionally, these data may contain some error.

Having continuous air monitoring data helps air quality professionals gauge current, local air quality conditions. Air quality forecasters may provide projected AQI values for the next 24 to 48 hours so the public can better prepare for expected air quality conditions. The public may use the AQI values to reduce their exposure to air pollution and its associated health effects by modifying their daily activities.

Table 2. The Air Quality Index

Index	Color Designation	Air Quality	Health Impact
0 – 50	Green	Good	No harmful effects expected.
51 – 100	Yellow	Moderate	Unusually sensitive people should consider limiting prolonged outdoor exertion.
101 – 150	Orange	Unhealthy for Sensitive Groups	Active children & adults, people with respiratory disease (e.g., asthma) should limit prolonged outdoor exertion.
151 – 200	Red	Unhealthy	Everyone should observe caution. Avoid prolonged outdoor exertion.
201 – 300	Purple	Very Unhealthy	Avoid all outdoor exertion. Use extreme caution outdoors.
301 – 500	Maroon	Hazardous	Everyone should avoid all outdoor exertion.

Source: 40 CFR Part 58, Appendix G - Uniform Air Quality Index (AQI) and Daily Reporting

The AQI is used throughout the U.S. and the [EPA AIRNow website](#) provides air pollution forecast maps for O₃ and PM_{2.5}, plus real-time air pollution maps with CO, O₃, PM₁₀, and PM_{2.5} data for major metropolitan areas, including the Phoenix metropolitan area. Again, different colors on the map indicate health risks using pollutant concentrations. Figure 2 shows there is a moderate health risk due to O₃ and PM_{2.5} within the yellow area and an increased risk for unhealthy or sensitive groups within the orange area.

The MCAQD has participated in the AIRNow AQI program since 2001. The MCAQD, in cooperation with ADEQ and PCAQCD, expanded the area that the maps cover. This area now includes sites as far east as Queen Creek, as far south as Casa Grande, and as far west as Palo Verde.

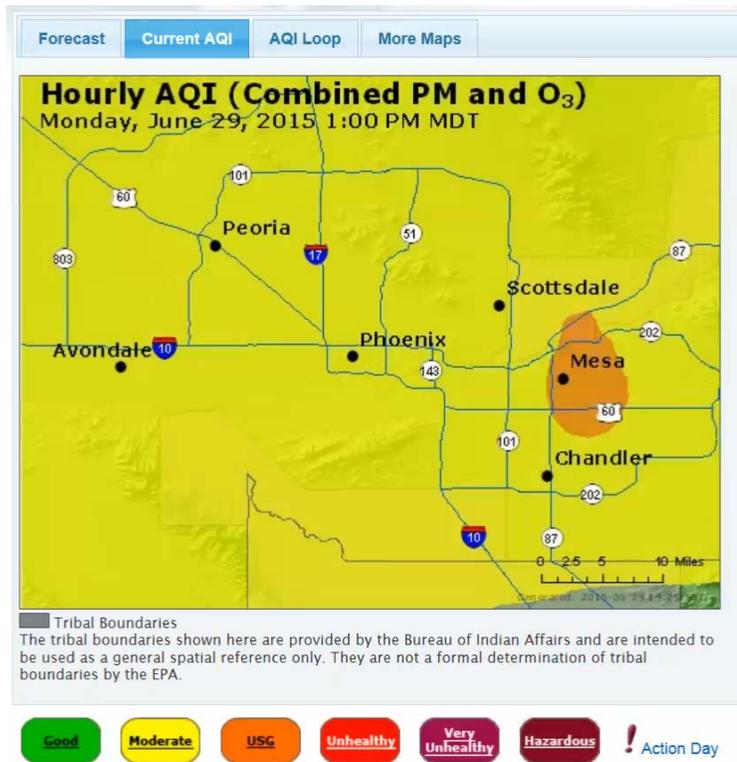


Figure 2. AIRNow AQI Forecast Map

Source: EPA AIRNow Website

Figure 3 shows the [MCAQD website](#), which also provides AQI values for our local air monitoring sites in colored circles.

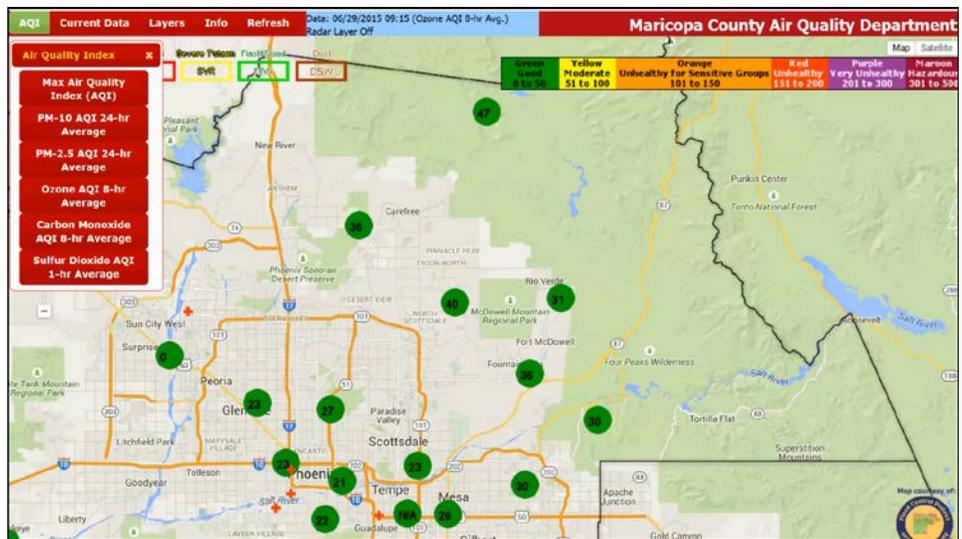


Figure 3. Maricopa County’s AQI Map

Source: MCAQD’s Air Quality Website

Information Regarding the Causes, Characteristics, and Compliance of Criteria Pollutants

The information regarding air pollutants was compiled from various pages at the EPA's [Air and Radiation website](#).

Carbon Monoxide (CO)

Carbon monoxide is a colorless, odorless gas found in both outdoor and indoor air. Carbon monoxide is primarily formed by the incomplete combustion of fossil fuels, e.g., carbon-containing fuels, and the photochemical reactions of gases in the atmosphere. Carbon monoxide is produced by both natural and anthropogenic sources, e.g., human activities. One of the more significant anthropogenic sources of CO is automobile exhaust, which currently contributes to about 50 percent of CO emissions nationwide. Concentrations of CO from motorized vehicles lowered considerably over the last two decades partly due to replacing carburetors with fuel injectors, which results in a more complete combustion of fuel. Industrial processes use CO to synthesize many compounds such as acetic anhydride, polycarbonates, acetic acid, and polyketones, which contributes some CO emissions. Carbon monoxide is emitted from the manufacturing of carbon black, which is used in numerous industrial applications such as a pigment in paints and as a reinforcing filler material in tires and rubber products. Natural, or biogenic, sources of CO emissions include volcanic emissions and smoke from wildfires. Smoke from tobacco, cooking, fireplaces, and woodstoves contribute to indoor exposure to CO. The global CO background measurements in ambient air are usually in the range of 25-350 ppb in the unpolluted atmosphere. Concentrations of CO tend to peak in the colder, winter months.

Many factors can influence a person's potential to respond adversely to CO exposure including: pre-existing medical disorders or disease states, age, gender, lifestyle, or increased CO exposures. People are considered to be at greater risk from chronic CO exposure when they live close to CO sources, including heavily travelled roadways. The population that is considered most at-risk from CO exposure includes: people with cardiovascular diseases, i.e., heart problems such as coronary artery disease and congestive heart failure, people with breathing problems due to chronic bronchitis, asthma, and chronic obstructive pulmonary disease, and people who suffer from anemia. Additional populations that may be at-risk include infants, children, and pregnant women; however, more study is needed in this area.

Carbon monoxide enters the body through inhalation, and the body eliminates CO primarily through exhalation and to a lesser extent through metabolic activity. After being inhaled, CO enters the bloodstream and binds to the blood's hemoglobin; thereby forming carboxy-hemoglobin that displaces oxygen (O₂) in the blood. This reduces the blood's capacity to carry O₂ to organs and tissues and causes the body to become O₂ deprived. This deprivation of O₂ is called hypoxia. This can adversely affect those with anemia, because anemia already reduces the blood's ability to carry O₂. Exposure to CO can result in a type of cardiovascular disease called ischemic heart disease, especially for those with existing heart problems. The central nervous system is adversely affected by CO as well. Acute exposure to severely high levels of CO is toxic and potentially fatal, and its effects on the body are well-known and widely studied. According to the [Agency for Toxic Substances and Disease Registry](#), severe acute poisoning can cause cardiac arrest, heart attack, seizures, hypotension, respiratory arrest, noncardiogenic pulmonary edema, and coma. Moderate exposure may include many symptoms such as: confusion, chest pain, and weakness. Mild exposure may lead to symptoms that include: headache, nausea, vomiting, dizziness, and blurred vision.

Furthermore, studies show that when CO is released into the environment, it remains in the atmosphere for approximately 2 months from the time of release and can be transported over long distances. When NO_x and water vapor are present in the air, and both usually are present to some degree depending on one's geographic location, they cause photochemical oxidation of CO that produces ground-level, or tropospheric, ozone (O₃). The National Aeronautics and Space Administration (NASA) [jet propulsion laboratory website](#) provides a brief summary on how O₃ forms and this reaction process. For this reason, CO is considered to be a precursor to O₃, and CO's influence on the formation of ground-level O₃ is of great interest to public health officials. To help better understand this process, EPA requires a CO analyzer at Type 2 stations within the Photochemical Ambient Monitoring Stations (PAMS) network. The ADEQ operates a PAMS Type 2 station within the Phoenix metropolitan area at JLG Supersite, and CO measurements have been collected at this site as far back as 1993.

Last, CO is considered a weak greenhouse gas (GHG) itself, but it adversely affects concentrations of other GHGs that are believed to contribute to global warming including: methane, ground-level O₃, and carbon dioxide (CO₂). As per the [EPA's website on climate change](#), CO₂ accounts for about 82% of GHG emissions due to human activities.

In 1971 EPA established identical primary and secondary standards for CO: an 8-hour primary standard at 9 parts per million (ppm) and 1-hour primary standard at 35 ppm. The EPA has reviewed the CO NAAQS several times since 1971, which led to the secondary standard being revoked in 1985. The primary standard levels have not changed to date, and currently, CO concentrations nationwide are substantially lower than the CO NAAQS. In 2014, Maricopa County achieved its 18th consecutive year of compliance with the 8-hour CO standard.

This general summary was compiled from the EPA's [Air and Radiation website](#) plus and the EPA's OAQPS Health and Environmental Impacts Division recently published the [Quantitative Risk and Exposure Assessment for Carbon Monoxide – Amended July 2010](#), which provides current CO exposure risk assessment information. This report was produced for the 2010 CO NAAQS review.

Lead (Pb)

Lead is a heavy metal that occurs naturally in the environment and is used in manufactured products. The major sources of Pb emissions have historically been motor vehicles such as cars and trucks, and industrial sources. In the early 1970s, EPA set national regulations to gradually reduce the Pb content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of EPA's regulatory efforts to remove Pb from gasoline, levels of Pb in the air decreased by 94 percent between 1980 and 1999. Levels of airborne Pb in Maricopa County were drastically reduced following the removal of Pb from automotive fuel. Since Pb concentrations were consistently below national levels, Maricopa County was allowed to discontinue ambient air monitoring for Pb in 1997.

Due to the phase-out of leaded gasoline, metals processing is the major source of lead emissions to the air today. The highest levels of Pb in air are generally found near lead smelters. General aviation airports are also a significant source of Pb, as general aviation fuel still contains Pb additives. Other stationary sources are: waste incinerators, utilities, and Pb-acid battery manufacturers.

An array of adverse health effects can be attributed to Pb exposure. Once taken into the body, Pb distributes throughout the body in the blood and accumulates in the bones. Depending on the level of exposure, Pb can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the O₂ carrying capacity of the blood. Currently, the foremost health effects associated with Pb exposure to children are neurological and for adults cardiovascular, e.g., high blood pressure and heart disease. Infants and young children are especially sensitive to even low levels of Pb, which may contribute to behavioral problems, learning deficits, and lowered IQ.

Lead is persistent in the environment and accumulates in soils and sediments through deposition from air sources, direct discharge of waste streams to water bodies, mining, and erosion. Ecosystems near Pb point-sources demonstrate a wide range of adverse effects including losses in biodiversity, changes in community composition, decreased growth and reproductive rates in plants and animals, and neurological effects in vertebrates.

Recent changes in the Pb NAAQS prompted the need to resume Pb monitoring activities within Maricopa County. In 2008, the Pb primary standard was revised to better public health, especially in "sensitive" populations, which include asthmatics, children, and the elderly. Initially, Pb monitoring was required near sources that emitted more than one ton of Pb per year. Later, Pb monitoring was required at NCORE stations around the U.S. In July 2010, MCAQD opened a new Pb monitoring site at Deer Valley Airport. The Deer Valley Airport is one of the busiest general aviation airports in Maricopa County, and the largest expected source of Pb emissions. Results from more than four years of monitoring have shown that ambient levels of Pb at the airport are still well below the current Pb NAAQS. The ADEQ operates the local NCORE station, and Pb concentrations have been collected at the JLG Supersite using a PM₁₀ sampler and inductively coupled plasma mass spectrometry for sample analysis as per EPA NCORE requirements.

Nitrogen Oxides (NO_x) with Nitrogen Dioxide (NO₂) as the Indicator Compound

Nitrogen dioxide belongs to a family of highly reactive gases called NO_x. These gases are formed when fuel is burned at high temperatures, and they are primarily emitted from automobile exhaust and power plants. Nitrogen oxides are key compounds in the production of ground-level ozone (O₃). Ozone is formed when NO_x and volatile organic compounds (VOC) react in the presence of heat and sunlight. Emissions control measures have helped to significantly reduce NO₂ and may have the important co-benefit of reducing the formation of O₃ and fine particles as well.

When discussing health effects from this family of gases as well as NAAQS compliance, NO₂ is referenced; because, it has been selected by EPA as the “indicator” compound for NO_x. Unlike the other gaseous CPs, we measure the ambient levels of NO_x indirectly using chemiluminescent analyzers. The analytical process is sophisticated, but it basically involves determining the concentration of NO₂, then nitric oxide (NO). The NO₂ and NO concentrations are summed to determine the NO_x concentration as shown below.

$$\textit{Equation 1: } \text{NO}_2 + \text{NO} = \text{NO}_x$$

For most of the population, the primary route of NO₂ entry into the body is inhalation. Current scientific evidence links short-term NO₂ exposures, ranging from 30 minutes to 24 hours, with adverse respiratory effects including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. Studies show a connection between breathing elevated short-term NO_x concentrations and increased visits to emergency rooms and hospital admissions for respiratory issues, especially asthma. Additionally, NO₂ reacts with ammonia, moisture, and other compounds to form small particles. These small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death.

In 1971, EPA set the first primary and secondary standards for NO₂ at 53 ppb, averaged annually. EPA reviewed the standards in 1985 and 1996, and chose not to revise either standard. In January 2010, EPA retained the 1971 standards and added to the primary standard a one-hour average limit of 100 ppb for the 98th percentile of the three-year average.

Recent research indicates that individuals who spend time on or near major roadways can experience acute NO₂ exposures considerably higher than measurement collected by the NO₂ network. Research by the EPA shows that NO₂ concentrations in vehicles and near roadways are appreciably higher than those measured at monitors in the current nationwide NO₂ network. EPA reports that in-vehicle concentrations can be 2-3 times higher than measured at nearby area-wide monitors. Near-roadway (within about 50 meters) concentrations of NO₂ have been measured to be approximately 30 to 100% higher than concentrations away from roadways.

For this reason, in February 2010 the EPA revised 1-hour NO₂ NAAQS and promulgated requirements for monitoring NO₂ at near-roadway stations. The S/L/T MOs are required to install near-road NO₂ monitoring stations in larger urban areas where hourly NO₂ concentrations are believed to be the highest in that urban area.

The regulations require a CBSA with 2,500,000 or more persons, or those CBSAs with one or more roadway segments carrying traffic volumes of 250,000 or more vehicles as measured by annual

average daily traffic (AADT) counts, to operate two near-road NO₂ monitors within that CBSA. Based on this regulation, Maricopa County is required to have two near-road NO₂ monitoring stations.

To ensure compliance with the new 1-hour NO₂ standard, AMD completed the installation and startup of the first of two near-road stations in February 2014. The station is housed at the new “Diablo” site, which is located off the I-10 near the Broadway curve, east of downtown Phoenix. We are currently in the construction phase for the second near-road monitoring station off the I-10, west of downtown. The new “Thirty-third” station is anticipated to startup in the second half of 2015.

In 2014, we recorded one 1-hour value that exceeded the 1-hour NO₂NAAQS limit at the Buckeye site, which is attributed to interference from exhaust of nearby construction vehicles. This is supported by meteorological data and site observations by personnel. Maricopa County is currently in attainment status for NO₂ compliance limits established in 1971 and 2010. In fact, there are no areas within Arizona that are in nonattainment with the NO₂ NAAQS.

Ozone (O₃)

Ozone is a colorless, slightly odorous, reactive gas in which three oxygen atoms combine to form a molecule. Ozone occurs naturally in the Earth's upper atmosphere, known as the stratosphere, where it has a beneficial effect of protecting us from the Sun's harmful ultraviolet rays. However, at ground-level in the troposphere, it is the main component of smog, can harm our health, and affect vegetation and ecosystems even at low concentrations. Anthropogenic activities have been a leading cause of ground-level O₃ due to VOC and NO_x being emitted into the atmosphere from industrial facilities, electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents. Nationally, O₃ concentrations declined in the 1980's, leveled off in the 1990's, and showed a notable decline after 2002 in part due to more stringent emission controls that lowered VOC and NO_x concentrations.

Ozone is not directly emitted into the air, but is formed by a complex photochemical reaction that involves sunlight, heat, and a "soup" of pollutants, especially VOCs and NO_x. Ozone is continually going through a rapid, natural cycle of being formed, then converted back to the more stable, or "normal", double oxygen molecule (O₂). Ozone is likely to reach unhealthy levels on hot, sunny days in urban environments, but it can impact rural areas by being transported long distances by wind. Although the Phoenix metropolitan area has sunshine most of the year, there is a seasonal pattern to O₃ concentrations with lower concentrations occurring in the winter months. It is interesting to note that a recent study observed elevated O₃ concentrations during cold months at a few high elevation locations in the western U.S. due to high levels of local VOC and NO_x emissions.

Ozone causes significant physiological and pathological changes in both animals and humans at concentrations present in many urban environments. Ozone affects the respiratory system in people and animals, and it also affects the growth of plants. The primary route of entry into the body is inhalation. Symptoms of O₃ exposure generally involve the lungs, and can include: coughing, a sore or scratchy throat, shortness of breath and chest pain on deep inhalations, increases in asthma attacks, and damage to the lungs. The population at the greatest risk is children. This is because: their lungs are still developing, they are more likely to be active outdoors when O₃ levels are high, and they are more likely to have asthma than adults.

Animal studies suggest that O₃ exposure interferes with or inhibits the immune system. With plants, O₃ at ambient concentrations injures the stomates, which are the cells that regulate plant respiration, resulting in flecks on the upper leaf surfaces of dichotomous plants and the death of the tips of coniferous needles. Ozone is considered by plant scientists to be the most important of all of the phytotoxic air pollutants, causing over 90 percent of all plant injury from air pollution on a global basis.

In 1997, the primary and secondary O₃ NAAQS were lowered to 0.08 ppm using the annual fourth-highest daily maximum 8-hour concentration, averaged over three years. Many O₃ monitoring sites were found to exceed this limit, which led to EPA designating Maricopa County as nonattainment for the 1997 NAAQS in 2004. On June 15, 2005, EPA revoked the 1997 1-hour average primary standard for O₃, and it was replaced by the 8-hour average standard for compliance purposes.

In March 2008, the NAAQS were lowered again to better protect public health and welfare. The EPA reduced the primary and secondary 8-hour O₃ NAAQS from 0.080 to 0.075 ppm (75 ppb). When the 2008 NAAQS became effective in May 2008, O₃ concentrations in the County had improved, but they were exceeding the new limit. This led to EPA designating portions of Maricopa and Pinal Counties as marginal nonattainment for the 2008 O₃ NAAQS in 2012. Excluding portions of Maricopa and Pinal

Counties, Arizona is currently in attainment for the O₃ NAAQS. Compliance with the standard is determined by averaging the 4th highest 8-hour average over a 3-year period. This 3-year average must be less than or equal to 0.075 ppm.

In November 2014, the EPA signed a notice to revise the O₃ NAAQS. The EPA proposed new primary and secondary O₃ standard limits within the range of 0.065 to 0.070 ppm. EPA is under court order to issue a final rule on the revised O₃ NAAQS by October 1, 2015. In 2014, 14 out of 18 MCAQD sites exceeded the 8-hour average of 0.075 ppm at least once during O₃ season. Based on our data, it is clear that lowering the NAAQS will introduce additional compliance challenges for Maricopa County. To achieve compliance with the new NAAQS and to improve air quality for all, additional strategies to reduce O₃ will have to be developed and implemented, and air monitoring efforts and associated resources are bound to increase. Lowering the NAAQS may potentially affect the attainment status of other geographical areas in Arizona, too.

Particulate Matter (PM)

Particulate matter is a collective term describing very small solid or liquid particles that vary considerably in size, geometry, chemical composition, and physical properties. Numerous chemical components may be present in particle pollution including: acids, such as nitrates and sulfates, organic chemicals or biomass, metals, soils, and finer dust particles. Particulates can be formed by natural processes, such as pollen production and wind erosion, and anthropogenic activities, such as commercial, industrial, and agricultural operations. Particulates contribute to visibility reduction, pose a threat to public health, and cause economic damage.

Again, EPA currently regulates PM pollution using two size categories:

- “PM₁₀” with size range ≤ 10 micrometers (μm) in aerometric diameter;
- “PM_{2.5}”, aka "fine particles", with a size range of ≤ 2.5 μm in aerometric diameter.

The larger particles that make up PM₁₀ form through mechanical processes such as the grinding of matter and the atomization of liquids, natural weathering processes, and anthropogenic activities that disturb soil. The earth's crustal components are often present in PM₁₀. In Arizona, elevated concentrations of PM₁₀ are associated with people driving on unpaved roads, dusty industries, and dust storms related to high wind events. Previously, air quality personnel have referred to PM₁₀ as “coarse” PM; however, the description of PM coarse is evolving. The EPA currently refers to coarse PM (PM_{10-2.5} or PM_c) as particles having a diameter between 2.5 μm and 10 μm . Years ago, coarse particles were defined as having diameters ranging from about 2.5 μm to more than 40 μm . Furthermore, recent health effects studies are starting to separate PM into several size ranges: PM₁₀, PM_{2.5}, PM_c, and “ultrafine” particulates, a subpart of PM_{2.5} with particles having ≤ 1.0 μm aerometric diameter. The ability to separate particulates into these size categories is possible due to advances in PM monitors.

Fine particulates are formed by the condensation of vapors or by their subsequent growth through coagulation or agglomeration. Fine particulates are further classified as “primary”, meaning they are produced within and emitted from a source such as a controlled burn, wildfire, or a fireplace with little subsequent change, or “secondary”, meaning they are not directly emitted by the sources such as power plants and automobiles. Secondary particulates form in the atmosphere from gaseous emissions from sources. For example, the fine particles in smoke are classified as primary. Nitrates and sulfates are classified as secondary, because they formed by oxidation of gaseous SO₂ and NO₂. Last, some fine PM constituents, such as atmospheric carbon, can be classified as both a primary and secondary particulate, because it forms either way.

For PM, the primary route of entry into the body is through inhalation. The size, shape, and chemical composition of particulates determine the health effects that may result from PM exposures. The potential for causing health problems is directly linked to particle size. Smaller particles are more toxic than larger particles because of the higher relative content of toxic metals and ions combined with the increase of particle surface area. The EPA is concerned about particles ≤ 10 μm in diameter, because those are the particles that generally pass through the throat and nose and enter the lungs. Coarser particles are deposited in the upper parts of the respiratory system, but finer particles are deposited deeper into the respiratory system. Fine particles are small enough to be deposited in the lung's alveoli, which are tiny air sacks deep inside the lungs. Some research shows that the smallest of particles may enter the bloodstream as well. Currently, research is being conducted to better understand the health effects of ultrafine particles.

The populations most at risk from particulate exposure are diabetics, older adults, and children, because they tend to be more physically active and this causes them to breath faster and deeper. Once inhaled, these particles can cause serious heart and lung health effects that affect both humans and animals. Epidemiological studies show that long-term, chronic exposures, e.g., years, to high levels of particulates are associated with reduced lung function, the development of chronic bronchitis, and premature death. Studies show that short-term, acute exposures, e.g., hours to days, to high levels of particulates can aggravate lung disease, cause asthma attacks and acute bronchitis, and may increase susceptibility of respiratory infections. For those with heart disease, it can induce heart attacks. Acidic aerosols have been linked to the inability of the upper respiratory tract and pulmonary system to remove harmful particles.

In 1987, the EPA replaced the 1971 Total Suspended Particulates (TSP), i.e., particles around 40 μm and less in aerometric diameter, with the primary and secondary NAAQS for PM_{10} . The EPA revoked the annual PM_{10} NAAQS in 2006. Currently, the 24-hour primary and secondary limits for PM_{10} are both $150 \mu\text{g}/\text{m}^3$. In 2012, the PM_{10} NAAQS underwent review with exposure to $\text{PM}_{10-2.5}$ also being considered. This review resulted in EPA retaining the existing primary and secondary 24-hour PM_{10} NAAQS, which is considered to provide for protection against effects associated with acute exposure to thoracic $\text{PM}_{10-2.5}$, i.e., inhaled particles that make it past the larynx. According to the January 15, 2013 *Federal Register* (78 FR 3085), the U.S. EPA Administrator concluded that “the available health evidence and air quality information for $\text{PM}_{10-2.5}$, taken together with the considerable uncertainties and limitations associated with that information, suggests that a standard is needed to protect against short-term exposure to all types of $\text{PM}_{10-2.5}$ and that the degree of public health protection provided against short-term exposures to $\text{PM}_{10-2.5}$ does not need to be increased beyond that provided by the current PM_{10} standard.” This indicates that future NAAQS may be forthcoming for $\text{PM}_{10-2.5}$. The EPA is scheduled to complete the next NAAQS review for the PM standards in 2017.

In 1997, the EPA reviewed and updated the $\text{PM}_{2.5}$ NAAQS limits. Since then, these NAAQS have been reviewed in 2006 and 2012 with some limits being made more stringent. On December 14, 2012, EPA retained the primary 24-hour $\text{PM}_{2.5}$ standard of $35 \mu\text{g}/\text{m}^3$, but reduced the primary and secondary NAAQS annual $\text{PM}_{2.5}$ limit to $12 \mu\text{g}/\text{m}^3$ and $15.0 \mu\text{g}/\text{m}^3$, respectively. The January 2013 *Federal Register* (78 FR 3085), also shows the U.S. EPA’s final determinations for the 2012 $\text{PM}_{2.5}$ NAAQS review. The EPA’s new rulings on the PM NAAQS became effective March 18, 2013.

Effective April, 15, 2015, Maricopa County remains “unclassifiable/attainment” for the $\text{PM}_{2.5}$ NAAQS. A status of unclassifiable/attainment means that Maricopa County’s air quality meets or is expected to meet the $\text{PM}_{2.5}$ NAAQS, but limited data were available for use when the determination was made. This is good news, because we tend to experience 24-hour exceedances during the colder, winter months near the Thanksgiving, Christmas and New Year’s Day holidays. In colder months, smoke from residential fireplaces coupled with the air inversion tends to drive up $\text{PM}_{2.5}$ concentrations throughout the metropolitan area.

In 2014, ADEQ and Maricopa County representatives worked together on a public outreach campaign to improve air quality in the County around the fall/winter holidays. Controls to reduce particulates have been in place for decades, beginning in the 1960s with a Pima County ordinance that required watering to reduce dust from construction. Maricopa County’s umbrella dust abatement rule, Rule 310, has been revised many times through the years and now regulates construction dust, trackout dust from construction sites, and dust from unpaved parking and vacant lots. Efforts to reduce dust resuspended

from paved roads have concentrated on eliminating trackout from construction sites, curbing and stabilizing road shoulders, and investigating more efficient street sweepers.

The Governor's Agricultural Best Management Practices Committee has developed a rule containing best management practices for agricultural activities (AgBMP) to reduce particulate emissions from tilling and harvesting activities of croplands and non-croplands. The recent PM₁₀ State Implementation Plan (SIP) includes seventy-seven new measures to enhance enforcement of the County's dust rules, implementation of AgBMP, diesel engine replacement and retirement programs, and requirements for cleaner burning fireplaces to further reduce PM_{2.5} emissions. As vehicle emission controls helped to reduce fine particulates and precursor gases, these cleaner burning fireplaces can reduce fine particulates as well. For example, reducing gaseous hydrocarbon emissions led to reductions in ambient concentrations of secondary organic carbon.

In 2005, Congress identified a need to account for events that result in exceedances of the NAAQS that are "exceptional" in nature, i.e., not expected to recur or caused by acts of nature beyond man-made controls. In response, the U.S. EPA promulgated the *Exceptional Events Rule (EER)* found in *40 CFR Parts 50 and 51* on March 22, 2007 (*72 FR 13560*). In an attempt to clarify this rule, the U.S. EPA released interim guidance documents on the implementation of the *EER* to S/T/L agencies for review on May 10, 2013. Maricopa County is susceptible to both windblown dust due to the arid climate and to smoke events from fires, both of which may qualify as an "exceptional event" (EE). The *EER* allows for S/T/L to "flag" ambient air quality monitoring data as an EE and to exclude those data when determining NAAQS exceedances or violations if the EPA concurs with the demonstration package. Some exceedances of the PM₁₀ NAAQS within Maricopa County have been successfully shown to meet the EE requirements. Exceptional event information for 2012 – 2014 is shown in the 2014 Summary of Network Results and Required Information section. The ADEQ is responsible for producing and submitting EE packages to EPA Region 9 for concurrence.

The MCAQD implemented an automated alarm system that triggers email notifications and/or telephone calls to subscribers when concentrations of PM₁₀ and PM_{2.5} escalate to help reduce their concentrations. Subscribers of the alert system include, but are not limited to: MCAQD's compliance and air monitoring personnel as well as industrial source representatives who can take action to reduce PM emissions cause by their work activities. In addition, the County enforces a "no burn restriction" when a PM_{2.5} High Pollution Advisory (HPA) is issued by ADEQ.

Sulfur Dioxide (SO₂)

Sulfur dioxide is a colorless gas with a pungent irritating odor at elevated concentrations. It is emitted in gaseous form primarily from burning high-sulfur coal, oil, and diesel fuel. Most fuels contain trace quantities of sulfur and their combustion releases both gaseous SO₂ and particulate sulfate; therefore, separating the health effects of these two chemicals is difficult. Together, SO₂ and PM_{2.5} make up a major portion of the pollutant load in many cities, acting separately and in concert to threaten public health.

Sulfur dioxide's primary route of entry into the body is by inhalation. It contributes to respiratory illness, particularly in children and the elderly, and aggravates existing heart and lung diseases. Sulfur dioxide contributes to the formation of acid rain, and it contributes to the formation of atmospheric particles that cause visibility impairment, most notably in national parks. Sulfur dioxide and the pollutants formed from SO₂, such as sulfate particles, can be transported over long distances and deposited far from the point of origin. This means that problems associated with SO₂ are not confined to areas where it is emitted.

Sulfur dioxide is removed from the atmosphere through dry deposition on plants, and it is converted to sulfuric acid, and eventually sulfate particles. Both contribute to public health problems and negatively impact the environment. The SO₂ and sulfate from vehicular emissions have been significantly reduced over the years through lowering the sulfur content in diesel fuel and gasoline. The EPA 2011 [National Emissions Inventory \(NEI\)](#) report shows the estimated quantity of SO₂ emitted from various sources in Arizona and in Maricopa County.

The majority of state-wide SO₂ emissions occurs in eastern Arizona and is produced by coal-based electricity generation, the smelting of non-ferrous, e.g., non-iron-containing, sulfide copper ore from mines, and smoke from wildfires. Major controls were installed in Arizona's copper smelters in the 1980s, which reduced SO₂ emissions substantially. In addition, most of the copper ore smelters that used to operate have been shutdown, which reduced SO₂ emissions in localized areas around the state. As of 2013, the only regulated smelters operating in Arizona are located about 90 miles east of downtown Phoenix, in Miami and Hayden, Arizona.

In Maricopa County, the majority of SO₂ is emitted from mobile and industrial sources. Currently, MCAQD operates two year-round SO₂ monitoring stations using pulsed fluorescence analyzers. The siting of SO₂ monitors is based on EPA requirements, as is the case for all ambient air monitoring networks.

AIR MONITORING STRATEGIES AND SURVEILLANCE SYSTEM DESIGN

Overview of the Criteria Pollutant Networks

The AMD monitors for the six CPs by operating and maintaining 25 ambient air monitoring sites located throughout Maricopa County. The sites' startup dates range from 1961 for Central Phoenix to 2014 for Diablo. Land use patterns around the sites vary from densely populated urban areas to sparsely populated rural settings. The sites' elevations range from 845 feet above sea level at Buckeye to 5190 feet above sea level at the top of Humboldt Mountain. Each site's pollutant monitoring station(s) are chosen based on specific EPA requirements as described below, special requests from EPA, and/or specific needs of the County. Some sites measure many pollutants; while others may only measure one or two. The requirements for operating the ambient air monitoring system are found in both *40 CFR Parts 50 & 58*.

The MCAQD has been designated as a Primary Quality Assurance Organization (PQAO) by EPA R9 for our ambient air monitoring program, which basically means that we do not share QA roles and/or responsibilities with another MO. The MCAQD is fully responsible for designing, operating, and reporting data from our surveillance system to EPA's AQS database. However, MOs within Arizona may provide support to each other by exchanging technical services and/or knowledge when problems arise with instrumentation or special studies.

This section details how MCAQD designs its air monitoring networks to obtain representative CP data. In addition to producing this AMNP, EPA now requires a five-year network assessment as per *40 CFR § 58.10*. The 5-year assessment is best served by collaborating with EPA, ADEQ, and other local and/or tribal agencies. The first assessment was produced in 2010 and the second will be produced in 2015. The assessment process continues to improve, and MCAQD is working with other MOs regarding CP network design issues to the extent possible.

Monitoring Objectives

The ambient air monitoring networks must be designed to meet the three basic monitoring objectives listed below. The order of these objectives shown below is not based upon priority. Each objective is important and must be considered individually.

1. Provide air pollution data to the general public in a timely manner. Data can be presented to the public in a number of attractive ways including: air quality maps, newspapers, MO and EPA websites, and as part of weather forecasts and public advisories.
2. Support compliance with the NAAQS and developing emission control strategies. To determine compliance with the NAAQS and to develop attainment and maintenance plans, only data collected by EPA-approved methods can be used. The EPA classifies approved methods into one of three categories: a federal reference method (FRM), a federal equivalent method (FEM), or an approved regional method (ARM). The MCAQD only uses FRM and FEM instruments within the CP surveillance system. This practice ensures high-quality data of like kind are used for compliance-driven decisions. However, additional data from research monitors can be used to further evaluate regional air quality models used in developing emissions' strategies, tracking trends in air pollution, and evaluating the impact control measures are having on improving air quality.

3. Support air pollution research studies geared toward assessing health effects, atmospheric processes, or future monitoring methods in development. In addition to data collected by FRM and FEM monitors, MCAQD may produce other data for special studies as well. These data can be made available for decision makers; but they are not necessarily reported to AQS. In Maricopa County, EPA R9 has charged ADEQ with collecting the majority of research data at JLG Supersite via the following networks: National Core multi-pollutant site (NCORE), Photochemical Ambient Monitoring Stations (PAMS), Chemical Speciation Network (CSN), National Air Toxics Trends Stations (NATTS), and Urban Air Toxics Monitoring Program (UATMP). The data from these networks should be available in AQS.

Monitoring Site Types

To support the three basic air monitoring objectives, a network must be designed with a variety of monitoring site “types”. Monitoring sites must be capable of informing managers and the general public about peak air pollution levels, typical levels in populated areas, air pollution transported into and outside of a city or region, and air pollution levels near specific sources (see Table 3).

Table 3. Site Monitoring Types

Measure highest concentrations expected to occur in the area covered by the network.
Measure typical concentrations in areas of high population density.
Determine the impact of significant sources or source categories on air quality.
Determine general background concentration levels.
Determine the extent of regional pollutant transport among populated areas and in support of secondary standards.
Measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts.

Source: Adapted from 40 CFR Part 58, Appendix D

Spatial Scales of Monitoring

The concept of “spatial scale of representativeness” was created to help link monitoring objectives and site types with the physical location of a monitor. The spatial scale of representativeness is defined in terms of the physical dimensions of the air parcel around a monitoring site throughout which pollutant concentrations are reasonably similar. There are six scales of representativeness of most interest for the monitoring site types (see Table 4).

Table 4. Spatial Scales of Representativeness

Name	Distance
Micro Scale	0 to 100 meters
Middle Scale	100 to 500 meters
Neighborhood Scale	0.5 to 4 kilometers
Urban Scale	4 to 50 kilometers
Regional Scale	10 to 100s of kilometers
National and Global Scales	Characterizing the nation and the globe as a whole.

Source: Adapted from 40 CFR Part 58, Appendix D, 1.2

Air Monitoring Station Classifications

It is worth noting that NO₂ air monitoring stations can have several different classifications. An NO₂ station’s classification is largely determined by the underlying purpose for collecting the data, and the definitions regarding the various station classifications are found in 40 CFR Part 58. A brief overview of the potential NO₂ station classifications is provided below.

State and Local Air Monitoring Stations (SLAMS)

The stations operated by ADEQ are most often SLAMS, which gather data for comparison to the NAAQS. “SLAMS” make up the ambient air quality monitoring sites that are primarily needed for NAAQS comparisons, but may serve other data purposes as well. The SLAMS exclude special purpose monitors (SPM) and Prevention of Significant Deterioration (PSD) monitors, but include air monitors for specialized programs that are considered a subset of SLAMS such as the near-road, NCORE, and PAMS stations.

Special Purpose Monitor Stations

As defined by 40 CFR Part 58, an “SPM station” means a monitor included in an agency’s network that the agency has designated as a special purpose monitor station in its monitoring network plan and in the AQS. The agency does not count an SPM toward showing compliance with the minimum requirements for QA, siting, or for the quantity of monitors needed for a particular criteria pollutant. SPMs are not required to meet the rigorous QA/QC requirements applied to SLAMS monitors. Often

SPMs are used to quickly gather and report preliminary information regarding air quality in a local area.

It is important to reference EPA requirements regarding the operation of an SPM monitor. It is important to note that if an SPM station uses an FRM, FEM, or an ARM method and meets the SLAMS siting requirements in *40 CFR Part 58 Appendix E*, then the agency can be limited to its removal without EPA approval. Removal depends upon the particular CP concentrations recorded and the monitor's operating duration. Usually, if the monitor operates for more than two years, removing it will need prior approval by EPA. In the event of a geographical area's population increases or air quality data indicate a SLAMS is more appropriate, an SPM station may be reclassified to a SLAMS and potentially outfitted with a different model FEM monitor.

Locating Monitors

Since it is physically and fiscally impossible to monitor air quality in every location, the goal in locating monitors is to correctly integrate the monitoring objective and monitoring site type with the spatial scale of representativeness most appropriate for the air pollutant to be measured. For example, consider the case where the objective is to determine NAAQS compliance by understanding the maximum O₃ concentrations for an area. Such areas would most likely be located downwind of a metropolitan area, quite likely in a suburban residential area where children and other susceptible individuals are likely to be outdoors. Sites located in these areas are most likely to represent an urban scale of measurement. In this example, physical location was determined by considering O₃ precursor emission patterns, public activity, and meteorological characteristics affecting O₃ formation and dispersion. Thus, spatial scale of representativeness was not used in the selection process, but was a result of site location.

Using these principles, the total number of monitoring sites that will serve the variety of data needs will be substantially higher than federal minimum requirements. The optimal size of each pollutant's network involves trade-offs among data needs and available resources; and, the network's size is subject to change over time. Each pollutant's network must be dynamic enough to maintain a current representative sampling of the air quality.

Overview of the Air Monitoring Sites

Maricopa County has a population of over 3.9 million people based on the 2012 U.S. Census estimate. As per 40 CFR Part 58, the EPA mandates the minimum quantity of monitors required by a pollutant's network to properly represent the County's population. As previously mentioned, the MCAQD networks are designed using the concept of spatial scale representativeness and monitoring objectives. This has resulted in CP networks that meet, and in most cases exceed, the minimum quantity of monitors required by EPA (see "Required General Information on Monitoring Network" in Appendix II). The 25 monitoring sites operating in 2014 are shown again in Figure 4.

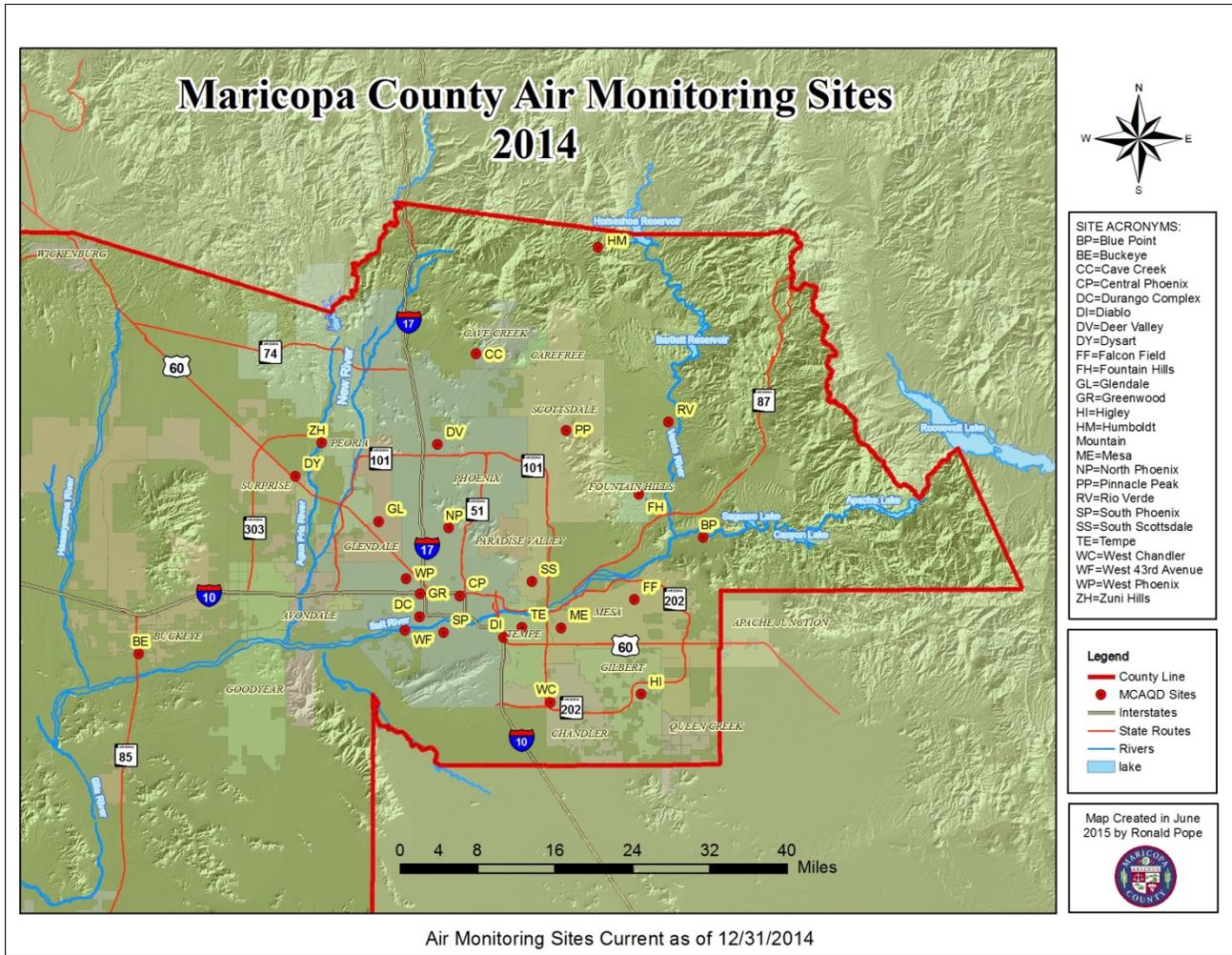


Figure 4. 2014 Air Monitoring Sites

The following tables show details regarding each site's AMD abbreviation symbol, EPA's AQS identification number, geographic coordinates, and the full complement of air monitors and/or sensors. All CP monitors are now classified as SLAMS. Table 5 shows the MCAQD's site abbreviations and the AQS identification number. Table 6 shows the specific geographic coordinates for the location of each site. Table 7 provides the complement of air monitoring instruments operating at each site in 2014.

Table 5. Maricopa County Ambient Air Monitoring Sites for 2014

Name	AMD Abbreviation	AQS ID
Blue Point	BP	04-013-9702
Buckeye	BE	04-013-4011
Cave Creek	CC	04-013-4008
Central Phoenix	CP	04-013-3002
Deer Valley	DV	04-013-4018
Diablo	DI	04-013-4019
Durango Complex	DC	04-013-9812
Dysart	DY	04-013-4010
Falcon Field	FF	04-013-1010
*Fountain Hills	FH	04-013-9704
Glendale	GL	04-013-2001
Greenwood	GR	04-013-3010
*Higley	HI	04-013-4006
Humboldt Mountain	HM	04-013-9508
Mesa	ME	04-013-1003
North Phoenix	NP	04-013-1004
Pinnacle Peak	PP	04-013-2005
Rio Verde	RV	04-013-9706
South Phoenix	SP	04-013-4003
South Scottsdale	SS	04-013-3003
Tempe	TE	04-013-4005
West Chandler	WC	04-013-4004
West 43rd Ave.	WF	04-013-4009
West Phoenix	WP	04-013-0019
*Zuni Hills	ZH	04-013-4016

* This site experienced an extended monitoring interruption in 2014.

Table 6. Location of Air Monitoring Sites

Site	Latitude	Longitude	Location	AQS Code
BP	33.54549	-111.60925	Usery Pass & Bush Highway	04-013-9702
BE	33.37005	-112.62070	MC 85 & AZ HWY 85	04-013-4011
CC	33.82169	-112.01739	32 nd St. & Carefree Highway	04-013-4008
CP	33.45793	-112.04601	19 th St & Roosevelt St.	04-013-3002
DV	33.684627	-112.08635	10 th Ave. & Deer Valley Rd.	04-013-4018
DC	33.42650	-112.11814	27 th Ave. & Durango St.	04-013-9812
DY	33.63713	-112.34184	Bell Rd. & Dysart Rd.	04-013-4010
DI	33.3961	-111.9680	Fairmont Dr. & Diablo Way	04-013-4019
FF	33.45223	-111.73331	McKellips Rd. & Greenfield Rd.	04-013-1010
FH	33.61103	-111.72529	E. Palisades Blvd. & Fountain Hills Blvd.	04-013-9704
GL	33.56936	-112.19153	59 th Ave & W. Olive Ave.	04-013-2001
GR	33.46093	-112.11748	27 th Ave. & Interstate 10	04-013-3010
HI	33.31074	-111.72255	Higley Rd. & Chandler Blvd.	04-013-4006
HM	33.98280	-111.79870	Top of Humboldt Mountain	04-013-9508
ME	33.41045	-111.86507	Broadway Rd. & Alma School Rd.	04-013-1003
NP	33.56033	-112.06626	7 th Street & Dunlap Ave.	04-013-1004
PP	33.70655	-111.85557	Alma School Rd. & Happy Valley Rd.	04-013-2005
RV	33.71881	-111.67183	Forest Rd. & Del Ray Ave.	04-013-9706
SP	33.40316	-112.07533	Central Ave. & Broadway Rd.	04-013-4003
SS	33.47968	-111.91721	Scottsdale Rd. & Miller Rd.	04-013-3003
TE	33.4124	-111.93473	College Ave. & Apache Blvd.	04-013-4005
WC	33.29898	-111.88431	Ellis St. & Frye Rd.	04-013-4004
WF	33.40642	-112.14434	43 rd Ave. & Broadway Rd.	04-013-4009
WP	33.48385	-112.14257	39 th Ave. & Earll Dr.	04-013-0019
ZH	33.686738	-112.294171	109 th Ave & Deer Valley Rd.	04-013-4016

Table 7. Air Monitoring Instruments by Site

AIR MONITORING SYSTEM OPERATIONS

Sites	AQS Site ID	CO	O ₃	NO ₂	SO ₂	PM ₁₀ Hourly	PM _{2.5} Hourly	PM _{2.5} Filter	Pb	Delta T	Amb. Temp	Baro. Press	Rel. Hum	WS / WD	Rain	Solar	Rm	Multi-Gas Calibrator	Active Instruments	Last Audit
BE	04-013-4011	1 *	1	1		1					1	1	1	1			1	1	10	06/02/15
BP	04-013-9702		1								1			1			1		4	06/02/15
CC	04-013-4008		1								1		1	1	1		1		6	06/02/15
CP	04-013-3002	1	1	1	1	1					1	1		1			1	1	10	06/02/15
DC	04-013-9812				1	1	1				1	1	1	1			1	1	9	06/02/15
DI	04-013-4019	1		1			1				1		1	1			1	1	8	06/02/15
DY	04-013-4010	1 *	1			1					1	1	1	1			1		8	06/02/15
DV	04-013-4018								2		1	1	1	1			1		6	06/02/15
FF	04-013-1010		1								1		1	1			1		5	06/02/15
FH	04-013-9704		1								1	1	1	1			1		6	06/02/15
GL	04-013-2001	1 *	1			1	1				1	1	1	1			1		9	06/02/15
GR	04-013-3010	1		1		1					1	1		1			1	1	8	06/02/15
HI	04-013-4006					1				1	1	1		1			1		6	11/01/14
HM	04-013-9508		1								1		1				1		4	06/02/15
ME	04-013-1003	1 *	1			1	1				1	1	1	1			1		9	06/02/15
MM #	Mobile Truck	1 *			1	1	1				1	1	1	1		1	1	1	11	06/02/15
NP	04-013-1004	1 *	1			1	1			1	1	1		1		1	1		10	06/02/15
PP	04-013-2005		1								1	1	1	1			1		6	06/02/15
RV	04-013-9706		1														1		2	06/02/15
SP	04-013-4003	1 *	1			1	1				1	1	1	1			1		9	06/02/15
SS	04-013-3003	1 *	1			1					1	1	1	1			1	1	9	06/02/15
TE	04-013-4005	1 *	1			1	1			1	1		1	1	1		1		9	04/01/15
WC	04-013-4004	1 *	1			1					1	1	1	1			1		8	06/02/15
WF	04-013-4009					1				1	1	1		1			1		6	06/02/15
WP	04-013-0019	1	1	1		1	1	1		1	1	1		1			1	1	12	06/02/15
ZH	04-013-4016					1					1			1					3	06/02/15
Active Instruments		14	18	5	3	17	9	1	2	5	25	18	16	24	2	2	25	8		

temporarily closed

* = seasonal or event monitor

= Mobile Monitoring Truck

Total # of Pollutant Monitors 69

Total # of Active Instruments 194

Number of Active Sites 24

Mobile Truck 1

2014 SUMMARY OF NETWORK RESULTS AND REQUIRED INFORMATION

Determining Data Quality and Acceptability

The EPA has established data quality and measurement quality objectives for CP data. In total, there are seven data quality indicators established by the EPA to determine the quality of ambient air data. Data must meet each indicator's requirement to be acceptable for use by decision makers for NAAQS compliance determinations, researchers, and the public. These indicators are: precision, bias, completeness, comparability, detectability, representativeness, and sensitivity. "Timeliness" of data collection, validation, and upload to AQS is important as well. This sections details the results obtained from our 2014 monitoring year.

With CP data, accuracy is defined as "a measure of the overall agreement of a measurement to a known value and includes a combination of random error (precision) and systematic error (bias) components of both sampling and analytical operations". The AMD's personnel evaluate data using these indicators, with precision, bias, and completeness being the most crucial to evaluate on an ongoing basis. If CP data pass all validation tests, the data meet EPA's quality requirements and can be used to determine compliance with the NAAQS.

Data Completeness

Before any data set can be considered valid, it must first pass a data recovery, or completeness, test. The test requirements begin with checking completeness at hourly and 24-hour concentration values. These values are commonly referred to as "samples". In general, CP pollutant data measurements, or samples, from continuous analyzers are based on a valid hour; while 24-hour filter samples from manual samplers are based on a 24-hour sampling period from midnight to midnight. For NAAQS determinations, the completeness tests are extended to data sets at 3-hour, 8-hour, quarterly, annual, and multiple year levels of data aggregation, which are specific to each CP.

For CPs, data completeness must be greater than 75% for a data set to pass the first validity test. To determine data completeness, the total quantity of actual samples/measurements collected is divided by the total quantity of scheduled samples/measurements for a certain time period.

$$\text{Equation 2: Data Completeness} = \text{Qty. of Samples Scheduled} / \text{Qty. of Samples Collected} (100)$$

The annual data completeness for 2014 is shown below (see Table 8).

Table 8. 2014 Criteria Pollutant Data Completeness for SLAMS

	CO	Pb	O ₃	NO ₂	SO ₂	PM _{2.5}	PM ₁₀	TOTAL
Percent Complete	98.5%	93.0%	98.4%	98.2%	98.0%	96.8%	98.7%	98.1%

Source: EPA AQS database - 2014 AQS Data Completeness Report (AMP 430)

Increasing Data Volumes

Due to increasing data requirements and the availability of FEM analyzers, the amount of data the AMD produces increased considerably over the past few years. Operating and maintaining all the various components of each air monitoring network is an ongoing challenge. To remain up-to-date with EPA's requirements and to meet decision makers' and researchers' data needs, AMD personnel adjusted standard operating processes accordingly to ensure only high-quality are being produced. In addition to the increased amount of CP data to be generated and validated, supporting components of the surveillance system such as the communications system to the sites and the database used for data management needed upgrading, too. So far, AMD has managed to make some significant program changes to keep up with the increasing demand for data. By automating some processes, we have been able to successfully respond to data needs without increases to personnel. The following information summarizes a few notable changes that have been implemented to date.

- A Rapid Response Notification System (RRNS) was implemented to better manage quickly-developing pollution events. The RRNS uses automated alarms to monitor instrument performance and incoming pollutant concentrations. The triggering instrument warning and pollutant concentration limits can be adjusted as needed for each alarm.
- A new, commercial database, AirVision™, was implemented, and it has enhanced our ability to manage the increase in data volume. It advanced data validation, retrieval/storage/security, and dissemination. The database must be maintained and updated regularly to keep up with software changes involving data collection, validation, and reporting to AQS.
- In addition, AMD now uploads preliminary data to the MC website as close as possible to real-time.
- AMD personnel perform multiple data checks throughout the workday to help prevent bad data from being released to the public via the County's and EPA's websites.

Table 9 shows the amount of 1-hour data AMD has been producing per year, plus the near ninefold increase of data produced when AMD started collecting 5-minute data.

Table 9. 2014 Total Amount of Data Produced

Type	1-Hour CP Data	1-Hour CP and Met Data	1-Hour, 5-minute and 24-hour CP and Met Data
Amount	587,162	1,612,082	14,901,002

NOTE: The amount does not include non-CP or special projects' data.

Summary of Data Produced by the Criteria Pollutant Networks

This section covers the 2014 data generated by each CP's network.

Carbon Monoxide (CO)

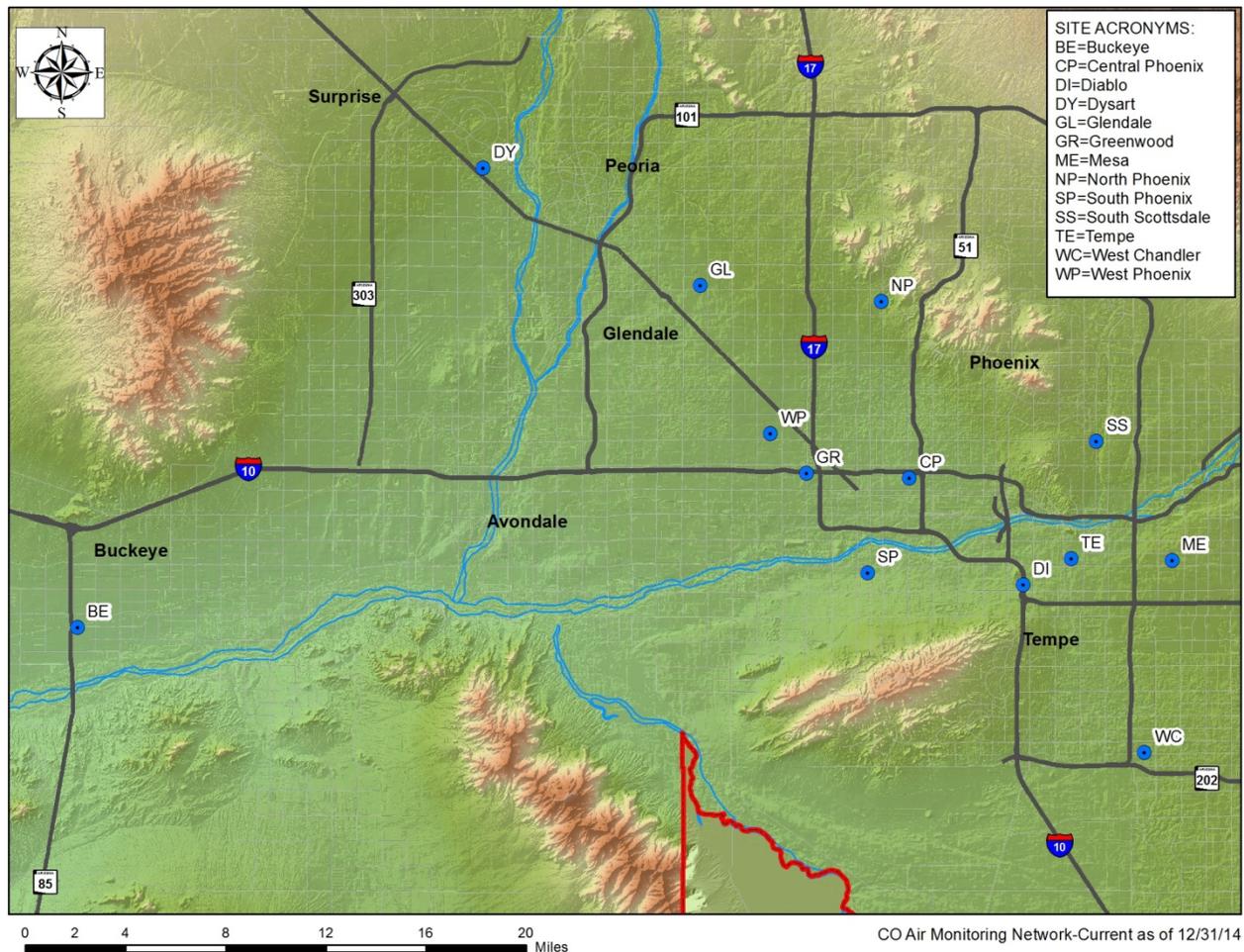


Figure 5. 2014 CO Monitoring Sites

There are two primary standard limits for CO: an 8-hour average of <9 ppm and a 1-hour average of <35 ppm. A violation of either standard is based on two exceedances in a calendar year. Since CO concentrations have been significantly lower than the 1-hour limit for so many years, we have not included it on Table 10. It is worth noting that the area has not exceeded the CO NAAQS since 1996.

The Phoenix metropolitan area and portions of Pinal County were once designated as a moderate nonattainment CO for the 1971 primary NAAQS. A nonattainment SIP was developed by ADEQ that covered how to reduce and maintain CO concentrations. The area failed to reach attainment by the end of 1995, which caused EPA to reclassify the area to serious nonattainment in 1996, with a new attainment date of December 31, 2000. In response, the Governor's Office, Legislature, Maricopa County, and other entities worked cooperatively together to find ways to reduce CO that included implementing innovative programs such as: a nationally recognized vehicle emissions inspection program, a cleaner burning gasoline program, pollution reduction measures for commercial and

industrial sources, and woodburning restrictions. As a result, CO concentrations declined and data showed that the area had reached attainment with the 8-hour primary NAAQS.

In April 2005, the EPA redesignated the Phoenix metropolitan area to attainment for CO and approved the attainment demonstration and maintenance plan, which shows how the area will maintain compliance with the CO NAAQS through 2015. However, Maricopa County must continue to show that the air quality is maintaining compliance with the NAAQS for a period of 20 years from the attainment determination. The area is now covered by a 10-year maintenance SIP that is renewed in its 8th year for the next 10-year maintenance SIP. Since we are now in maintenance/attainment, the majority of CO monitors can operate seasonally rather than year-round.

In 2014, the quantity of active CO monitors increased from thirteen to fourteen with the addition of the Diablo near-road station on February 21st. All CO monitors are classified as SLAMS, and data from all monitors are reported to the AQS (see Figure 5). For calendar year 2014, no exceedances of either CO limit were recorded at any MCAQD monitoring sites Table 10.

Table 10. 2014 8-hour Average CO Data Summary

Site	CO 8-hour Average Max. (ppm)	CO 8-hour Average 2 nd Highest (ppm)	Number of 8-Hour NAAQS Exceedances
Buckeye	0.6	0.5	0
Central Phoenix	2.5	2.4	0
Diablo	1.4	1.3	0
Dysart	0.6	0.6	0
Glendale	1.4	1.3	0
Greenwood	2.6	2.1	0
Mesa	1.4	1.2	0
North Phoenix	1.4	1.1	0
South Phoenix	2.9	1.9	0
South Scottsdale	1.4	1.3	0
Tempe	1.4	1.4	0
West Chandler	1.7	1.6	0
West Phoenix	4.2	2.8	0

Additional information required by EPA is shown in Table 11.

Table 11. CO Data Required by EPA

CBSA	Population & Census Year (2012)	Required Near-Road Monitors	Active Near-Road Monitors	Additional Near-Road Monitors Needed
38060	4,329,534	2	1	1

Lead (Pb)

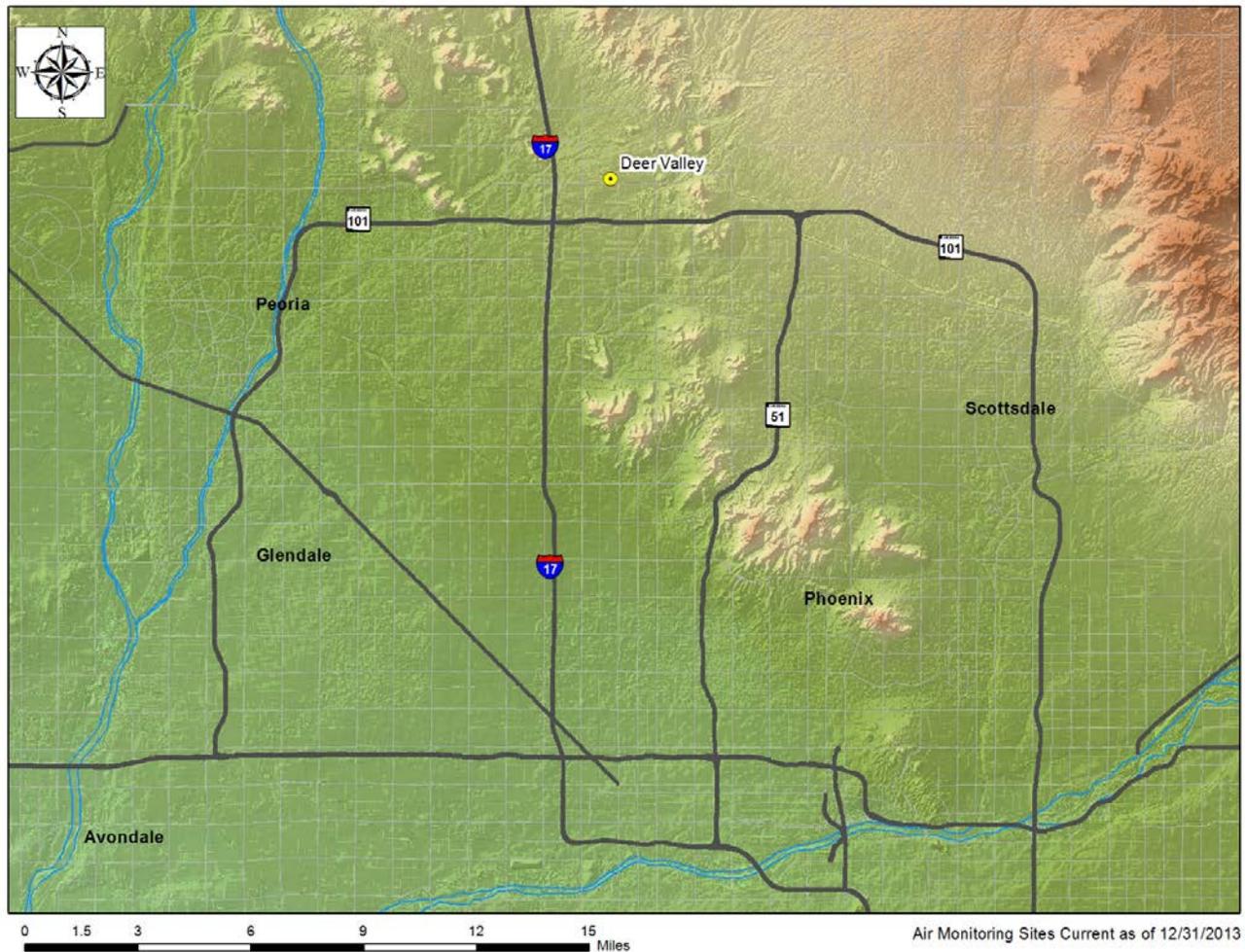


Figure 6. 2014 Pb Monitoring Sites

Figure 6 shows the Deer Valley site, which is the only site collecting Pb data. Two Pb monitors are required at the Deer Valley Airport for QA purposes and both monitors are classified as SLAMS. The Pb NAAQS has identical primary and secondary standards based on a rolling 3-month average. The rolling 3-month average is violated by an exceedance of $0.15 \mu\text{g}/\text{m}^3$.

In July 2010, this Pb monitoring site was opened near the Deer Valley Airport in north Phoenix. This airport is one of the busiest general aviation airports in the region, and it serves a significant number of propeller-driven aircraft. Propeller-driven aircraft still use Pb-containing general aviation fuel unlike jet engine-driven aircraft. A summary of the 2014 Pb data required by EPA is shown in Table 12.

Table 12. 2014 Pb Data Summary

Site	24-hour Max. ($\mu\text{g}/\text{m}^3$)	24-hour 2 nd Highest ($\mu\text{g}/\text{m}^3$)	Max. 3-month Rolling Quarterly Average ($\mu\text{g}/\text{m}^3$)	Number of Samples
Deer Valley	0.087	0.082	0.05	57

According to the 2011 EPA's National Emission Inventory, Deer Valley Airport remains the largest point-source of Pb within Maricopa County that triggers the EPA 1.0 ton per year (tpy) threshold for Pb emissions, which are shown on Table 13.

Table 13. Pb Data Required by EPA

Source Name	Location	2011 Pb Emission (tpy)	Emissions Inventory Source & Data Year	Max 3-month Design Value ($\mu\text{g}/\text{m}^3$)	Design Value Date	Required Monitors	Active Monitors	Additional Monitors Needed
Deer Valley Airport	Phoenix, AZ	1.16	General Aviation Airport 2011	0.05	January 2014	1	1	0

Nitrogen Dioxide (NO_x)

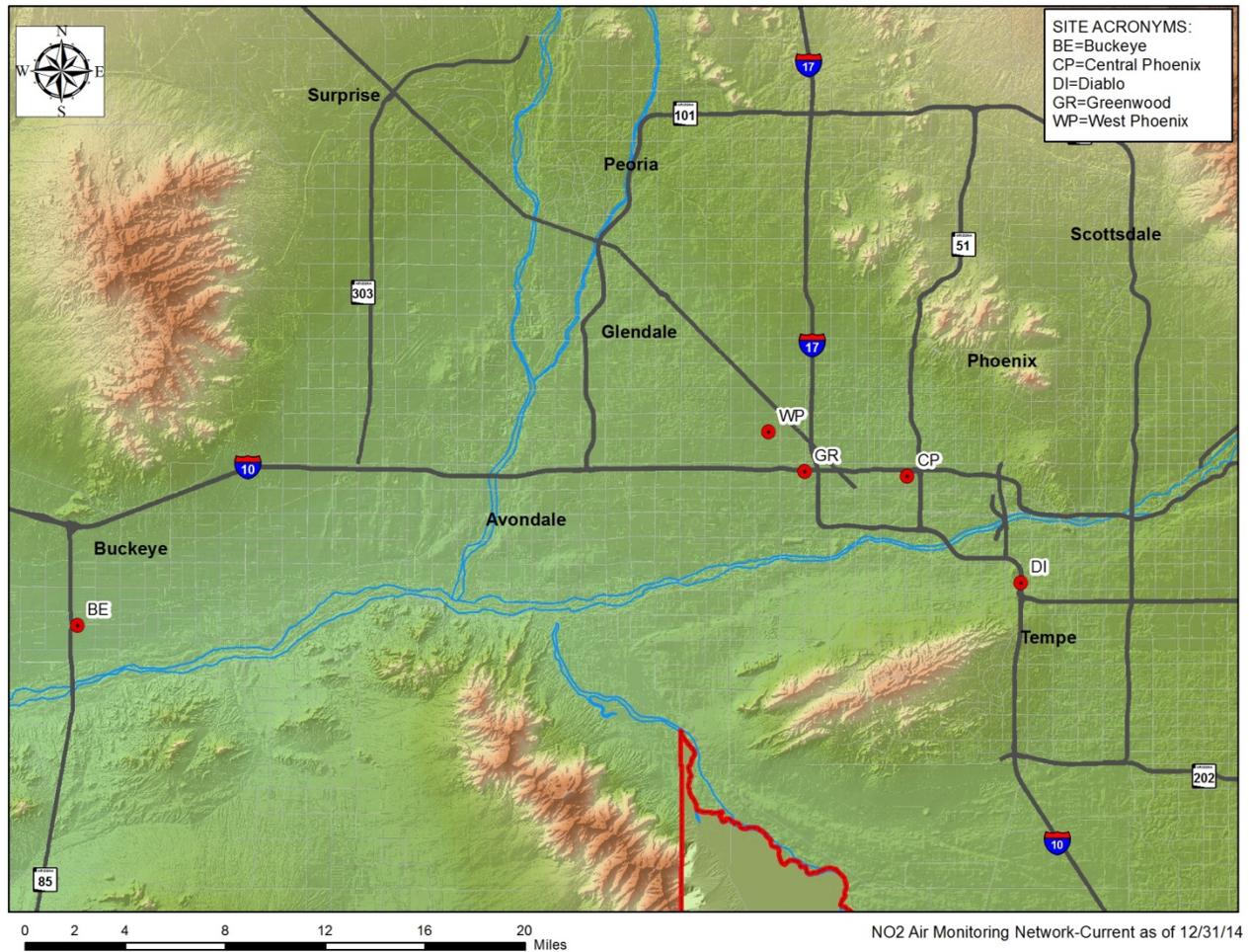


Figure 7. 2014 NO₂ Monitoring Sites

All parts of Maricopa County are in attainment for NO₂. Compliance with the NO₂ standard is achieved when the annual arithmetic mean concentration in a calendar year is less than or equal to 53 ppb. A new hourly standard for NO₂ began in 2010; this regulation states that the 3-year average of the 98th percentile cannot exceed 100 ppb. For calendar year 2014, no exceedances of the NO₂ annual were recorded at Maricopa County monitoring sites. However, we did exceed the one-hour NAAQS once at the Buckeye site on 05/05/15.

In 2014, the quantity of active NO₂ monitors increased from four to five once the Diablo near-road station became active in February. Data from all five monitors were reported in AQS (see Figure 7). All NO₂ monitors are designated as SLAMS (see Table 14).

Table 14. 2014 NO₂ 1-hour Data Summary

Site Name	NO ₂ Maximum (ppb)	NO ₂ . 98 th Percentile (ppb)	NO ₂ 3-Year Average of the 98 th Percentiles (ppb)	NO ₂ Annual Average (ppb)
Buckeye	102.0*	37.0	36	8.65
Central Phoenix	70.0	60.0	61	19.44
Diablo	62.0	59.0	59	20.85
Greenwood	67.0	64.0	64	24.55
West Phoenix	80.0	57.0	57	17.97

*Indicates an exceedance of the standard.

Source: The EPA's 2014 AQS AMP450 Report, aka "Quicklook Criteria Parameters Report"

Additional information required by EPA is shown in Table 15.

Table 15. NO₂ Data Required by EPA

CBSA	Population & Census Year (2012)	Max AADT Counts	Required Near-Road Monitors	Active Near-Road Monitors	Additional Near-Road Monitors Needed	Required Area-Wide Monitors	Active Area-Wide Monitors	Additional Area-Wide Monitors Needed
38060	4,329,534	320,137	2	1	1	1	4	0

Ozone (O₃)

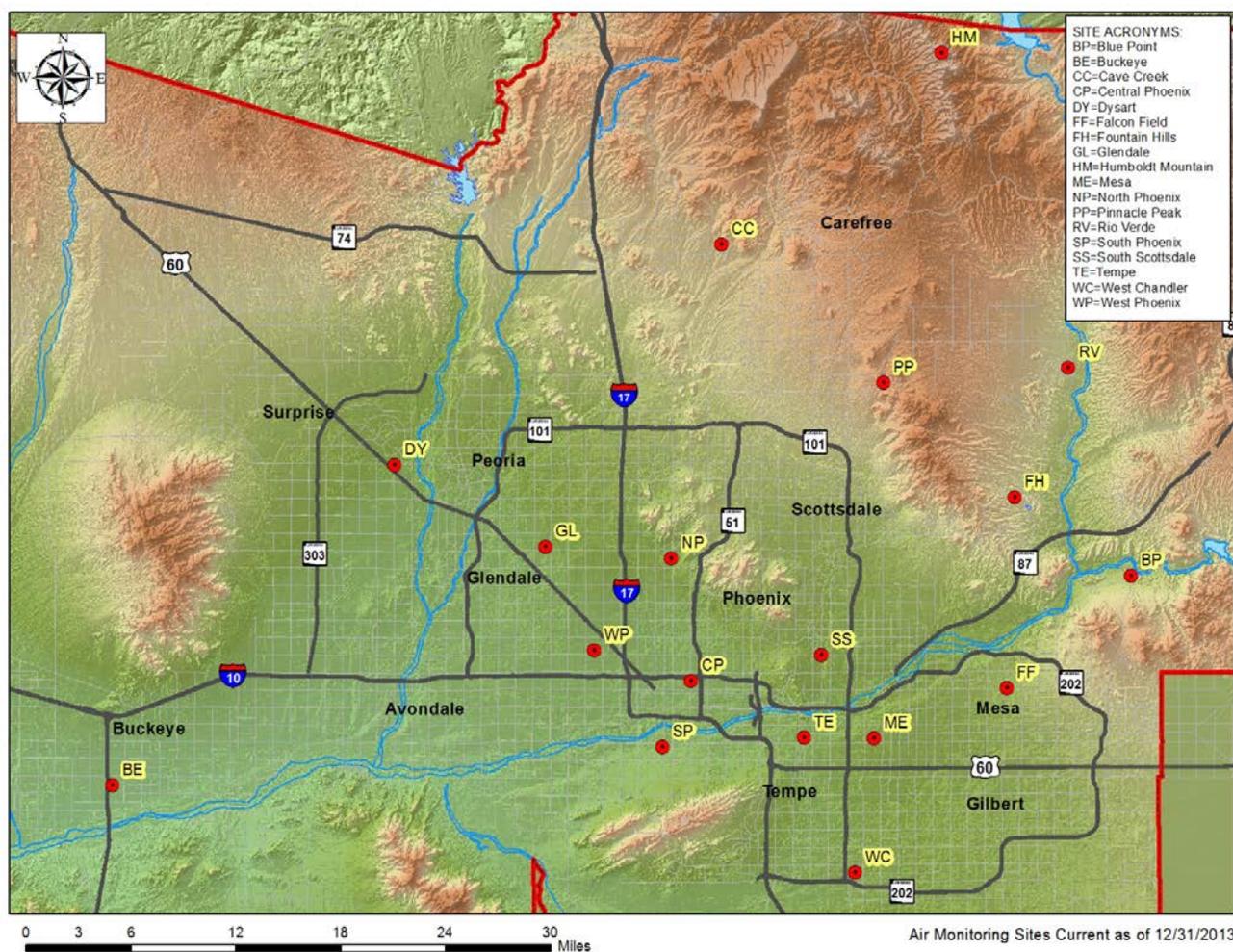


Figure 8. 2014 O₃ Monitoring Sites

As stated in the O₃ summary, compliance with the standard is determined by averaging the 4th highest 8-hour average over a 3-year period. This 3-year average must be less than or equal to 0.075 ppm. During 2014, eighteen O₃ monitors were reported as operational in AQS (see Figure 8). All of the O₃ monitors are classified as SLAMS.

In 2014, there were 11 exceedance days of the 8-hour primary standard for O₃. Table 16 presents the 2014 data summary for 8-hour O₃ at departmental monitoring sites. In addition, there were three violations of the 8-hour primary standard. The 8-hour standard is violated when a 3-year average using the 4th highest concentration measured in each year exceeds 0.075 ppm (see Table 16).

Table 16. 2014 8-hour Average O₃ Data Summary

Site	8-hr Max. (ppm)	2 nd Highest (ppm)	3 rd Highest (ppm)	4 th Highest (ppm)	Qty. of Days > 0.075 ppm
Blue Point	0.088*	0.076*	0.075	0.074	2
Buckeye	0.068	0.067	0.061	0.060	0
Cave Creek	0.081*	0.076*	0.074	0.074	2
Central Phoenix	0.077*	0.071	0.071	0.071	1
Dysart	0.075	0.074	0.072	0.070	0
Falcon Field	0.088*	0.078*	0.078*	0.076*	4
Fountain Hills	0.075	0.070	0.069	0.068	0
Glendale	0.079*	0.078*	0.075	0.071	2
Humboldt Mt.	0.082*	0.080*	0.077*	0.074	3
Mesa	0.086*	0.079*	0.078*	0.078*	6
North Phoenix	0.082*	0.081*	0.078*	0.078*	6
Pinnacle Peak	0.088*	0.081*	0.081*	0.080*	6
Rio Verde	0.085*	0.077*	0.074	0.073	2
South Phoenix	0.080*	0.076*	0.075	0.073	2
South Scottsdale	0.078*	0.073	0.072	0.072	1
Tempe	0.077*	0.073	0.071	0.071	1
West Chandler	0.074	0.074	0.071	0.070	0
West Phoenix	0.079*	0.078*	0.078*	0.076*	4

* Indicates an exceedance of the standard.

Source: The EPA's 2014 AQS AMP450 Report, aka "Quicklook Criteria Parameters Report"

Additional information required by EPA is shown in Table 17.

Table 17. O₃ Data Required by EPA

CBSA	County	Population & Census Year (2012)	8-Hr Design Value (ppm)	Design Value Site	Required Monitors	Active Monitors	Additional Monitors Needed
38060	Maricopa	4,329,534	0.080	04-013-1004	2	18	0

Source: The EPA's 2014 AQS AMP 480 Report, aka "Design Value Report"

Particulate Matter ≤ 10 Micrometers (PM_{10})

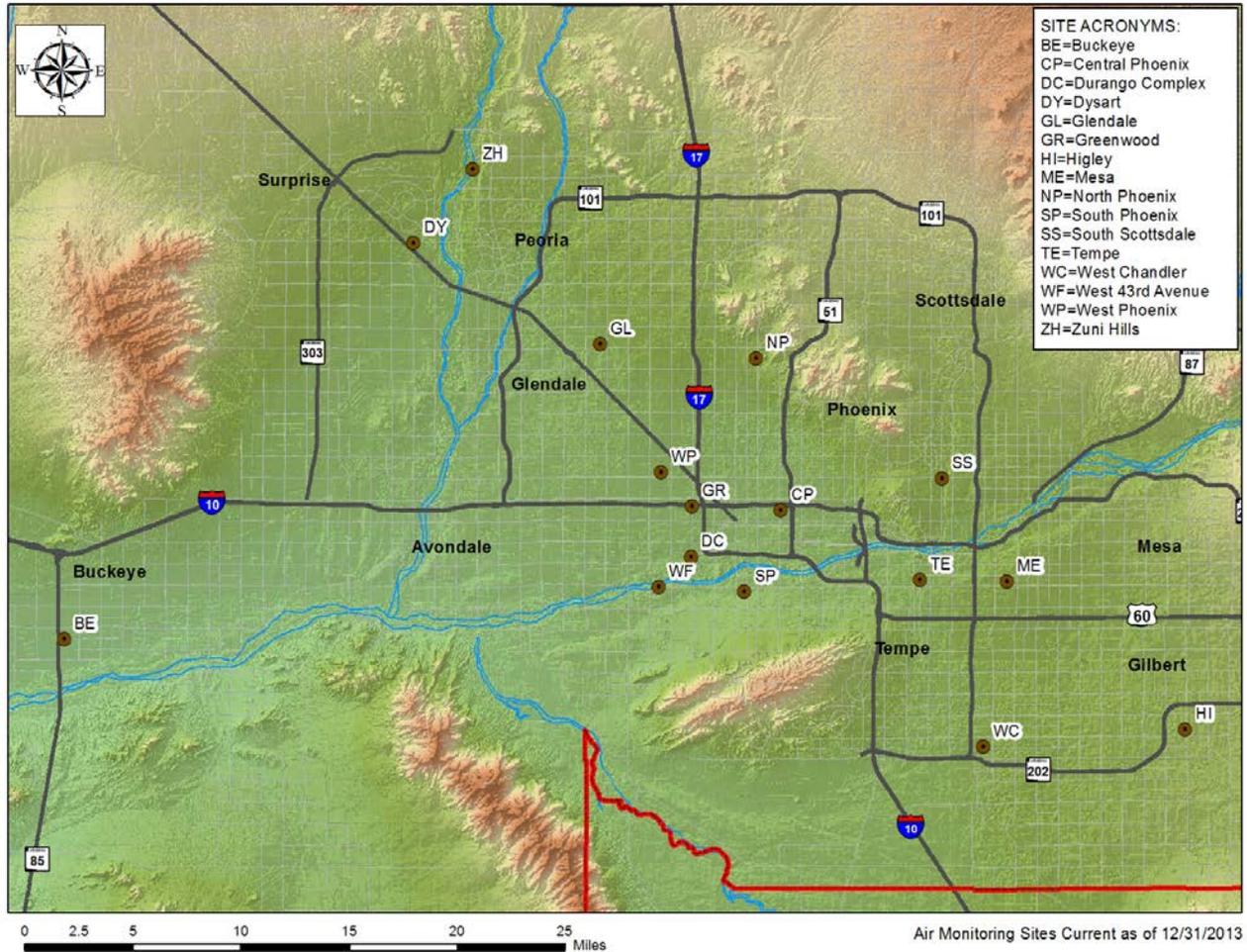


Figure 9. 2014 PM_{10} Monitoring Sites

During 2014, sixteen PM_{10} monitors were reported as operational in AQS (see Figure 9). All PM_{10} monitors are classified as SLAMS. The Zuni Hills monitor classification was changed from a SPM to a SLAMS beginning on January 1, 2015. All PM_{10} monitoring stations now operate continuous PM_{10} analyzers that collect hourly-averaged data. It is worth noting that EPA does not require PM_{10} analyzers to be collocated at the PQAO level or the national level as they did with PM_{10} samplers.

Although the 24-hour primary NAAQS standard for PM_{10} is 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), due to rounding the 24-hour average concentration must exceed 155 $\mu\text{g}/\text{m}^3$ to be considered an “exceedance”. This NAAQS is violated when the expected number of exceedances at a monitor is more than one per year on average over three years. The expected number of exceedances is estimated using a formula provided in *40 CFR Part 50 Appendix K*. The formula takes into account the number of days sampling occurs and the number of valid samples that can be collected. A 3-year average of these estimated days is then used to determine compliance. Effective December 18, 2006, EPA revoked the PM_{10} annual primary standard; however, the annual average is still displayed below for informational purposes (see Table 18).

In recent years, some PM_{10} exceedances occurring in the Maricopa County CBSA have been successfully attributed to an EE. As per the EPA’s *EER*, an EE is considered to be an uncontrollable

event that was caused by natural sources of pollution or an event that is not expected to recur at a given location. ADEQ makes the determination of which events to classify as exceptional; then, they develop and submit an EE petition to EPA for review and acceptance of the classification. If EPA concurs with the petition, the PM₁₀ concentrations measured during an EE are not used to determine compliance with the NAAQS. The EE counts below are current as of this review's publishing.

Table 18 shows the 2014 PM₁₀ 24-hour NAAQS status and data summary.

Table 18. 2014 PM₁₀ 24-Hour Data Summary

Site Name	24-hr Avg. Max (µg/m ³)	24-hr Avg. 2 nd Highest (µg/m ³)	24-hour NAAQS Exceedances	Expected Exceedances	Annual Weighted Average (µg/m ³)	Quantity of EEs
Buckeye	271*	175*	2	2.0	43.4	1
Central Phoenix	182*	146	1	1.0	32.0	1
Durango Complex	172*	162*	2	2.0	42.1	2
Dysart	163*	138	1	1	26.7	1
Glendale	205*	102	1	1.011	27.4	1
Greenwood	208*	157*	2	2.011	44.0	2
Higley	179*	155*	2	2.0	34.8#	2
Mesa	155*	146	1	1.034	30.4	1
North Phoenix	199*	107	1	1.0	27.9	1
South Phoenix	170*	169*	3	3.0	40.6	3
South Scottsdale	193*	169*	2	2.045	31.0	2
Tempe	175*	140	1	1.011	28.7	1
West Chandler	163*	146	1	1.0	29.3	1
West 43rd Avenue	171*	141	1	1.0	45.9	1
West Phoenix	210*	165*	2	2.022	38.8	2
Zuni Hills	166*	86	1	1.247	24.0#	1

* Indicates an exceedance of the standard.

Indicates that the mean does not satisfy summary criteria

Source: The EPA's 2014 AQS AMP450 Report, aka "Quicklook Criteria Parameters Report"

Additional information required by EPA is shown in Table 19.

Table 19. PM₁₀ Data Required by EPA

CBSA	County	Population & Census Year (2012)	Max Concentration*	Max Concentration Site	Required Monitors	Active Monitors	Additional Monitors Needed
38060	Maricopa	4,329,534	175 µg/m ³	04-013-4011	6-10	16	0

NOTE: Data exclude measurements submitted as EEs.

Particulate Matter ≤ 2.5 Micrometers ($PM_{2.5}$)

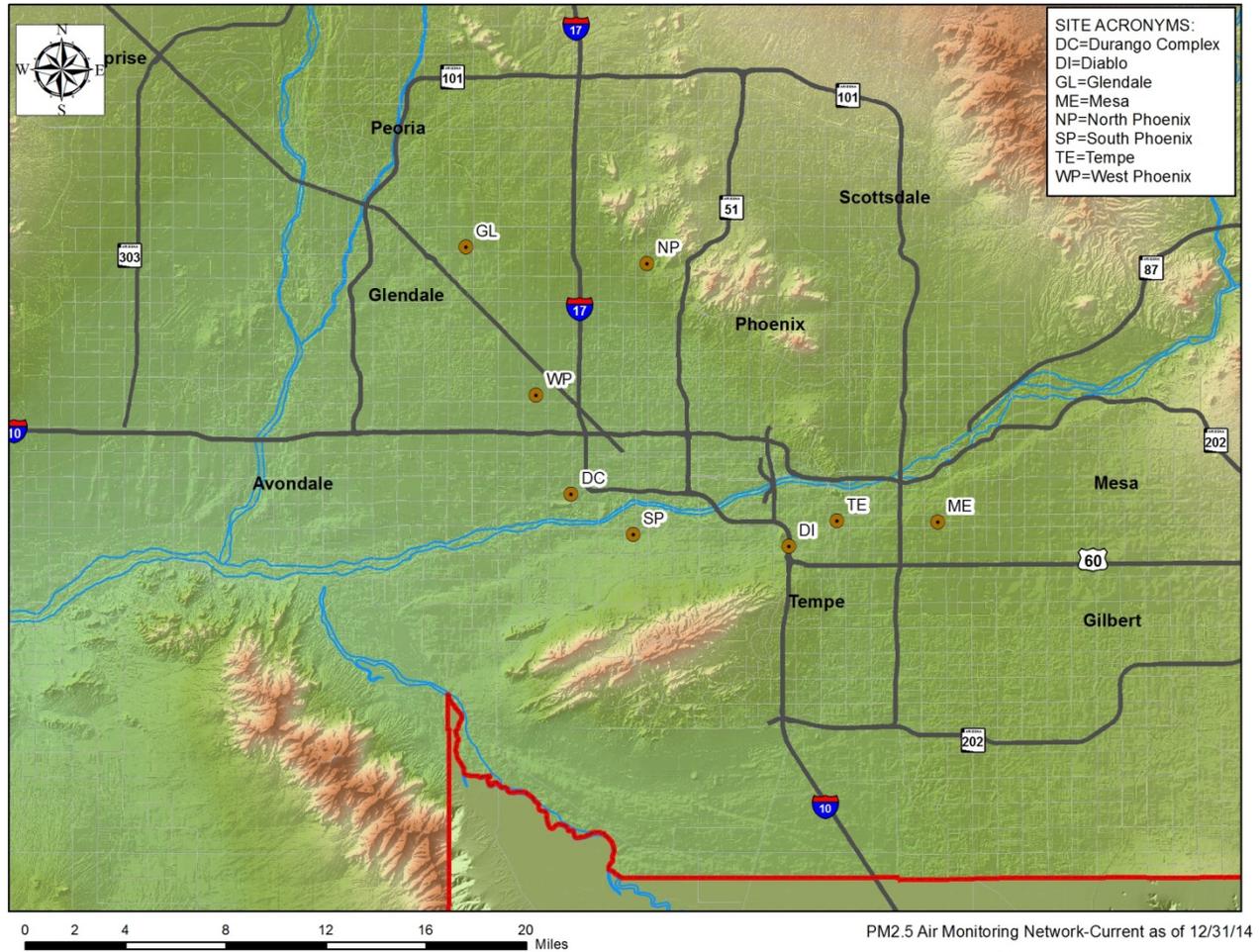


Figure 10. 2014 $PM_{2.5}$ Monitoring Sites

Figure 10 shows the sites monitoring for $PM_{2.5}$: Diablo, Durango Complex, Glendale, Mesa, North Phoenix, South Phoenix, Tempe, and West Phoenix. The department operates eight continuous Federal Equivalency Methods (FEM) $PM_{2.5}$ analyzers, so data are applicable for comparison to the NAAQS. All $PM_{2.5}$ monitors are identified as SLAMS.

Beginning in January 2015, all $PM_{2.5}$ primary monitors are FEMs; therefore, 2014 is the last year we will report data from the West Phoenix FRM sampler for comparison to the NAAQS. At the end of 2014, the AMD reduced the quantity of FRM $PM_{2.5}$ samplers in operation throughout the network from two to one. The primary monitoring method at the West Phoenix station officially changed from an FRM to an FEM beginning on January 1, 2015. The West Phoenix site remains our “collocated” site for $PM_{2.5}$, which means that we will operate one FEM continuous analyzer designated as “primary monitor” and one FRM filter-based $PM_{2.5}$ sampler designated as the “secondary monitor”. The secondary monitor is required to meet the EPA’s QA collocation requirements for the $PM_{2.5}$ network. Although data from the secondary monitor are intended for QA usage, if necessary, they can be substituted in place of the primary monitor’s data as per *40 CFR Part 50 Appendix N*. This secondary monitor will continue to collect a twenty-four hour, e.g., midnight-to-midnight, filter sample on the designated 1:12 day as required for collocated QA samples. The EPA OAQPS produces the [annual sampling calendar](#) each year and posts it on the AMTIC website.

The PM_{2.5} network is smaller than the PM₁₀ network, because, historically PM₁₀ was of more concern within Maricopa County due to EPA’s designation or nonattainment for PM₁₀. Maricopa County is currently in attainment for PM_{2.5}; however, MCAQD continually assesses the existing network to ensure it adequately represents air quality in Maricopa County in regards to PM_{2.5}. According to federal regulations, Maricopa County operates more than the required minimum number of PM_{2.5} monitors for the core-based statistical area (CBSA) as shown on Table 24 and in Appendix II. One result from these ongoing assessments has been increasing resources for the PM_{2.5} network and upgrading to continuous PM_{2.5} analyzers.

To determine compliance with the annual NAAQS, three years’ worth of the 24-hour annual average concentration at each site is used. To determine compliance with the 24-hour NAAQS, the 98th percentile concentration value from each PM_{2.5} monitoring station is used. To calculate the annual and the 24-hour NAAQS, three consecutive years of data from an “eligible” site must be available. Overall, an eligible site is one that meets the EPA’s operating and QA requirements. In addition, data generated by different monitoring methods are not combined but kept separate, i.e., FRM sampler data and FEM analyzer data are not averaged together when calculating outcomes.

2014 PM_{2.5} FRM Data Summary

Table 20 summarizes the 2014 data from the West Phoenix FRM sampler.

Table 20. 2014 PM_{2.5} 3-Year 24-Hour and Annual Mean Averages for the FRM Sampler

Site Name	2014 24-hr Avg. Max (µg/m ³)	2014 24-hr Avg. 2 nd High (µg/m ³)	2014 98 th Percentile Value (µg/m ³)	2014 Annual Mean (µg/m ³)
West Phoenix	30.3	29.0	28.3	9.95

2014 PM_{2.5} FEM Data Summary

Table 21 summarizes the 2014 data from the FEM analyzers.

Table 21. 2014 PM_{2.5} 3-Year 24-Hour Averages and Annual Means for FEM Analyzers

Site Name	2014 24-hr Avg. Max (µg/m ³)	2014 24-hr Avg. 2 nd High (µg/m ³)	2014 98 th Percentile Value (µg/m ³)	2014 Annual Mean (µg/m ³)
Diablo	29.2	26.2	21.4	#
Durango Complex	56.4*	30.7	24.1	10.12
Glendale	50.0*	30.1	18.6	7.73
Mesa	42.9*	26.8	19.4	8.28
North Phoenix	33.9	26.5	20.3	8.02
South Phoenix	101.7*	34.7	26.5	10.27
Tempe	44.0*	27.5	17.4	8.63
West Phoenix	170.7*#	48.7*#	28.9#	11.13#

* Indicates an exceedance of the standard.

Indicates that the mean does not satisfy summary criteria

The Annual PM_{2.5} NAAQS Status

Compliance with the annual NAAQS, both primary and secondary, is determined by averaging three consecutive years of a site’s annual mean value which is derived using the 24-hour, or daily, concentrations. The annual PM_{2.5} NAAQS is met when three-year annual average concentration is less than or equal to 12.0 µg/m³ at each eligible monitoring site. All 3-year averages were below the annual NAAQS.

FRM Data

Table 22 summarizes the 3-year, 24-hour annual average data from the FRM sampler at West Phoenix.

Table 22. PM_{2.5} FRM Sampler 3-Year Annual Averages

Site Name	2012 Annual Avg. (µg/m ³)	2013 Annual Avg. (µg/m ³)	2014 Annual Avg. (µg/m ³)	3-Year Annual Avg. (µg/m ³)
West Phoenix	12.02	10.16	9.95	10.71

FEM Data

Table 23 summaries the 3-year 24-hour annual average data from the FEM analyzers.

Table 23. PM_{2.5} FEM Analyzer 3-Year Annual Averages

Site Name	2012 Annual Avg. (µg/m ³)	2013 Annual Avg. (µg/m ³)	2014 Annual Avg. (µg/m ³)	3-Year Annual Avg. (µg/m ³)
Diablo	Not operating	Not operating	9.71#	#
Durango Complex	11.57	10.54	10.12	10.74
Glendale	8.74	7.52	7.73	7.99
Mesa	5.84#	5.69	8.28	6.60#
North Phoenix	9.26	8.0	8.02	8.42
South Phoenix	9.24	9.59	10.27	9.70
Tempe	9.27#	8.69	8.63	8.86#
West Phoenix	10.42#	10.57#	11.13	10.70#

#Does not meet data completeness standards

The 24-Hour PM_{2.5} NAAQS Status

Compliance with the primary and secondary 24-hour PM_{2.5} NAAQS is determined by averaging 3-consecutive years of the 24-hour 98th percentile concentration values from all eligible sites. The 24-hour NAAQS is met when 3-year average concentration values is less than or equal to 35 µg/m³. In 2014, there were three exceedance days, but no violations of the primary or secondary 24-hour NAAQS of 35 µg/m³.

FRM Data

Table 24 summarizes the 3-year, 24-hour 98th percentile data from the FRM sampler at West Phoenix.

Table 24. PM_{2.5} 3-Year 24-Hour Averages of the 98th Percentile for FRM Sampler

Site Name	2012 98 th Percentile (µg/m ³)	2013 98 th Percentile (µg/m ³)	2014 98 th Percentile (µg/m ³)	3-Year Average 98 th Percentile (µg/m ³)
West Phoenix	29.0	28.0	28.3	28.4

FEM Data

Table 25 summaries the 3-year 24-hour 98th percentile data from the FEM analyzers.

Table 25. PM_{2.5} 3-Year 24-Hour Averages of the 98th Percentile for FEM Analyzers

Site Name	2012 98 th Percentile (µg/m ³)	2013 98 th Percentile (µg/m ³)	2014 98 th Percentile (µg/m ³)	3-Year Average 98 th Percentile (µg/m ³)
Diablo	Not operating	Not operating	21.4#	#
Durango Complex	24.9	27.2	24.1	25.4
Glendale	18.6	16.6	18.6	17.9
Mesa	10.4	12.8	19.4	14.2
North Phoenix	21.2	17.2	20.3	19.6
South Phoenix	20.9	25.8	26.5	24.4
Tempe	19.5	17.9	17.4	18.2
West Phoenix	23.6#	29.0#	28.9	27.2#

Does not meet data completeness standards

Additional information required by EPA is shown in Table 26.

Table 26. PM_{2.5} Data Required by EPA

CBSA	County	Population & Census Year (2012)	Annual Design Value (µg/m³)	Annual Design Value Site	Daily Design Value (µg/m³)	Daily Design Value Site	Required Monitors	Active Monitors	Additional Monitors Needed
38060	Maricopa	4,329,534	11.0	04-013-0019	28	04-013-0019	3	7	0

* - excludes measurements submitted as EE

Sulfur Dioxide (SO₂)

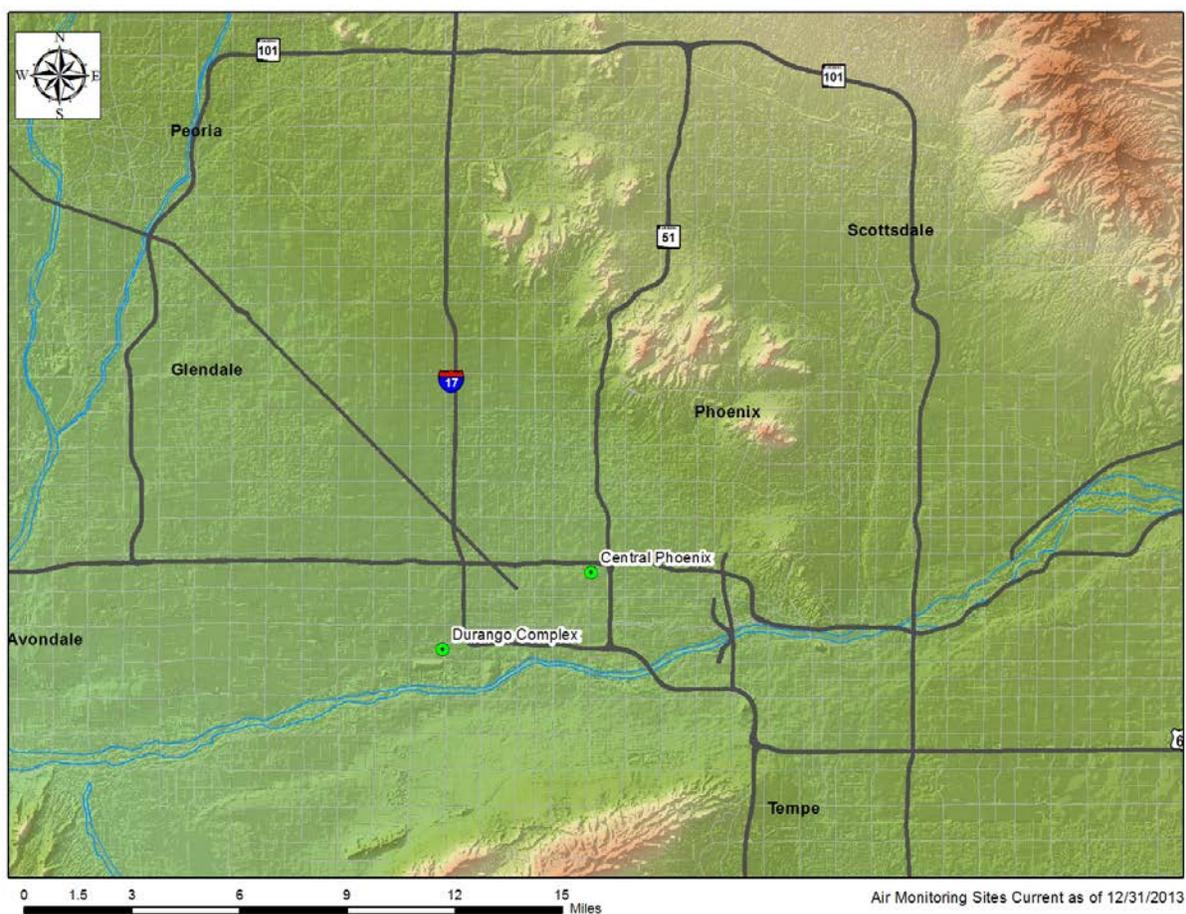


Figure 11. 2014 SO₂ Monitoring Sites

Maricopa County is in attainment for SO₂. During 2014, two SO₂ SLAMS monitors were operational and reported into AQS (see Figure 11). Sulfur dioxide has a 1-hour primary standard and a 3-hour secondary standard. The 24-hour and annual average standards were revoked in a June 2010 rulemaking. A violation of the primary standard occurs when the 3-year average of the 99th percentile of the daily maximum 1-hour average exceeds 75 ppb. A violation of the secondary standard occurs when a 3-hour average of 500 ppb is exceeded more than once per year.

For calendar year 2014, no exceedances of the SO₂ 1-hour or 3-hour standard were recorded at Maricopa County monitoring sites. The EPA now requires that the highest 5-minute average per hour per day be reported to AQS; however, there is not a 5-minute SO₂ NAAQS limit.

Table 27 shows the 2014 SO₂ data summary.

Table 27. 2014 SO₂ Data Summary

Site	1-hour Max. (ppb)	1-hour 2 nd High (ppb)	1-hour 99 th Percentile (ppb)
Central Phoenix	11.0	8.0	7.0
Durango Complex	10.0	8.0	8.0

NOTE: EPA no longer requires the reporting of 3-hour values for the SO₂ secondary NAAQS.

Table 28 shows additional information required by EPA.

Table 28. SO₂ Data Required by EPA

CBSA	County	Population & Census Year (2012)	Total SO ₂ Emitted in 2011 (tpy)	Population Weighted Emission Index	Required Monitors	Active Monitors	Additional Monitors Needed
38060	Maricopa	4,329,534	1468	N/A	0	2	0

Source: The [EPA's Clearinghouse for Inventories & Emissions Factors database](#)

2014 NAAQS Exceedance and Violation Summary

The following is a summary of the number, types, and dates of exceedances and violations of the NAAQS for 2014 (see Table 29).

Table 29. 2014 NAAQS Exceedances and Violation Summary

CO	No exceedances or violations of the 1-hour or 8-hour NAAQS standard were logged.
NO ₂	There was one day when one monitor exceeded the 1-hour standard for one hour; there was no violation of the 1-hour NAAQS standard.
O ₃	There were eleven unique days when at least one monitor exceeded the standard. There were three violations of the 8-hour standard.
Pb	No exceedances or violations of NAAQS were logged.
PM ₁₀	There were seven unique days when at least one monitor exceeded the 24-hour standard. There were no sites that violated the standard once EEs were removed.
PM _{2.5}	There were three unique days when at least one monitor exceeded the 24-hour standard. There were no violations of the 24-hour or annual standards.
SO ₂	No exceedances or violations of NAAQS were logged.

2014 O₃ Exceedance and Violation Information

Table 30 shows the dates and values for the primary and secondary 8-hour O₃ NAAQS exceedances. The NAAQS limit is 0.075 ppm for a rolling 8-hour average, and an exceedance occurs when the 8-hour average is greater than 0.075 ppm, e.g., 0.076 ppm or higher.

Table 30. 2014 O₃ 8-hour Average Exceedance Details

Ozone Exceedance Days 2014 9/26/2014																		
Ozone 8-hr avg. (ppm) Ozone NAAQS > 0.075 ppm																		
	Buckeye	Blue Point	Cave Creek	Central Phoenix	Dysart	Falcon Field	Fountain Hills	Glendale	Humboldt Mt.	Mesa	North Phoenix	Pinnacle Peak	Rio Verde	South Phoenix	South Scotts.	Tempe	West Chandler	West Phoenix
5/28/14			0.076															
6/5/14						0.078			0.080	0.078		0.081	0.077	0.076				
6/6/14		0.088	0.081	0.077		0.088		0.078	0.082	0.086	0.081	0.088	0.085	0.080	0.078	0.077		0.078
6/7/14						0.076			0.077	0.077		0.081						
6/9/14		0.076				0.078				0.078		0.080						
7/7/14											0.078							
7/14/14											0.077							
7/28/14											0.078	0.078						0.076
9/11/14								0.079		0.076	0.082							0.079
9/12/14										0.079								0.078
9/25/14											0.076	0.080						
Exceedance Days	0	2	2	1	0	4	0	2	3	6	6	6	2	2	1	1	0	4
Maximum Value		0.088	0.081	0.077		0.088		0.079	0.082	0.086	0.082	0.088	0.085	0.080	0.078	0.077		0.079
4th High Value>.075						0.076				0.078	0.078	0.08						0.076
All sites are located in or near the Ozone Nonattainment Area Please see ADEQ for information on additional statewide ozone sites																		
Total Number of Days where at least one monitor exceeded the NAAQS Ozone Standard																		11

Table 31 shows the O₃ NAAQS violations. A site violates the NAAQS when its 3-year average of the 4th-highest annual 8-hour concentration exceeds 0.075 ppm. Data shown below are the 2012 to 2014 3-year averages of the 4th highest 8-hour O₃ concentrations.

Table 31. 2014 O₃ NAAQS Violations

Site	Concentration (ppm)
North Phoenix	0.080
Pinnacle Peak	0.078
West Phoenix	0.078

2014 Particulate Matter Exceedance and Violation Status

The 24-Hour PM₁₀ NAAQS Exceedances

Table 32 shows the site and date of the 24-hour PM₁₀ exceedances. Note that this table includes all exceedances, even those that are expected to be or are in the process of being classified as EEs. Exceptional event data are not used when calculating compliance with the NAAQS.

Table 32. 2014 PM₁₀ 24-hour NAAQS Exceedances

Site	Date	24-hour avg. PM ₁₀ Concentration (µg/m ³)	Exceptional Event
Buckeye	07/03/14	271	*
	10/30/14	175	
Central Phoenix	05/11/14	182	*
Durango Complex	05/11/14	172	*
	07/25/14	162	*
Dysart	05/11/14	163	*
Glendale	05/11/14	205	*
Greenwood	05/11/14	208	*
	07/03/14	157	*
Higley	07/08/14	179	*
	09/04/14	155	*
Mesa	07/25/14	155	*
North Phoenix	05/11/14	199	*
South Phoenix	05/11/14	170	*
	07/25/14	169	*
	09/06/14	159	*
South Scottsdale	05/11/14	169	*
	07/25/14	193	*
Tempe	07/25/14	175	*
West 43rd Avenue	05/11/14	171	*
West Chandler	07/25/14	163	*
West Phoenix	05/11/14	210	*
	07/03/14	165	*
Zuni Hills	05/11/14	166	*
Quantity of Days in 2014 where at least one monitor <u>exceeded</u> the 24-hr PM₁₀ Standard		7	

*MCAQD has flagged these exceedances as EEs.

2014 24-Hour PM₁₀ NAAQS Violation Status with Exceptional Events

Table 33 shows the violations of the 24-hour primary and secondary PM₁₀ NAAQS. As per 40 CFR Part 50.6 (a), a site violates the PM₁₀ NAAQS when the calculated “rate of expected exceedances” is >1 when averaged over three consecutive years.

Table 33. 2014 Violations of the PM₁₀ 24-hour NAAQS with Only EE Data with EPA-Concurrence Excluded

Site	2012		2013		2014		Rate of Expected Exceedances
	24-hr Max. (µg/m ³)	Expected Exceedances	24-hr Max. (µg/m ³)	Expected Exceedances	24-hr Max. (µg/m ³)	Expected Exceedances	
Buckeye	205‡	1.00	298‡	2.21	271‡	2.0	1.736
Central Phoenix	340‡	0	328‡	2	182‡	1.0	1.0
Durango Complex	221‡	0	303‡	4.02	172‡	2.0	2.007
Dysart	167‡	0	147	0	163‡	1.0	0.33
Glendale	337‡	0	210‡	2	205‡	1.011	1.003
Greenwood	323‡	0	273‡	3.01	208‡	2.011	1.674
Higley	224‡	1.00	211‡	1	179‡	2.0	1.33
Mesa	64#	0	151	0	155‡	1.034	0.344
North Phoenix	178‡	0	153	0	199‡	1.0	0.33
South Phoenix	342‡	0	294‡	2.045	170‡	3.0	1.68
South Scottsdale	102	0	195‡	1.05	193‡	2.045	1.031
Tempe	169‡	0	227‡	1	175‡	1.011	0.67
West Chandler	402	2.00	234‡	3.04	163‡	1.0	2.01
West 43rd Avenue	254‡	2.00	301‡	4.19	171‡	1.0	2.396
West Phoenix	189‡	1.0	255‡	2.03	210‡	2.022	1.684
Zuni Hills	285‡	0	165‡	1.011	166‡	1.247	0.752

Indicates <75% data available, i.e., does not meet data completeness requirements

‡ Indicates value was flagged as an EE

NOTE: Only 2012 EE data with EPA concurrence were excluded in the calculations above. EPA has yet to concur with the 2013 and 2014 EE demonstration submittals.

2014 24-Hour PM₁₀ NAAQS Violation Status without Exceptional Events

The ADEQ submitted EE packages to EPA R9 for the seven PM₁₀ exceedance days that occurred in 2014 and the six exceedance days that occurred in 2013. If the EPA concurs with all of these packages, the number of sites that violated the PM₁₀ standard in 2014 will be zero (see Table 34).

Table 34. 2014 Violations of the PM₁₀ NAAQS with All EE Data Excluded, Regardless of EPA Concurrence

Site	2012		2013		2014		Rate of Expected Exceedances
	24-hr Max. (µg/m ³)	Expected Exceedances	24-hr Max. (µg/m ³)	Expected Exceedances	24-hr Max. (µg/m ³)	Expected Exceedances	
Buckeye	205‡	1.00	112	0	175	1.00	0.666
Central Phoenix	117	0	114	0	135	0	0
Durango Complex	124	0	110	0	107	0	0
Dysart	127	0	147	0	90	0	0
Glendale	136	0	90	0	86	0	0
Greenwood	145	0	119	0	125	0	0
Higley	136	1.00	143	0	137	0	0.333
Mesa	64#	0	151	0	101	0	0
North Phoenix	140	0	153	0	107	0	0
South Phoenix	134	0	118	0	109	0	0
South Scottsdale	90	0	142	0	98	0	0
Tempe	107	0	146	0	88	0	0
West Chandler	402	2.00	144	0	146	0	0.666
West 43rd Avenue	174	2.00	121	0	121	0	0.666
West Phoenix	148	1.00	114	0	148	0	0.333
Zuni Hills	147	0	80	0	86	0	0

Indicates <75% data available, i.e., does not meet data completeness requirements

‡ Indicates value was flagged as an EE

NOTE: All 2012 – 2014 data considered to be the result of an EE have been excluded from the calculations above, regardless of EPA concurrence status. EPA has yet to concur with the 2013 and 2014 EE demonstration submittals.

The 24-Hour PM_{2.5} NAAQS Exceedances and Violation Status

The 24-hour primary and secondary NAAQS for PM_{2.5} is 35 µg/m³. If the 24-hour, midnight-to-midnight block-average concentration at a site is 35.1 µg/m³ or higher, then it is counted as an exceedance. If the 24-hour 3-year average of the 98th percentile exceeds 35 µg/m³, then the 24-hour NAAQS are violated. Table 35 shows there were three exceedance days in 2014 for PM_{2.5}; but there were no violations.

Table 35. 2014 PM_{2.5} Exceedances

Site	Date	24-hr Avg. PM_{2.5} Concentration (µg/m³)
South Phoenix	01/01/14	102
West Phoenix	01/01/14	171
	07/04/14	49
	12/07/14	38
Durango Complex	01/01/14	56
Glendale	01/01/14	50
Mesa	01/01/14	43
Tempe	01/01/14	44
JLG Supersite (ADEQ)	01/01/14	63
Number of Days where at least one monitor exceeded the 24-hour PM_{2.5} Standard		3

Supplemental Exceptional Event Information

Recently, ADEQ began developing and submitting EE packages for PM_{2.5} to EPA R9 for review and consideration. Most, if not all, of these submittals are for elevated PM_{2.5} concentrations in the Phoenix metropolitan area that occurred during high wind events when elevated PM₁₀ concentrations occurred as well. For instance, the ADEQ recently submitted an EE package to EPA R9 for the July 17, 2012 exceedance day in January 2014. In addition, EE packages were submitted for the following exceedance days: July 2-8, 2011, July 18, 2011, August 25 – 28, 2011, September 2, 2011, and June 27, 2012. Copies of EE submittals can be viewed online at [ADEQ's website](#).

Changes to the Criteria Pollutant Air Monitoring Networks

The MCAQD's AMD strives to provide the most reliable and relevant air monitoring data to the public. Air quality issues are diverse and controversial subjects for the citizens of Maricopa County. High-quality monitoring data is a cornerstone of developing and implementing effective SIPs, EE packages, and permits for new and existing sources. The following describes projects and changes that have occurred during 2014.

Station and Site Reclassifications, Relocations, and/or Shutdowns

- Zuni Hills (04-013-4016) – this site was temporarily shutdown because of construction in the area from June 2014 to August 2014. Because the Zuni Hills' PM₁₀ monitor has been operating for more than 24 months, its classification was converted from an SPM to a SLAMS as per EPA protocol. This change was made in AQS effective January 1, 2015.
- Fountain Hills (04-013-9704) – this site was temporarily shutdown from August 27, 2013 through May 14, 2014 due to remodeling of the firehouse complex, which houses the O₃ station.
- Higley site (04-013-4006) – this site was temporarily shutdown on November 4, 2014 due to the property owner asking us to vacate the property. The owner was no longer able to provide housing for the station. Therefore, we discontinued monitoring and decommissioned the site in early November. Our plan is to establish a new site and monitoring station close enough to the previous site that the same AQS site identification number can be used. We are targeting startup by the end of 2015 or as soon as feasible.

New Monitoring Sites

Near-Road NO₂ Monitoring Stations

The EPA [Near-road NO₂ Monitoring Technical Assistance Document](#) provides the procedures for locating the near-road NO₂ monitors. Important parameters for traffic activity that can be readily obtained for near-road monitoring assessments include the number of vehicles, the fleet mix, vehicle speeds (traffic congestion), local terrain and topography, and meteorology. Each of these parameters affects the concentration and characteristics of the near-road pollutants. Per *40 CFR Part 58 Appendix D, § 4.3.2.a*, state and local ambient air monitoring agencies are required to assess what monitoring may be required using the latest available U.S. Census data of population counts and/or estimates and transportation agencies' data of motor vehicle traffic metrics.

- *Site #1 "Diablo"*

The Diablo site, which houses the first of two near-road monitoring stations, received EPA R9 approval in 2013 and opened in February 2014. The site, which is located near Interstate-10 (I-10) and the Broadway Curve, was chosen because it has:

- a #1 rating in fleet-equivalency rank (a comparative rating including both light and heavy-duty vehicles), #1 in average weekday traffic rank (AWT), and #3 in heavy-duty vehicle traffic;
- extreme traffic congestion;
- desirable supporting features such as highway orientation and surrounding grade;
- adjacent to commercial property with considerable residential parcels nearby;
- adequate safety, security, and power availability; and
- adequate accessibility due to the highway frontage land being owned by the Arizona Department of Transportation (ADOT), who has granted access.
 - ADOT is planning a major road-widening construction project from the U.S. 60/I-10 split to the Interstate-17/I-10 split beginning in 2019. Based on discussions with ADOT regarding site accessibility during construction, it appears that we will be able to move the monitoring station back from the highway far enough to accommodate monitoring during construction. If moving the station is not feasible, then we will have to prepare a site relocation assessment. We believe other nearby locations adjacent to I-10 are suitable.

- *Site #2 "Thirty-Third"*

For the second near-road site, a location was chosen near a high-density population source that does not represent the same traffic as the Diablo site. The EPA R9 approved our proposal for the second site's location, which is just east of 33rd Avenue on the south side of the I-10 highway in an area just past the soundwall. The secure monitoring shelter placement is within 10-20 meters of the road in the middle of the grade (see Figure 12 and Figure 13). As of June 2015, the site's construction is nearly complete, and we are targeting August 2015 for air monitoring startup.

This location was the most desirable because it has:

- a #13 rating in fleet-equivalency rank, #17 in AWT traffic, and #12 in heavy-duty vehicle traffic;
- extreme traffic congestion;
- many residential parcels nearby;

- favorable surrounding features and background NO₂ sources;
- adequate safety and security features that consist of the setback from the road, the grade of the slope, and a block wall around the shelter;
- adequate power supply; and,
- adequate accessibility due to the highway frontage land being owned by ADOT, who has granted access.

We proposed that the location's positive aspects outweighed the negative, and features alongside this road segment will allow access while avoiding the soundwalls. The site's drawbacks include:

- an east-west orientation, which is parallel to the average predominate wind direction;
- the highway is approximately 20' below grade;
- an overpass is located at 35th Avenue; and,
- soundwalls exist on some parts of the interstate.

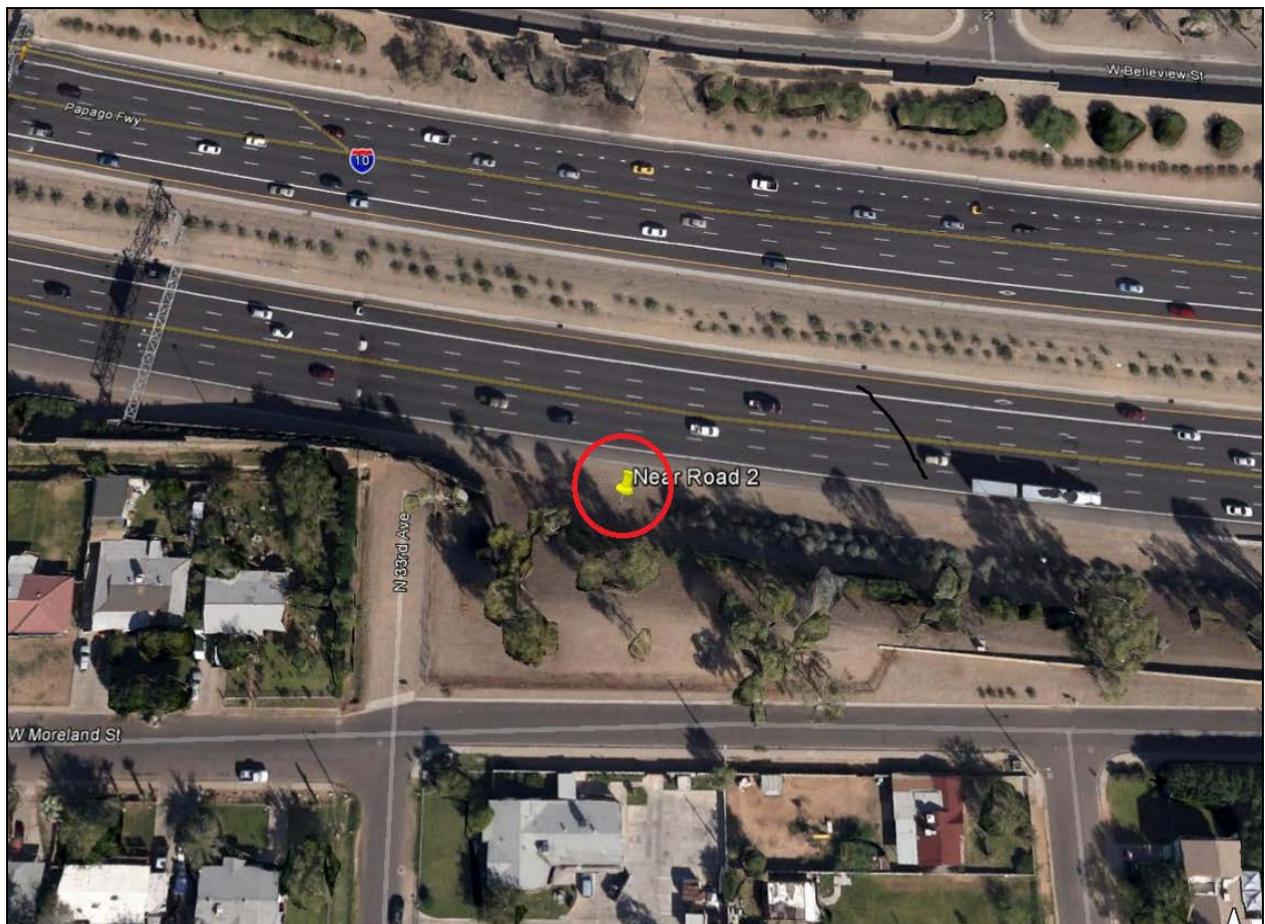


Figure 12. Aerial View of Near-road Site #2



Figure 13. Street View of Near-road Site #2

Seasonal Air Monitoring

There are no changes requested for reducing year-round monitors to seasonal monitors or vice versa. Currently, the AMD operates nine out of thirteen CO monitors on a seasonal basis (see Table 36). During the off-season, the quantity of CO monitors operating still exceeds the EPA's minimum requirements. By operating the CO network seasonally, AMD can better perform instrument upgrades, preventive maintenance that extends the life expectancy of the monitoring instruments while reducing replacement costs, and QA/QC checks on the required year-round monitors.

Table 36. Seasonal Monitors

Seasonal CO Monitoring Sites (Operational Sept. 1 – Apr. 1)
Buckeye
Dysart
Glendale
Mesa
North Phoenix
South Phoenix
South Scottsdale
Tempe
West Chandler

Daily Uses of Criteria Pollutant Data

Air Quality Forecasting

The ADEQ, in conjunction with MCAQD, has developed a year-round air quality forecasting capability for the Phoenix metropolitan area. ADEQ takes the lead on air quality forecasting and the issuing of High Pollution Advisories (HPA), while the MCAQD provides monitoring data and designates No-Burn Days. In 2014, AMD continued to supply CP and meteorological data to the ADEQ forecasters on a daily basis. In 2015, we began supplying CP and meteorological data to MAG on a daily basis as well.

Maricopa County's Air Monitoring Website

The department continued distributing 1-hour and 5-minute continuous CP data for the "[Maricopa County Interactive Pollution Map](#)". The website provides each pollutant's concentrations as well as AQI values. By having easy access to this information, the public can better plan their daily activities.

EPA's AIRNow Website

The department continued distributing 1-hour and 5-minute continuous CP data for the EPA's AIRNow website, which serves the same purpose as that of the Maricopa County's website.

Information Regarding Maricopa County's Supplementary Air Monitoring Programs

The Mobile Monitoring Program

The department received approval in late 2006 from the Maricopa County Board of Supervisors to start a “mobile monitoring” program. This program enables us to better respond to emergencies affecting air quality, to identify sources of air pollutants by performing localized air monitoring, and to collect and analyze hazardous air pollutant (HAP) samples. In addition, the program allows us to assist the Maricopa County Air Quality Compliance and Enforcement Division (MCAQCED) with the investigation and enforcement of air pollution control regulations.

In 2014, the mobile monitoring unit responded to air quality emergencies throughout Maricopa County such as heavy smoke from fires or toxic releases that threatened air quality (see Figure 14). By request, we responded to air quality concerns at an industrial source in Pinal County. All mobile monitoring personnel are required to meet medical monitoring and “hazwoper” training as per the U.S. Occupational Safety and Health Administration (OSHA) requirements found in *29 CFR 1910.120*. Members are recertified annually through refresher training.



Figure 14. 2014 Mulch Fire

Superbowl 2015

Phoenix hosted the National Football League's 49th Superbowl on February 1, 2015. The MCAQD was involved with the planning of safety and security for the games as well as other Superbowl events and activities scheduled in Glendale and downtown Phoenix. In 2014, activities primarily included attending Superbowl planning meetings and developing an air monitoring plan for public's safety and security. More information concerning our activities will be included in the next year's AMNP, because the Superbowl occurred in February 2015.

Rapid Response Notification System (RRNS)

Maricopa County enjoys many days with clean air. However, there are several days during the year when air pollution levels approach or exceed the NAAQS for PM₁₀, PM_{2.5}, or O₃. The MCAQD's robust ambient air monitoring system identifies when a significant amount of air pollution is building up. High CP pollution can cause immediate health impacts to County's residents and visitors and threaten our NAAQS attainment status. Therefore, MCAQD uses the RRNS to disseminate information regarding a developing situation to employees, stakeholders, and/or customers.

The RRNS serves as a tool to manage high pollution events using a three-part system:

1. dissemination of as near real-time as possible air quality data to the community;
2. a notification system to alert MCAQD personnel, stakeholders, and customers of a pollution problem; and,
3. onsite response from department inspectors and stakeholders to identify and discourage pollution activity and to reduce the risk of pollution impacts.

For PM₁₀ and PM_{2.5}, concentrations can buildup quickly due to a high wind speed or a fire, respectively. Overall, curtailing PM pollution from natural events is challenging; it requires advanced planning and implementation of control mechanisms to reduce the likelihood of an exceedance. However, anthropogenic activities that cause high PM concentrations near a site can often be addressed. If a quickly-developing PM event is not addressed, it could result in a NAAQS exceedance that may have been avoidable.

The AirVision™ database is programmed to trigger alerts for elevated PM₁₀ five-minute and hourly concentrations, and high PM_{2.5} five-minute concentrations. Immediately following an hourly or five-minute PM concentration surpassing an internally imposed notification limit, a high importance alert is sent out via email, text, and/or telephone. The MCAQD requests dust control permit holders inspect their sites as soon as possible and employ Best Available Control Measures to stabilize all disturbed soils to reduce blowing dust following the notification. The MCAQCED inspectors also review the data and current circumstances, make site visits, or take other appropriate actions to help stop PM concentrations from increasing. To better expedite response actions, meteorological data such as wind speed and direction are also available in five-minute increments.

Overall, there are little to no immediate actions that can be taken to reduce high concentrations of gaseous CPs. Currently, there are no RRNS triggers established for gaseous pollutants. In general, gaseous pollutant concentrations are decreased through planning and implementing long-term emission controls on sources. Depending on local sources of gaseous pollutants, it may be feasible to have a source stop operating at such times to reduce emissions. For instance, SO₂ is prone to spiking during certain industrial activities, and at such a time, temporarily shutting down an operation may be a viable control measure. Although a short-term increase or spike may occur for a particular gas, we rarely see them unless they are associated with out-of-the-ordinary activities near the site.

Emergency Response

The MCAQD is equipped to respond to air quality emergencies throughout Maricopa County, such as heavy smoke from fires or air toxic releases that threaten air quality. All division personnel are trained and use U.S. EPA and/or OSHA approved health and safety guidelines during hazardous materials and emergency response situations. Response team members are required to meet OSHA 29 CFR 1910.120 medical monitoring and training requirements. Members remain current through annual recertification.

In responding to emergencies, MCAQD has a wide variety of specialized equipment to assess air quality and meteorological conditions. These include several specially-equipped trailers and a large self-powered van equipped with CP monitors and meteorological instruments. In addition, AMD has purchased several portable monitors, including a FTIR to monitor air toxics and an Area-Rae system to monitor chlorine and ammonia.

When emergencies such as fires, chemical spills, or pipeline breaches occur, the air in the surrounding community can be adversely affected. The fire department with jurisdiction over the area is the designated authority to respond and mitigate such incidents. Most, if not all of the fire departments serving the metropolitan area have hazmat units and are prepared to identify and monitor for toxic chemicals resulting from the incident. Typically, the fire department's mission is to monitor the air until the incident is under control, which may take several hours. The MCAQD's response may provide backup to and continuation of the fire department's monitoring efforts. Our intention is to provide monitoring during and following an incident to ensure air quality impacts are addressed. This continued monitoring allows us to provide a higher level of care and assurance to our population. The results of the study are being forthcoming.

PM_{2.5} Speciation Monitoring

Occasionally, the AMD operates PM_{2.5} speciation monitors at certain monitoring sites. Sampling locations and duration vary from year-to-year, depending on prior data findings, current air monitoring needs, and resources availability. Speciation samples are used to identify select chemical components of PM_{2.5}, which may help to identify PM_{2.5} sources as well. Speciation samples have been collected from midnight-to-midnight using the Met One SuperSASS™ samplers. An EPA-contracted commercial laboratory that supports the Chemical Speciation Network (CSN) prepares the pre-exposed filter for sampling and analyzes the filter samples following collection.

In late 2014, we conducted a special study at the Durango Complex and West Phoenix sites. These sites were chosen because of population density and/or a history of being prone to elevated concentrations of fine particulates. We collaborated with ADEQ's Air Monitoring Unit, who supported the study by temporarily loaning us a SuperSASS™ and by collecting additional samples at JLG Supersite, which is an official CSN site. The days monitored were: Thanksgiving Eve and Day, Christmas Eve and Day, and New Year's Eve and Day.

Information Regarding Additional Air Monitoring within Maricopa County

The ADEQ operates its own air monitoring surveillance system within the State of Arizona, which includes the JLG Supersite in central Phoenix. The JLG Supersite is part of the national air monitoring surveillance system, and CP data are collected at this site. In addition, ADEQ collects air quality data for research programs at both the JLG Supersite and MCAQD's South Phoenix site. These research air monitors are primarily geared toward a variety of EPA-required air pollution trends research programs. Specifically, ADEQ performs air monitoring in Maricopa County for the Chemical Speciation Network (CSN), the Interagency Monitoring of Protected Visual Environments (IMPROVE), the National Air Toxics Trends Stations (NATTS), the National Core multi-pollutant monitoring stations (NCORE), the Photochemical Assessment Monitoring Stations (PAMS), the Urban Air Toxics Monitoring Program (UATMP). They also operate visibility cameras and meteorological monitors within the County. Occasionally, ADEQ may temporarily use other sites for special projects.

For more information about ADEQ's network, consult their annual network plan located on the [ADEQ website](#).

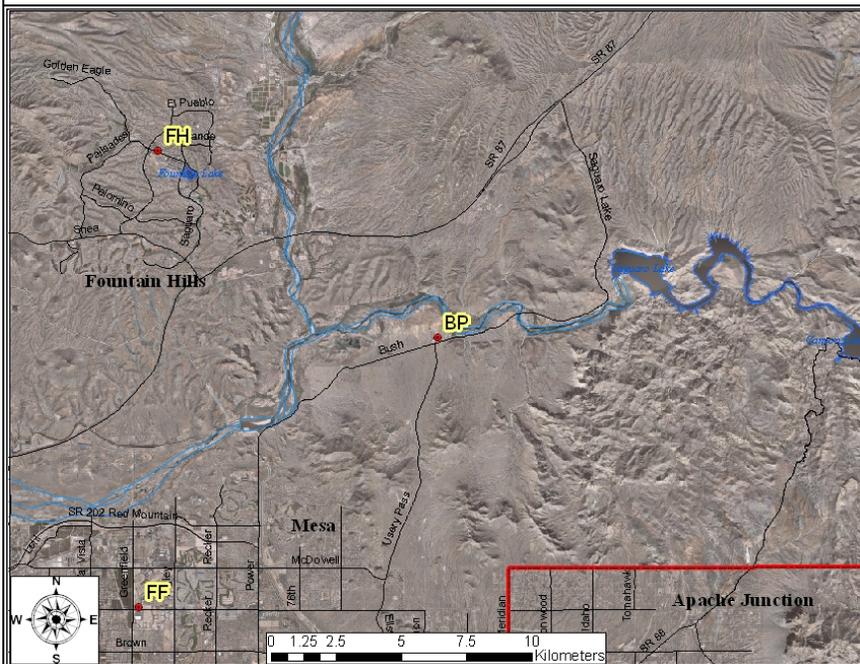
REFERENCES

1. *eCFR Title 40, Parts 50, 53, and 58*
2. EPA's AirData (AQS) information: <http://www.epa.gov/airdata>
3. EPA's NAAQS Info: <http://www.epa.gov/ttn/naaqs/criteria.html>
4. SIP Information: <http://www.azdeq.gov/environ/air/plan/index.html>
5. EPA Region 9 Air Program Information: <http://www.epa.gov/region9/air/index.html>
6. Maricopa County Air Quality Map: <http://alert.fcd.maricopa.gov/alert/Google/v3/air.html>
7. AirNow: <http://airnow.gov/>
8. Criteria Pollutant Information: <http://www3.epa.gov/airquality/urbanair/>
9. Maricopa County Air Quality Department Prior Network Reviews: <http://www.maricopa.gov/aq/divisions/monitoring/network.aspx>
10. Arizona Department of Environmental Quality Natural and Exceptional Events: <https://www.azdeq.gov/environ/air/plan/nee.html>

APPENDIX I –2014 AIR MONITORING DATA BY SITE

**Site information includes: photographs, site type and spatial scale,
and population represented.**

Blue Point (BP) (04-013-9702)



Location: Bush Highway and
Usery Pass Rd., Maricopa
County
Spatial Scale: Urban
Monitoring Objective: Maximum
Ozone Concentration



Site Description: The Blue Point site became operational in July 1995 and is located in a Maricopa County Sheriff’s Sub-Station in Tonto National Forest. This site represents the maximum O₃ concentration and urban-scale downwind transport conditions. This site is located approximately 40 miles east of the Phoenix metropolitan area. This SLAMS location monitors for O₃. Meteorological monitors operating at this site include: ambient temperature and wind speed/direction.

		2012	2013	2014
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.079*	0.077*	0.088*
	O ₃ #Daily Exceedances >0.075 (ppm)	10	3	2
	O ₃ 3-year average of 4 th High (ppm)	0.075	0.077#	0.075

*Indicates an exceedance of the standard

#Indicates a violation of the standard

Buckeye (BE) (04-013-4011)



Location: US 85 & MC 85,
Buckeye
Spatial Scale: Neighborhood and
Urban (NO₂)
Monitoring Type: Population
Exposure



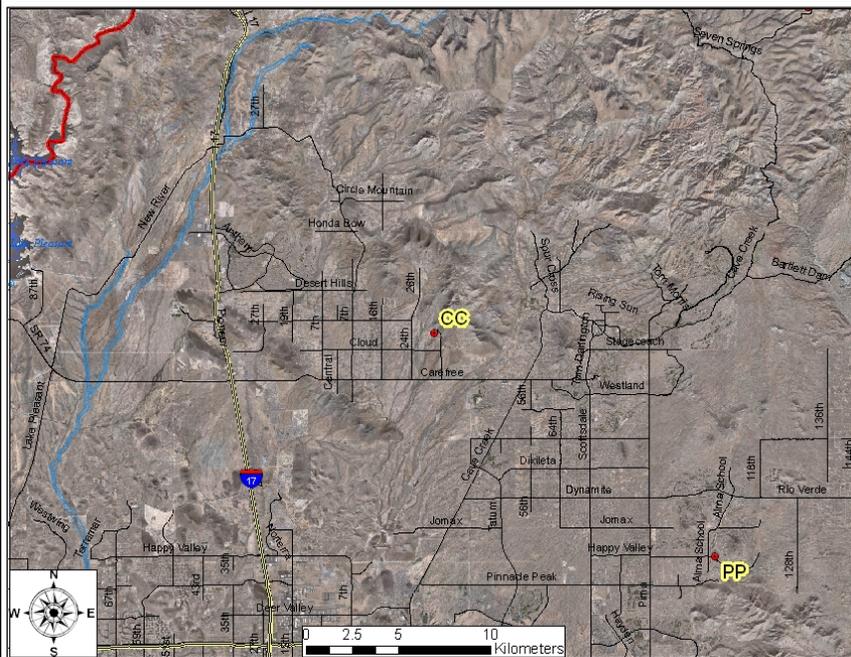
Site Description: The Buckeye site was established on August 1, 2004. The site is located in the Maricopa County Department of Transportation - Southwest Facility. The immediate area is agriculture and encroaching residential development. This SLAMS location monitors for CO seasonally, NO₂, O₃, and PM₁₀. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	0.5	0.4	0.6
	Number exceedances 8-hr CO	0	0	0
NO₂	Annual NO ₂ Avg. (ppb)	9.4	8.42	8.65
	NO ₂ 1-hour Ave. 98 th Percentile (ppb)	39.0	40.0	37.0
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.078	0.062	0.068
	O ₃ #Daily Exceedances >0.075	1	0	0
	O ₃ 3-year Avg. of 4 th High (ppm)	0.066	0.065	0.062
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	205*‡	298*‡	271*‡
	Number exceedances 24-hr PM ₁₀	2	2	2
	Annual PM ₁₀ Avg. (µg/m ³)	47.4	40.8	43.4

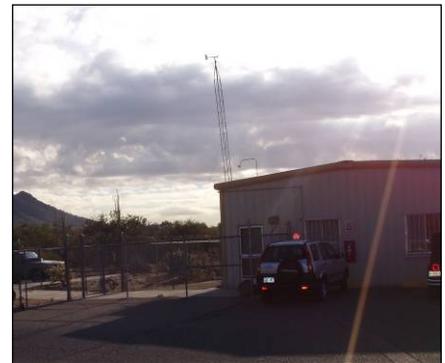
*Indicates an exceedance of the standard

‡Indicates EE at this site - listed value is the highest official current AQS reading.

Cave Creek (CC) (04-013-4008)



Location: 32nd St. & Carefree Highway, Cave Creek
Spatial Scale: Urban
Monitoring Type: Maximum Ozone Concentration



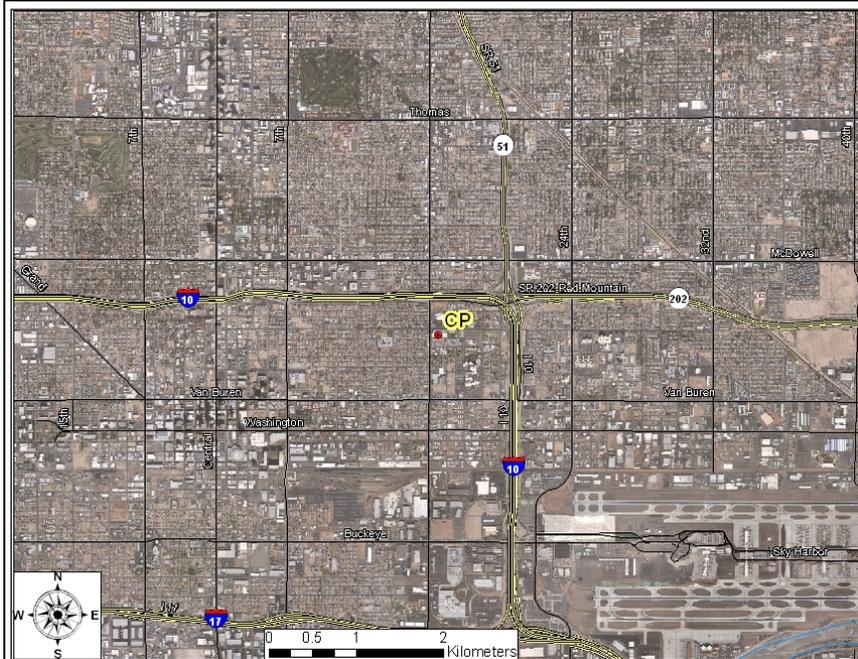
Site Description: The Cave Creek site became operational in August 2001 and is located in the Maricopa County Cave Creek Recreation Area (Park Office). This site was chosen through discussions on modifying the O₃ network for the 2005 8-hr O₃ standard. This SLAMS location monitors for O₃ only. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, rain, relative humidity, and wind speed/direction.

		2012	2013	2014
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.081*	0.076*	0.081*
	O ₃ #Daily Exceedances >0.075 (ppm)	10	1	2
	O ₃ 3-year average of 4 th High (ppm)	0.077#	0.077#	0.074

*Indicates an exceedance of the standard

#Indicates a violation of the standard

Central Phoenix (CP) (04-013-3002)



Location: 19th St. and Roosevelt
Spatial Scale: Neighborhood
Monitoring Type: High Population
 Exposure and Highest
 Concentration (NO₂ and SO₂)



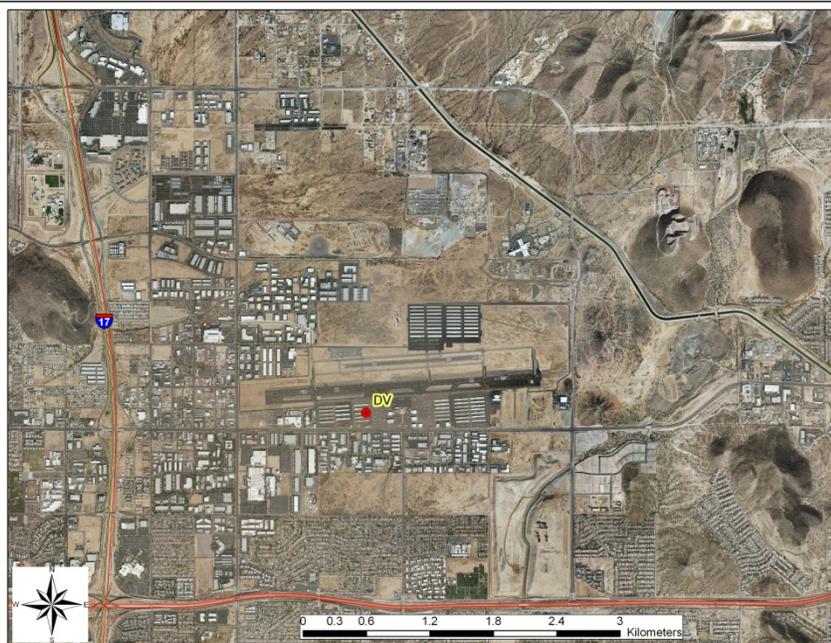
Site Description: The Central Phoenix site has been in existence for over four decades and has provided a long-term historical database with a high rate of data recovery. The site is representative of high population exposure (greater than 5000 people per square mile) in the central Phoenix area. This SLAMS location monitors for CO, PM₁₀, NO₂, O₃, and SO₂. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, and wind speed/direction.

		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	2.7	2.1	2.5
	Number exceedances 8-hr CO	0	0	0
NO ₂	Annual NO ₂ Avg. (ppb)	21.2	19.71	17.97
	NO ₂ 1-hour Average 98 th Percentile (ppb)	63.0	60	57.0
O ₃	Max. 8-hr O ₃ Avg. (ppm)	0.084*	0.079*	0.077*
	O ₃ #Daily Exceedances >0.075 ppm	6	3	1
	O ₃ 3-year avg. of 4 th High (ppm)	0.074	0.075	0.074
PM ₁₀	Max. 24-hr PM ₁₀ Avg. Continuous (µg/m ³)	340*‡	328*‡	182*‡
	Number exceedances Continuous 24-hr PM ₁₀	1	2	1
	Annual PM ₁₀ Avg. Continuous (µg/m ³)	37.9	31.8	32.0
SO ₂	SO ₂ 1-hour 99 th Percentile (ppb)	3.4	8.0	7.0
	Number of Exceedances SO ₂	0	0	0
	Annual SO ₂ Avg. (ppb)	1.2	1.19	3.3

*Indicates an exceedance of the standard

‡Indicates EEs at this site - listed value is the highest official current AQS reading.

Deer Valley (DV) (04-013-4018)



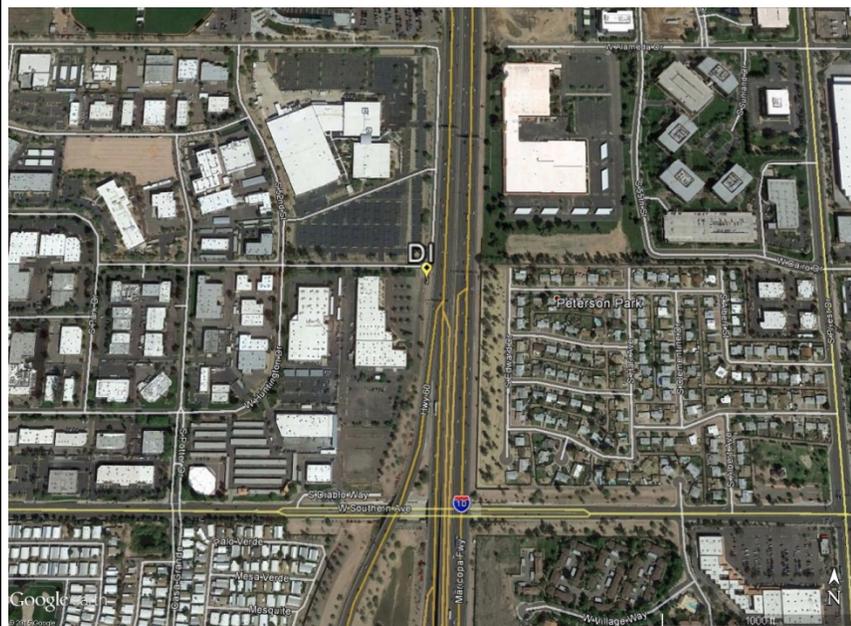
Location: 7th Avenue & Deer Valley Rd.
Spatial Scale: Middle
Monitoring Type: Source-oriented



Site Description: The Deer Valley site is located on the grounds of the Deer Valley Airport in north Phoenix. This site was started in July 2010, because changes in the Pb NAAQS necessitated that MCAQD begin Pb monitoring once again. All ambient Pb monitoring had been discontinued in 1997, because concentrations were consistently much lower than the NAAQS at that time. The source of Pb emissions is the general aviation fuels used in the propeller-driven aircraft, and Deer Valley Airport is one of the busiest general aviation airports in Maricopa County. This SLAMS location monitors for Pb only. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

		2012	2013	2014
Pb	Max. 24-hr Pb Avg. ($\mu\text{g}/\text{m}^3$)	0.057	0.071	0.087
	Pb #Daily Exceedances $>0.15\mu\text{g}/\text{m}^3$	0	0	0
	Pb Maximum 3-month Rolling Quarterly Average ($\mu\text{g}/\text{m}^3$)	0.0398	0.04	0.05

Diablo (DI) (04-013-4019)



Location: Fairmont Dr. & Diablo Way
Spatial Scale: Micro
Monitoring Type: Source-oriented



Site Description: The Diablo site was the first near-road air monitoring site established by MCAQD on the west side of the I-10 highway just south of the Fairmont/Diablo Way intersection. There is a concrete barrier between the highway and the frontage road, offering safety, and we have erected a secure shelter for housing the monitoring instruments. In February 2014, we began reporting CO and NO₂ data, with PM_{2.5} data soon following in May 2014. This SLAMS location monitors for CO, NO₂, and PM_{2.5}. Meteorological monitors operating at this site include: ambient temperature, relative humidity, and wind speed/direction.

		2012	2013	2014				
CO	Max. 8-hr CO Avg. (ppm)	N/A	N/A	1.4				
	Number exceedances 8-hr CO			0				
NO₂	Annual NO ₂ Avg. (ppb)			N/A	N/A	20.85		
	NO ₂ 1-hr Average 98 th Percentile (ppb)					59.0		
PM_{2.5}	Max. 24-hr PM _{2.5} Avg. (µg/m ³)					N/A	N/A	29.2+
	No. of daily PM _{2.5} exceedances							0
	Annual PM _{2.5} Avg. (µg/m ³)			9.71+				
	98 th Percentile PM _{2.5} Value (µg/m ³)			21.4+				

+Represents <75% of a data completeness due to May startup (238 daily observations in 2014)

Durango Complex (DC) (04-013-9812)



Location: 27th Ave and Durango St.
Spatial Scale: Middle
Monitoring Type: Highest Concentration



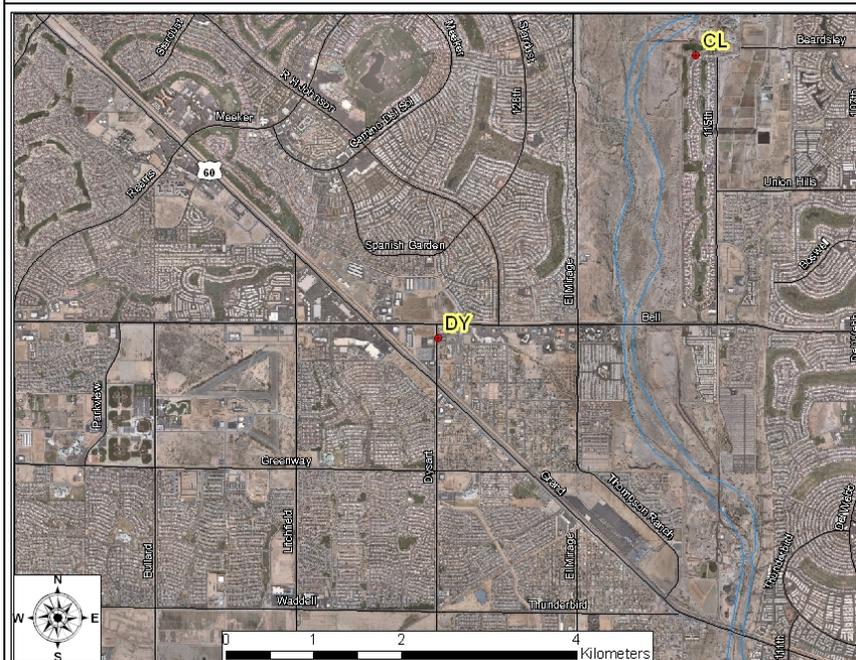
Site Description: This site is located in the Maricopa County Flood Control District storage yard. Sampling began on January 6, 1999 with the intent to replace the old maximum highest concentration site. However, in 2000 the EPA determined that the site is not equivalent to that old site, which prompted the establishment of a new highest concentration site (West 43rd). This SLAMS location monitors for PM₁₀, PM_{2.5}, and SO₂. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

		2012	2013	2014
PM₁₀	Max. 24-hr PM ₁₀ Avg. Continuous (µg/m ³)	221*‡	303*‡	172*‡
	Number exceedances Continuous 24-hr PM ₁₀	4	4	2
	Annual PM ₁₀ Avg. Continuous (µg/m ³)	49.1	40.1	42.1
PM_{2.5}	Max. 24-hr PM _{2.5} Avg. (µg/m ³)	74.4*	66.9*	56.4*
	No. of daily PM _{2.5} exceedances	2	3	1
	Annual PM _{2.5} Avg. (µg/m ³)	11.6	10.54	10.12
	98 th Percentile PM _{2.5} Value (µg/m ³)	24.9	27.2	24.1
SO₂	SO ₂ 1-hour 99 th Percentile (ppb)	NA	9.0	8.0
	Number of Exceedances SO ₂	0	0	0
	Annual SO ₂ Avg. (ppb)	1.5	1.15	0.87

*Indicates an exceedance of the standard

‡Indicates EEs at this site

Dysart (DY) (04-013-4010)



Location: Bell Rd. & Dysart Rd.,
Surprise
Spatial Scale: Neighborhood
Monitoring Type: Population
Exposure



Site Description: The Dysart site was established in July 2003. It is located at the Maricopa County Facility Maintenance Yard at the corner of Bell Rd. and Dysart Rd. The site is in a growing population area in the northwest valley. The land use around the site consists of subdivisions of single family homes, commercial, and industrial. The location is approximately one mile west of the Agua Fria riverbed. This SLAMS location monitors for CO seasonally, O₃, and PM₁₀. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	0.6	0.7	0.6
	Number exceedances 8-hr CO	0	0	0
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.079*	0.075	0.075
	O ₃ #Daily Exceedances >0.075 ppm	2	0	0
	O ₃ 3-year Avg. of 4 th High (ppm)	0.071	0.072	0.072
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	167*‡	147	163*‡
	Number exceedances 24-hr PM ₁₀	1	0	1
	Annual PM ₁₀ Avg. (µg/m ³)	30.0	24.9	26.7

*Indicates an exceedance of the standard

‡Indicates EEs at this site - listed value is the highest official current AQS reading.

Falcon Field (FF) (04-013-1010)



Location: Greenfield and McKellips
Spatial Scale: Neighborhood
Monitoring Type: Population Exposure

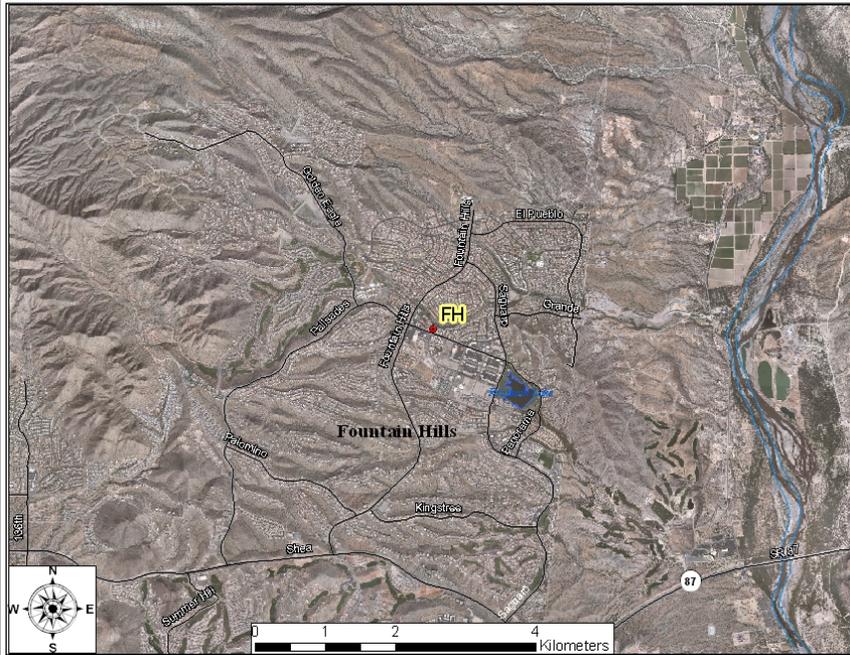


Site Description: Monitoring began in June of 1989. The site is located at a fire station near an airfield within a growing residential area. This SLAMS location monitors for O₃ only. Meteorological monitors operating at this site include: ambient temperature, relative humidity, and wind speed/direction.

		2012	2013	2014
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.075	0.082*	0.088*
	O ₃ #Daily Exceedances >0.075 ppm	0	5	4
	O ₃ 3-year avg. of 4 th High (ppm)	0.069	0.072	0.074

*Indicates an exceedance of the standard

Fountain Hills (FH) (04-013-9704)



Location: Fountain Hills Blvd. and Palisades Blvd.
Spatial Scale: Neighborhood
Monitoring Type: Maximum Ozone Concentrations



Site Description: The site is located at a Fountain Hills fire station, and it became operational in April of 1996. The site is located approximately 15 miles downwind from the Phoenix metropolitan area and represents the high downwind O₃ concentrations on the fringes of the central basin district along the predominant summer/fall daytime wind direction. The site was shutdown from August 27, 2013 through May 14, 2014 for complex renovation. This SLAMS location monitors for O₃ only. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

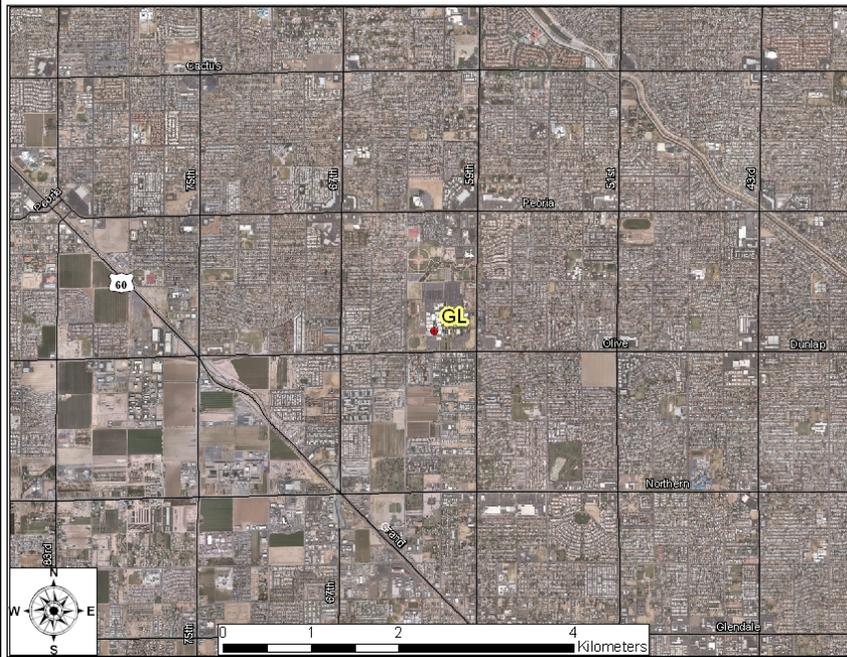
		2012	2013	2014
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.083	0.072@	0.075@
	O ₃ #Daily Exceedances >0.075 ppm	5	0	0
	O ₃ 3-year avg. of 4 th High (ppm)	0.076#	0.074@	0.071@

*Indicates an exceedance of the standard

#Indicates a violation of the standard

@ = <75% data completeness (223 valid daily observations in 2014)

Glendale (GL) (04-013-2001)



Location: 59th Ave. and Olive Ave.
Spatial Scale: Neighborhood
Monitoring Type: Population Exposure



Site Description: The site is located on the grounds of Glendale Community College in a populous residential area. Homes, various strip malls, food establishments, and parks surround the site. This SLAMS location monitors for CO seasonally, O₃, PM₁₀, PM_{2.5}. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

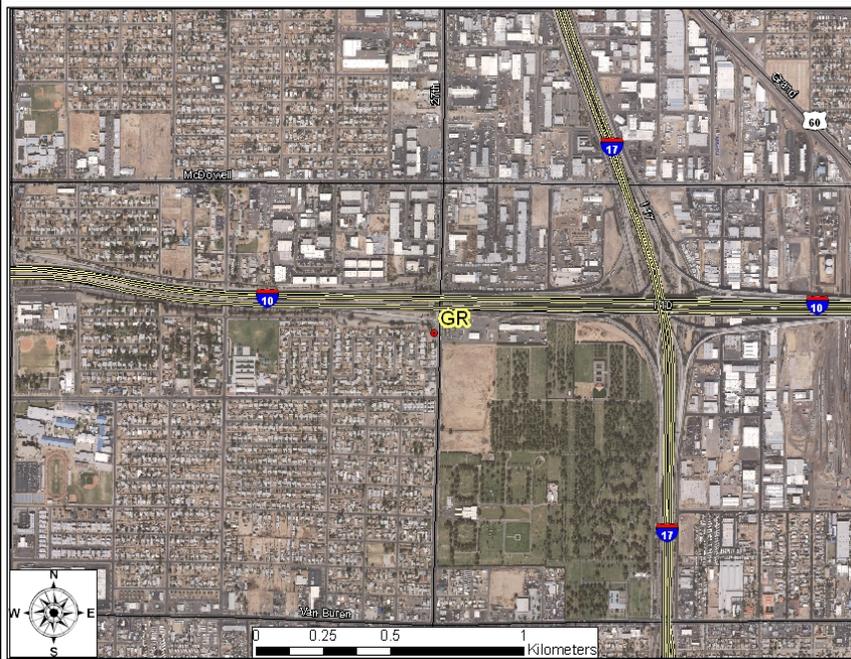
		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	1.3	1.6	1.4
	Number exceedances 8-hr CO	0	0	0
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.088*	0.077*	0.079*
	O ₃ #Daily Exceedances >0.075 ppm	4	2	2
	O ₃ 3-year avg. of 4 th High (ppm)	0.076#	0.076#	0.074
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	337*‡	210*‡	205*‡
	Number exceedances 24-hr PM ₁₀	1	2	1
	Annual PM ₁₀ Avg. (µg/m ³)	34.1	27.5	27.4
PM_{2.5}	Max. 24-hr PM _{2.5} Avg. (µg/m ³)	66.1*	90.0*	50.0*
	No. of daily PM _{2.5} exceedances	2	1	1
	Annual PM _{2.5} Avg. (µg/m ³)	8.7	7.52	7.73
	98 th Percentile Value (µg/m ³)	18.6	16.6	18.6

*Indicates an exceedance of the standard

#Indicates a violation of the standard

‡Indicates EEs at this site - listed value is the highest official current AQS reading.

Greenwood (GR) (04-013-3010)



Location: 27th Ave. and I-10,
Phoenix
Spatial Scale: Middle
Monitoring Type: Population
Exposure



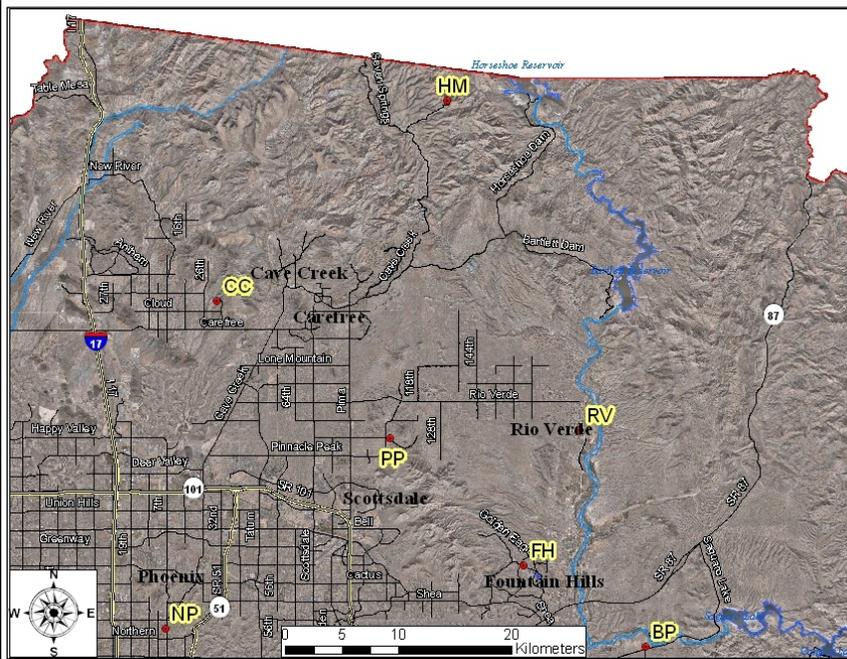
Site Description: Monitoring began at this site in December 1993. The station is bordered by I-10, homes, and the Greenwood Cemetery. Interstate-17 is approximately one mile to the east of the site. This SLAMS location monitors for CO, NO₂, and PM₁₀. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, and wind speed/direction.

		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	3.2	2.5	2.6
	Number exceedances 8-hr CO	0	0	0
NO₂	Annual NO ₂ Avg. (ppb)	26.0	24.58	24.55
	NO ₂ 1-hour Average 98 th Percentile (ppb)	65.0	64.3	64.0
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	323*‡	273*‡	208*‡
	Number exceedances 24-hr PM ₁₀	2	3	2
	Annual PM ₁₀ Avg. (µg/m ³)	45.3	41.5	44.0

*Indicates an exceedance of the standard

‡Indicates EEs at this site - listed value is the highest official current AQS reading.

Humboldt Mountain (HM) (04-013-9508)



Location: Humboldt Mountain Summit
Spatial Scale: Regional
Monitoring Type: Maximum Ozone Concentrations



Site Description: This site became operational in August 1995. The Humboldt Mountain site is located on Federal Aviation Agency property, in a National Forest Service building within the Tonto National Forest. This site is located approximately 40 miles north-northeast of the Phoenix metropolitan area at an elevation of 5190 feet. This SLAMS location monitors for O₃ only. Meteorological monitors operating at this site include: ambient temperature and relative humidity.

		2012	2013	2014
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.082*	0.078*	0.082*
	O ₃ #Daily Exceedances >0.075 ppm	10	1	3
	O ₃ 3-year avg. of 4 th High (ppm)	0.075	0.076#	0.075

*Indicates an exceedance of the standard

#Indicates a violation of the standard

Mesa (ME) (04-013-1003)



Location: Broadway Rd. and Brooks Ave.
Spatial Scale: Neighborhood
Monitoring Type: Population Exposure



Site Description: This site is located at the City of Mesa - Brooks Reservoir, which is centered in an area that contains residential, commercial, and industrial properties. In December 2012, following a ten-month site construction by the City of Mesa, the site began operation again with new continuous PM₁₀, PM_{2.5}, and O₃ monitors. This SLAMS location monitors for CO seasonally, O₃, PM₁₀, and PM_{2.5}. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	1.4	1.2	4.2
	Number exceedances 8-hr CO	0	0	0
O₃	Max. 8-hr O ₃ Avg. (ppm)	Did not operate	0.086*	0.086*
	O ₃ #Daily Exceedances >0.075 ppm	Did not operate	6	6
	O ₃ 3-year avg. of 4 th High (ppm)	Did not operate	NA	NA
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	64	151	155*‡
	Number exceedances 24-hr PM ₁₀	0#	0	1
	Annual PM ₁₀ Avg. (µg/m ³)	22.8	28.8	30.4
PM_{2.5}	Max. 24-hr PM _{2.5} Avg. (µg/m ³)	23.3 (16.0)	(31.9)	33.9
	Number of Daily PM _{2.5} Exceedances	0@	0	0
	Annual PM _{2.5} Avg. (µg/m ³)	8.5@ (5.8)@	(5.69)	8.02
	98 th Percentile PM _{2.5} Value (µg/m ³)	23.3@ (10.4)@	(12.8)	20.3

*Indicates an exceedance of the standard

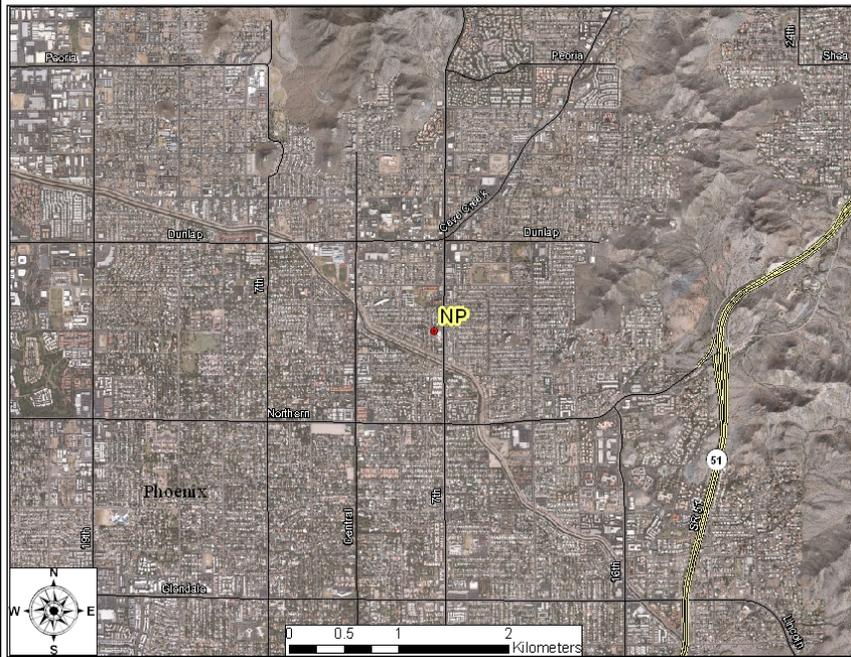
‡Indicates EEs at this site - listed value is the highest official current AQS reading.

#Indicates a violation of the standard

@ = <75% data completeness

NOTE: For 2012 and 2013, the first PM value is from a 24-hour filter sample; the second value shown in parenthesis is from a continuous monitor.

North Phoenix (NP) (04-013-1004)



Location: 7th St. and Butler Ave.
Spatial Scale: Neighborhood
Monitoring Type: Population Exposure



Site Description: This site is located in the Sunnyslope area of North Phoenix. The site is surrounded by residential and commercial properties. This SLAMS location monitors for CO seasonally, O₃, and PM₁₀, PM_{2.5}. Meteorological monitors operating at this site include: ambient temperature, delta T (temperature inversion), barometric pressure, solar radiation, and wind speed/direction.

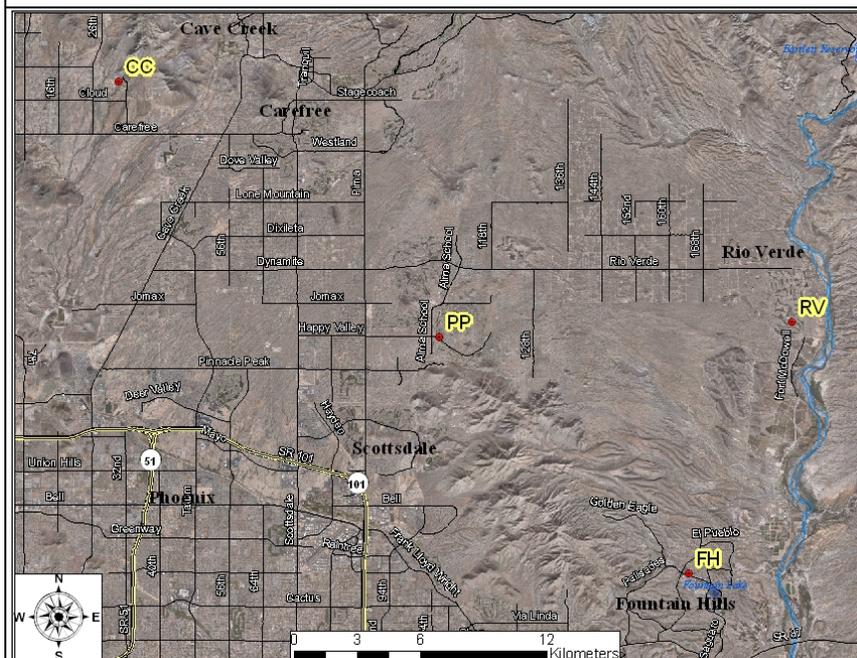
		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	1.5	1.3	1.4
	Number exceedances 8-hr CO	0	0	0
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.091*	0.080*	0.082*
	O ₃ #Daily Exceedances >0.075 ppm	10	7	6
	3-year Avg. of 4 th High (ppm)	0.081#	0.081#	0.080#
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	178*‡	151	199*‡
	Number exceedances 24-hr PM ₁₀	1	0	1
	Annual PM ₁₀ Avg. (µg/m ³)	32.4	28.8	27.9
PM_{2.5}	Max. 24-hr PM _{2.5} Avg. (µg/m ³)	30.1	57.3*	33.9
	Number of Daily Exceedances	0	1	0
	Annual PM _{2.5} Avg. (µg/m ³)	9.3	8.00	8.02
	98 th Percentile Value (µg/m ³)	21.2	17.2	20.3

*Indicates an exceedance of the standard

#Indicates a violation of the standard

‡Indicates EEs at this site - listed value is the highest official current AQS reading.

Pinnacle Peak (PP) (04-013-2005)



Location: Alma School & Happy Valley Rd.
Spatial Scale: Urban
Monitoring Type: Maximum Ozone Concentrations



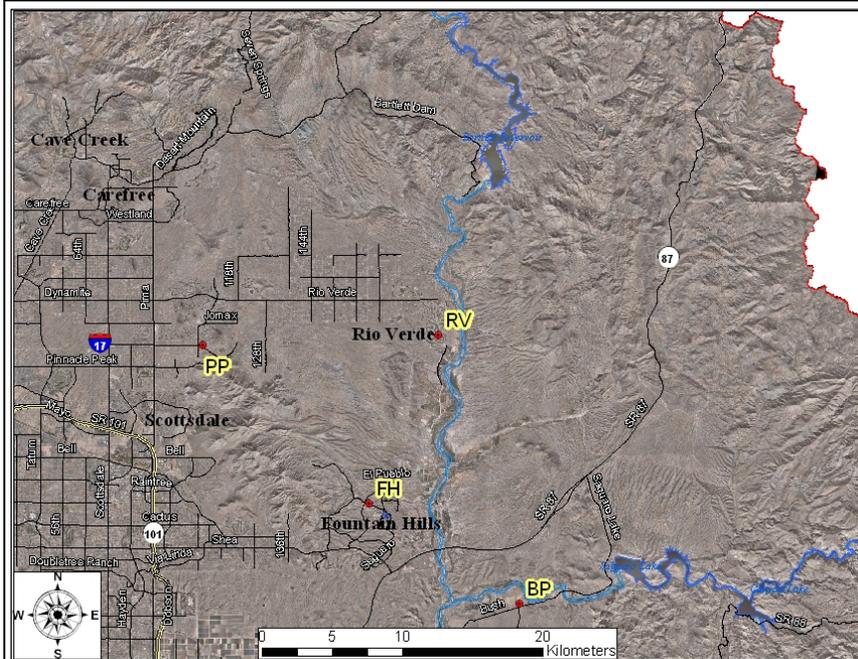
Site Description: The site is located in a geographic area of low-density population (less than 2500 people per square mile). In the current and previous years, O₃ exceedances have been recorded due to transport of O₃ and precursors from more urbanized areas of metropolitan Phoenix. This SLAMS location monitors for O₃ only. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

		2012	2013	2014
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.082*	0.080*	0.088*
	O ₃ #Daily Exceedances >0.075 ppm	6	5	6
	O ₃ 3-year Avg. of 4 th High (ppm)	0.077#	0.077#	0.078#

*Indicates an exceedance of the standard

#Indicates a violation of the standard

Rio Verde (RV) (04-013-9706)



Location: Forest Rd. and Del Ray Ave.
Spatial Scale: Urban
Monitoring Type: Maximum Ozone Concentrations

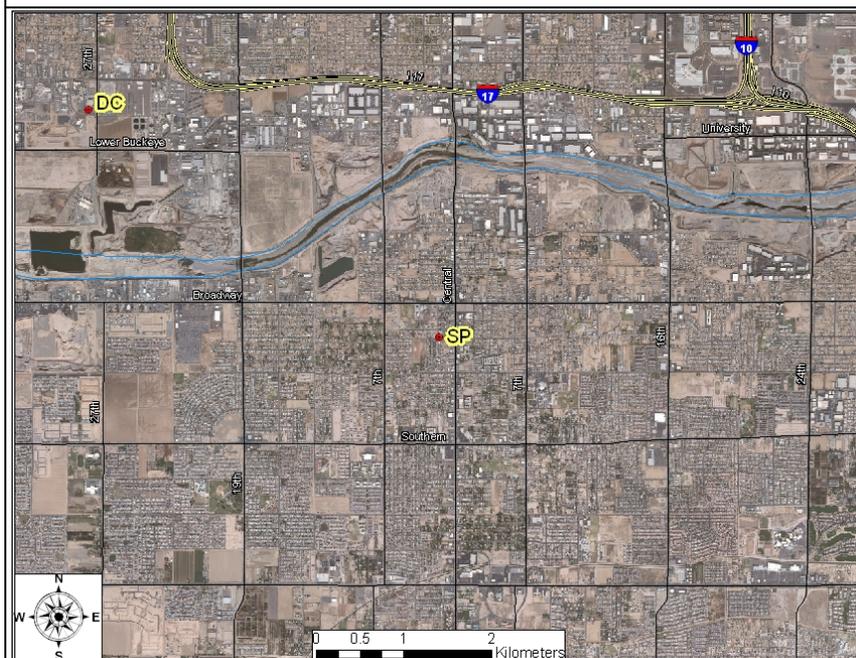


Site Description: This site has been in operation since the spring of 1997. The monitor is located at the fire station / County Sheriff's Office Sub-Station located in a residential area surrounded by the desert of Tonto National Forest. The site is on the edge of a Class I Wilderness Area. This SLAMS location monitors for O₃ only. No meteorological monitors operate at this site.

		2012	2013	2014
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.076*	0.074	0.085*
	O ₃ #Daily Exceedances >0.075 ppm	2	0	2
	O ₃ 3-year Avg. of 4 th High (ppm)	0.074	0.075	0.072

*Indicates an exceedance of the standard

South Phoenix (SP) (04-013-4003)



Location: Central Ave. and Broadway Rd.
Spatial Scale: Neighborhood
Monitoring Type: Population Exposure



Site Description: The site has operated at its current location since October 1999. The site borders a mixture of high population density residential and commercial properties. This SLAMS location monitors for CO seasonally, O₃, PM₁₀, and PM_{2.5}. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	2.3	2.3	2.0
	Number exceedances 8-hr CO	0	0	0
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.087*	0.081*	0.080*
	O ₃ #Daily Exceedances >0.075 ppm	5	3	2
	O ₃ 3-year Avg. of 4 th High (ppm)	0.076#	0.076#	0.075
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	342*‡	294*‡	170*‡
	Number exceedances 24-hr PM ₁₀	3	2	3
	Annual PM ₁₀ Avg. (µg/m ³)	47.9	38.6	40.6
PM_{2.5}	Max. 24-hr PM _{2.5} Avg. (µg/m ³)	70.0* (70.8)	(97.3*)	101.7*
	Number of Daily PM _{2.5} Exceedances	2	4	1
	Annual PM _{2.5} Avg. (µg/m ³)	11.5 (9.2)	(9.59)	10.27
	98 th Percentile PM _{2.5} value (µg/m ³)	24.4 (20.9)	(25.8)	26.5

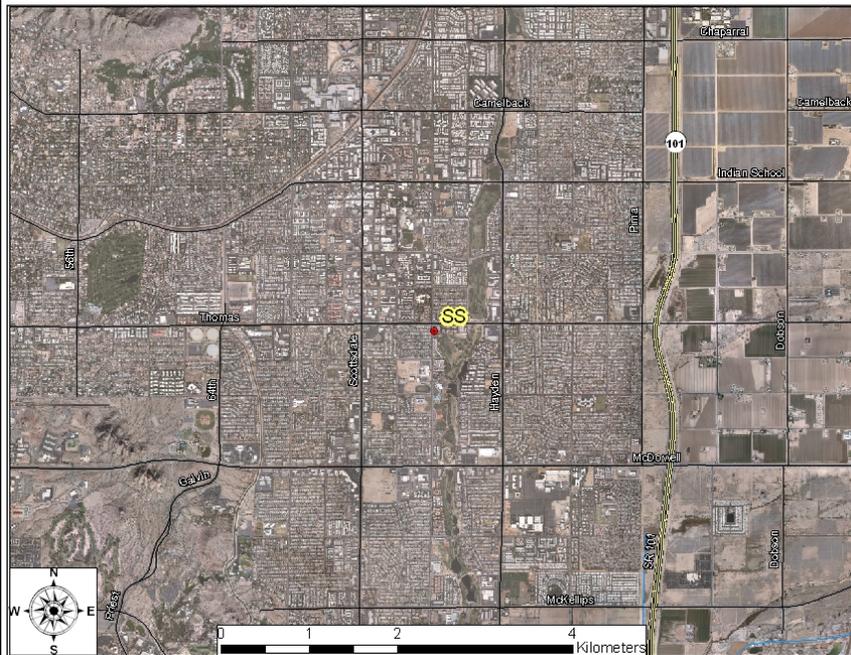
*Indicates an exceedance of the standard

#Indicates a violation of the standard

‡Indicates EEs at this site

NOTE: For 2012 and 2013, the first value is from a 24-hour filter sample; the second value shown in parenthesis is from continuous monitor.

South Scottsdale (SS) (04-013-3003)



Location: Thomas Rd. and Miller Rd.
Spatial Scale: Neighborhood, Urban (NO₂)
Monitoring Type: Population Exposure



Site Description: The South Scottsdale site is located at a City of Scottsdale fire station. The area surrounding the site is residential with a density of 2500 to 5000 persons per square mile. Previously, SO₂ was monitored, but was discontinued in 2010 due to extremely low values being recorded. The SO₂ monitor was moved the Durango Complex site, which is closer to SO₂ point-sources. The NO₂ monitoring was discontinued in 2011. This SLAMS location monitors for CO seasonally, O₃, and PM₁₀. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

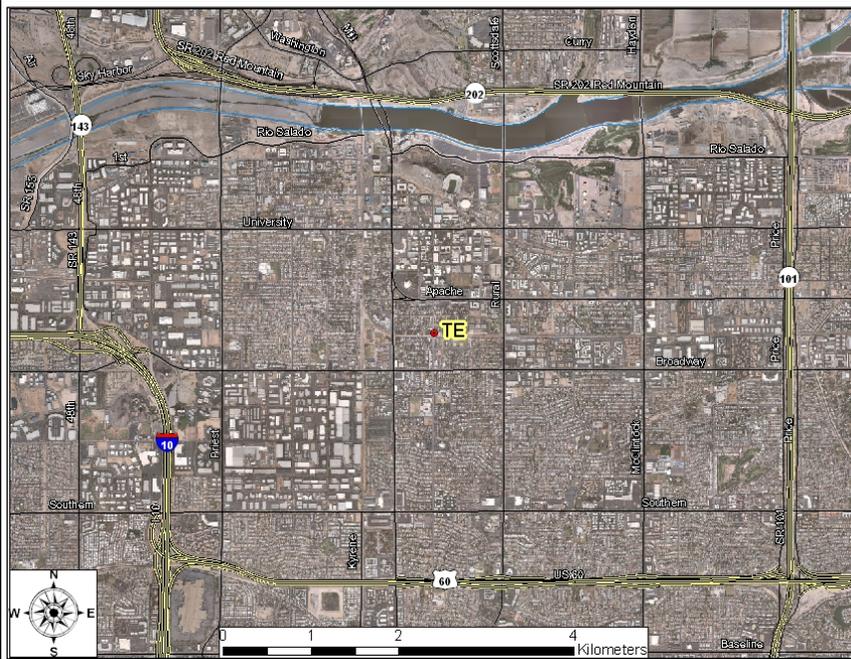
		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	1.3	1.4	1.4
	Number exceedances 8-hr CO	0	0	0
NO₂	Annual NO ₂ Avg. (ppb)	Shutdown	Shutdown	Shutdown
	NO ₂ 1-hour Average 98 th Percentile (ppb)	Shutdown	Shutdown	Shutdown
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.086*	0.079*	0.078*
	O ₃ #Daily Exceedances >0.075 ppm	7	2	1
	O ₃ 3-year Avg. of 4 th High (ppm)	0.077#	0.076#	0.075
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	102	195*‡	193*‡
	Number exceedances 24-hr PM ₁₀	0	1	2
	Annual PM ₁₀ Avg. (µg/m ³)	31.6	26.0	31.0

*Indicates an exceedance of the standard

#Indicates a violation of the standard

‡Indicates EEs at this site

Tempe (TE) (04-013-4005)



Location: Apache Blvd. & College Ave.
Spatial Scale: Neighborhood
Monitoring Type: Population Exposure



Site Description: The site was established in 2000 and is located near the ASU Tempe Campus. The site is surrounded by residential homes, some high-density residential properties, and a railroad track. In spring 2015, the site was temporarily shutdown due to the owner, Arizona Public Service – a power provider, needing to make infrastructure upgrades to the site. This SLAMS location monitors for CO seasonally, O₃, PM₁₀, and PM_{2.5}. Meteorological monitors operating at this site include: ambient temperature, delta T (temperature inversion), rain, and wind speed/direction.

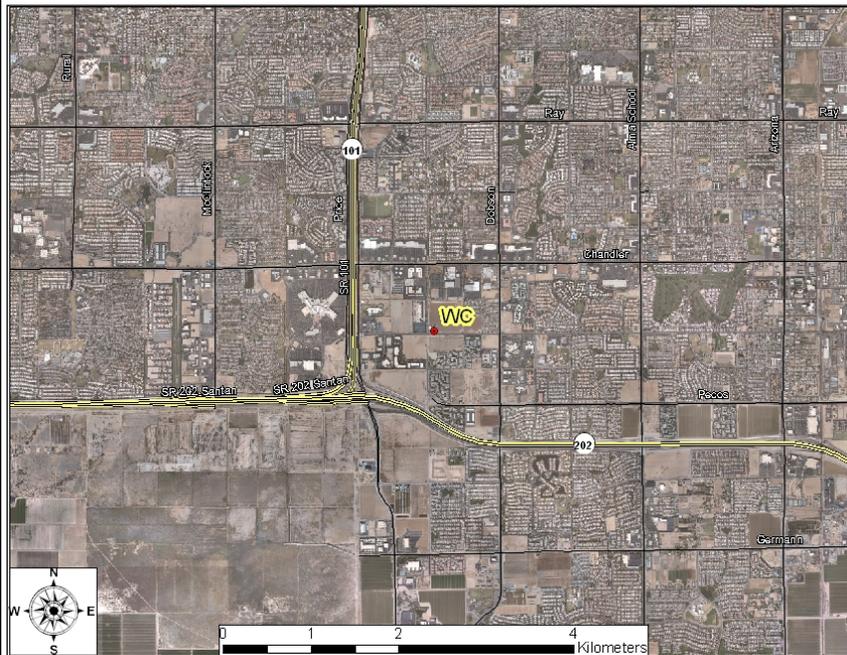
		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	1.6	1.3	1.4
	Number exceedances 8-hr CO	0	0	0
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.078*	0.077*	0.077*
	O ₃ #Daily Exceedances >0.075 ppm	1	1	1
	O ₃ 3-year Avg. of 4 th High (ppm)	0.070	0.071	0.071
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	169*‡	227*‡	175*‡
	Number exceedances 24-hr PM ₁₀	1	1	1
	Annual PM ₁₀ Avg. (µg/m ³)	31.6	28.3	28.7
PM_{2.5}	Max. 24-hr PM _{2.5} Avg. (µg/m ³)	23.1	51.1*	44.0*
	Number of Daily PM _{2.5} Exceedances	0	1	1
	Annual PM _{2.5} Avg. (µg/m ³)	9.27	8.69	8.63
	98 th Percentile PM _{2.5} Value (µg/m ³)	19.5	17.9	17.4

*Indicates an exceedance of standard

#Indicates a violation of the standard

‡Indicates EEs at this site

West Chandler (WC) (04-013-4004)



Location: Frye Rd. and Ellis St.
Spatial Scale: Neighborhood, Middle (PM₁₀)
Monitoring Type: Population Exposure



Site Description: This site was established in January 1995. A wide range of land uses surround the site including residential, agriculture, and heavy industry (semiconductor manufacturing plants and liquid air storage). This SLAMS location monitors for CO seasonally, O₃, and PM₁₀. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	1.4	1.3	1.7
	Number exceedances 8-hr CO	0	0	0
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.082*	0.081*	0.074
	O ₃ #Daily Exceedances >0.075 ppm	2	1	0
	O ₃ 3-year Avg. of 4 th High (ppm)	0.074	0.072	0.071
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	402*	234*‡	163*‡
	Number exceedances 24-hr PM ₁₀	5	3	1
	Annual PM ₁₀ Avg. (µg/m ³)	36.1	28.5	29.3

*Indicates an exceedance of the standard

‡Indicates EEs at this site

West 43rd Avenue (WF) (04-013-4009)



Location: 43rd Ave. & Broadway Rd.
Spatial Scale: Middle
Monitoring Type: Highest Concentrations



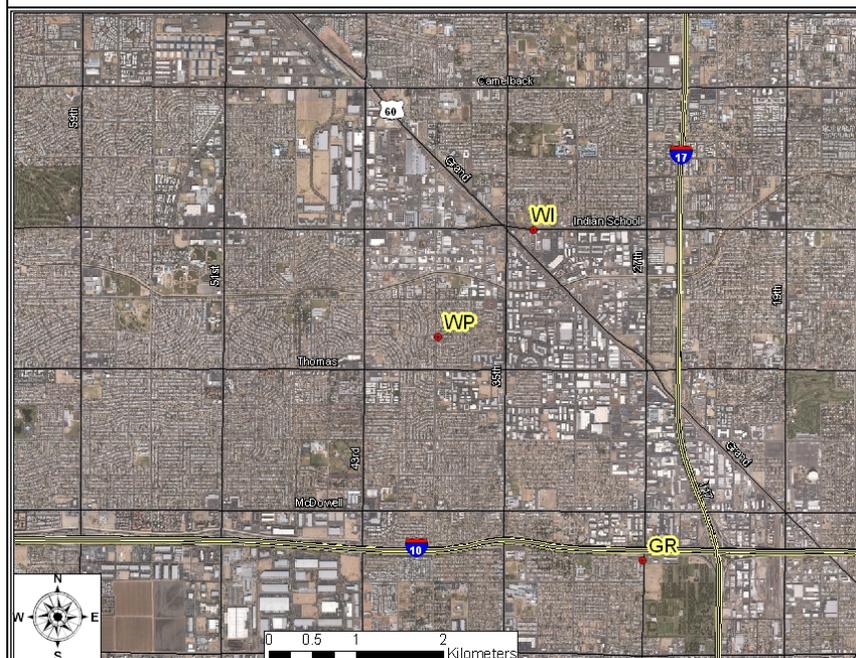
Site Description: Monitoring began at the site in the 2nd quarter of 2002. This site is located at a Maricopa County Department of Transportation storage lot and is surrounded by a combination of heavy industry and residential homes. The main purpose of the site is to measure maximum PM₁₀ concentration. The sources around the site include sand and gravel operations, auto and metal recycling facilities, landfills, paved and unpaved haul roads, and cement casting. This SLAMS location monitors for PM₁₀. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, delta T (temperature inversion), and wind speed/direction.

		2012	2013	2014
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	254*‡	301*‡	171*‡
	Number exceedances 24-hr PM ₁₀	7	4	1
	Annual PM ₁₀ Avg. (µg/m ³)	50.5	42.5	45.9

*Indicates an exceedance of the standard

‡Indicates EEs at this site

West Phoenix (WP) (04-013-0019)



Location: 39th Ave. and Earll Dr.
Spatial Scale: Neighborhood
Monitoring Type: Population Exposure,
Highest Concentration (PM_{2.5})



Site Description: This site has been operational since 1984. The spatial scale for the West Phoenix site is neighborhood. It is located in an area of stable, high-density residential properties. This SLAMS location monitors for CO, NO₂, O₃, PM₁₀, and PM_{2.5}. In addition, this is a QA/QC collocation site for PM_{2.5} where the MCAQD operates one filter-based PM_{2.5} FRM sampler along with one continuous PM_{2.5} FEM analyzer as per 40 CFR Part 58 Appendix A. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, delta T (temperature inversion), and wind speed/direction.

		2012	2013	2014
CO	Max. 8-hr CO Avg. (ppm)	3.9	2.7	4.2
	Number exceedances 8-hr CO	0	0	0
NO₂	Annual NO ₂ Avg. (ppb)	19.4	17.97	80.0
	NO ₂ 1-hr Avg. 98 th Percentile (ppb)	58.0	69.0	17.97
O₃	Max. 8-hr O ₃ Avg. (ppm)	0.087*	0.083*	0.079*
	O ₃ #of Daily Exceedances >0.075 ppm	9	4	4
	O ₃ 3-year Avg. of 4 th High (ppm)	0.078#	0.079#	0.078#
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	189*‡	255*‡	210*‡
	Number exceedances 24-hr PM ₁₀	1	2	2
	Annual PM ₁₀ Avg. (µg/m ³)	46.9	35.7	38.8
PM_{2.5}	Max. 24-hr PM _{2.5} Avg. (µg/m ³)	112.6* (89.1*)	76.0* (53.0*)	170.7*
	Number of Daily PM _{2.5} Exceedances	2 (2)	1 (3)	3
	Annual PM _{2.5} Avg. (µg/m ³)	12.0 (10.4)	10.16 (10.57)	11.13
	98 th Percentile PM _{2.5} Value	29.0 (23.6)	28.0	28.9

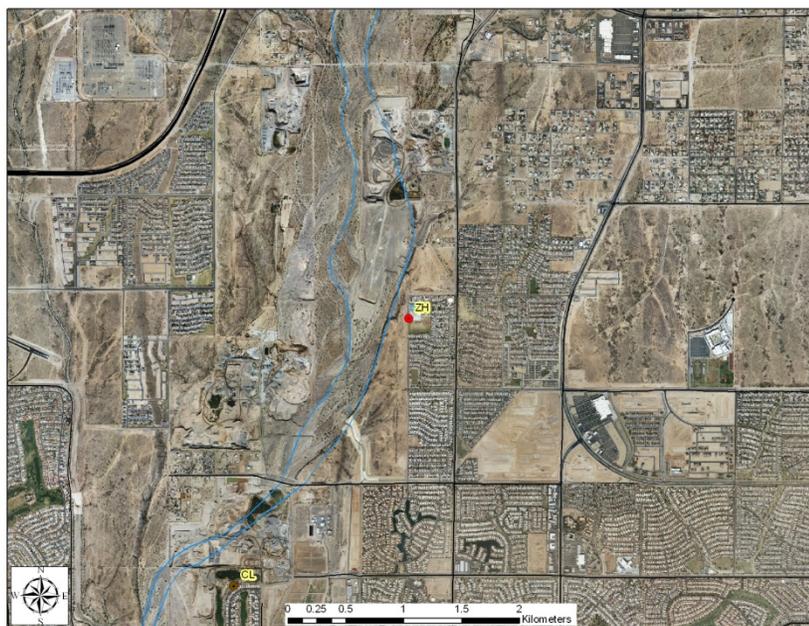
*Indicates an exceedance of the standard

#Indicates a violation of the standard

‡Indicates EEs at this site - listed value is the highest official current AQS reading.

NOTE: For 2012, and 2013, the first value is from the filter-based monitor; second value shown in parenthesis is from continuous monitor.

Zuni Hills (ZH) (04-013-4016)



Location: 109th Ave. and Deer Valley Road.
Spatial Scale: Neighborhood
Monitoring Type: Population Exposure



Site Description: This site opened in December 2009 and is located on the campus of the Zuni Hills Elementary School, which is approximately 1.7 miles to the northeast from the now closed Coyote Lakes monitor. Coyote Lakes was a source-oriented, middle-scale PM₁₀ site that was situated in the Agua Fria River bottom adjacent to sand and gravel mines. Zuni Hills replaced this with a population-oriented, neighborhood-scale site that is situated on the higher-elevation river bank. This site will theoretically be able to represent the air quality for a larger area and a greater number of people. The site was shutdown for construction in the area June 2014-August 2014. This SPM samples for PM₁₀ only and meets the operating requirements of 40 CFR Part 58.20(c). Therefore, the data can be used for comparison to the PM₁₀ NAAQS. Meteorological monitors operating at this site include: ambient temperature and wind speed/direction.

		2012	2013	2014
PM₁₀	Max. 24-hr PM ₁₀ Avg. (µg/m ³)	285*‡	165*‡	166*‡
	Number exceedances 24-hr PM ₁₀	1	1	1
	Annual PM ₁₀ Avg. (µg/m ³)	49.1	23.5	24.0

*Indicates an exceedance of the standard

‡Indicates EEs at this site - listed value is the highest official current AQS reading.

APPENDIX II - EPA-REQUIRED SITE METADATA

Detailed information includes: compliance information regarding air monitoring technical specifications found in *40 CFR §58.10 and Appendices A, C, D, and E* (QA, monitoring methods, network design, and monitor siting)

Required General Statement Regarding Changes to the PM_{2.5} Network

In the event the department needed to move or change a violating PM_{2.5} monitor, this procedure would be followed. The department would hold a public hearing regarding the requested change. Details and documentation of the requested change, as well as all public comments, would then be forwarded to the EPA R9 for approval. Any action on the department's part will be dependent on EPA R9 approval.

Please note that the previous statement is general in nature and is required to be placed in the annual network review by *40 CFR Part 58*. The department does not currently have any violating PM_{2.5} monitors, nor does it have any proposals to move any PM_{2.5} monitors.

Appendix II Site Schematic Descriptions

Analysis Method (filter samples only) refers to the method used to process and analyze PM and Pb filter samples.

Distance from Supporting Structure refers to those sample probes that are attached to a supporting structure, such as the side of a building. In most cases the sample probe is located above the supporting structure, in which case the entry will show as "N/A", aka not applicable.

Distance from Obstructions refers to those obstructions, both on the roof and off the roof, which are located higher than the probe. In the case of a nearby obstruction being higher than the probe, details of its location will be listed in the entry. If there are no obstructions higher than the probe, then the entry will be N/A.

Date of Annual Performance Evaluation refers to the last 2014 QA audit on the gaseous analyzers. These evaluations are performed by the AMD's QA team. Twenty-five percent of the monitors operating within each gaseous pollutant's network are evaluated quarterly; thereby, each monitor is evaluated at least once per year as per *40 CFR Part 58, Appendix A, §3.2.2*.

Date of Semi-Annual Flow Rate Audit refers to the last 2014 QA audit on PM and Pb monitors as per *40 CFR Part 58, Appendix A, §§ 3.2.4 and 3.3.4*, respectively. These evaluations are performed by the AMD's QA team at least once every six months.

Probe Sample Line Material refers to the material makeup of the intake sample lines.

Pollutant Sample Residence Time refers to the amount of time that it takes a sample of air to travel between the probe inlet and the bulkhead of the analyzer. This residence time is calculated by a formula that is based on the sample line's diameter and length, and the flow rate of the air intake. It is important to keep residence time low to prevent gases in the air sample from reacting with the sample line material or with other gases in the sample; i.e., O₃ could react with nitrogen oxides in the sample if the residence time exceeds 20 seconds. This measurement applies to CO, NO₂, SO₂, and O₃ sample lines.

BLUE POINT
County ID: BP
AQS ID: 04-013-9702
Address: Bush Highway & Usery Pass Road, Maricopa County
Coordinates: 33.54549N, -111.60925W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	O ₃
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	26
# Accuracy Audits Performed Annually& Date of Last 2014 Check	5 12/18/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly
Frequency of Flow Rate Verification	N/A
-Appendix C Requirements	
Sampler Make & Model	API M400 (087)
Date Established	01/01/1993
Classification	SLAMS
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Max Ozone Concentration
Monitoring Scale	Urban
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	5.3 meters
Airflow Arc	360°
Probe Sample Line Material	Teflon
Pollutant Sample Residence Time	7.6 seconds
Distance from Supporting Structure	3 meters
Distance from Obstructions	3.5 meters
Distance to Furnace Flue	None
Spacing from Trees	6 meters
Nearest Major Roadway	Bush Highway
Distance and Direction to Road	160 meters, S
Traffic Count (ADT)	1,000
Groundcover	Paved

BUCKEYE

County ID: BE
 AQS ID: 04-013-4011
 Address 26453 W MC85
 Coordinates: 33.37005N, -111.62070W
 Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information				
Pollutant	O ₃	CO	NO ₂	PM ₁₀
Sampling Schedule	Continuous	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A	N/A
-Appendix A Requirements				
# Precision Checks Performed Annually	25	15	25	23
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	4 10/28/14	2 09/03/14	2 11/13/14	2 02/05/14 09/03/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	N/A	N/A	Semi-monthly
-Appendix C Requirements				
Sampler Make & Model	API M400 (087)	API M300 (093)	API M200 (099)	Thermo TEOM 1400AB (079)
Date Established	08/01/2004	08/01/2004	08/01/2004	08/01/2004
Classification	SLAMS	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FRM	FEM
-Appendix D Requirements				
Monitoring Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Sep-Mar	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes	Yes
-Appendix E Requirements				
Distance between collocated samplers	N/A	N/A	N/A	N/A
Probe Inlet Height	4 meters	4 meters	4 meters	4.5 meters
Airflow Arc	360°	360°	360°	360°
Distance from Supporting Structure	2 meters	2 meters	2 meters	2.1 meters
Probe Sample Line Material	Teflon	Teflon	Teflon	N/A
Pollutant Sample Residence Time	4.0 seconds	4.0 seconds	4.0 seconds	N/A
Distance from Obstructions	None	None	None	None
Distance to Furnace Flue	None	None	None	None
Spacing from Trees	14 meters, N	14 meters, N	14 meters, N	14 meters, N
Nearest Major Roadway	US Hwy 85	US Hwy 85	US Hwy 85	US Hwy 85
Distance and Direction to Road	31 meters, N	31 meters, N	31 meters, N	31 meters, N
Traffic Count (ADT)	3,000	3,000	3,000	3,000
Groundcover	Paved	Paved	Paved	Paved

CAVE CREEK
 County ID: CC

AQS ID: 04-013-4008
Address: 37019 N Lava Lane, Phoenix
Coordinates: 33.82169N, -112.01739W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	O ₃
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	26
# Accuracy Audits Performed Annually & Date of Last 2014 Check	5 10/07/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	Bi-weekly
Frequency of Flow Rate Verification	N/A
-Appendix C Requirements	
Sampler Make & Model	API M400 (087)
Date Established	07/20/2001
Classification	SLAMS
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Max Ozone Concentration
Monitoring Scale	Urban
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	4.8 meters
Airflow Arc	360°
Probe Sample Line Material	Teflon
Pollutant Sample Residence Time	10.2 seconds
Distance from Supporting Structure	2.5 meters
Distance from Obstructions	None
Distance to Furnace Flue	None
Spacing from Trees	14.9 meters
Nearest Major Roadway	32 nd Street
Distance and Direction to Road	240 meters, NE
Traffic Count (ADT)	1,000
Groundcover	Paved

CENTRAL PHOENIX
 County ID: CP
 AQS ID: 04-013-3002
 Address: 1645 E Roosevelt, Phoenix
 Coordinates: 33.45793N, -112.04601W
 Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information					
Pollutant	O ₃	CO	NO ₂	SO ₂	PM ₁₀
Sampling Schedule	Continuous	Continuou s	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A	N/A	N/A
-Appendix A Requirements					
# Precision Checks Performed Annually	25	25	26	25	21
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	4 11/04/14	4 11/05/14	4 08/12/14	4 10/22/14	2 06/107/14 11/05/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi- Weekly	Bi-Weekly	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	N/A	N/A	N/A	Semi- monthly
-Appendix C Requirements					
Sampler Make & Model	API M400 (087)	API M300 (093)	API M200 (099)	API M100 (100)	Thermo TEOM 1400AB (079)
Date Established	06/01/1967	10/01/196 6	01/01/1967	01/01/1965	04/01/1985
Classification	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FRM	FEM	FEM
-Appendix D Requirements					
Monitoring Type	Population Exposure	Populatio n Exposure	Highest Concentrati on	Highest Concentratio n	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec

Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes	Yes	Yes
-Appendix E Requirements					
Distance between collocated samplers	N/A	N/A	N/A	N/A	N/A
Probe Inlet Height	10.3 meters				
Airflow Arc	360°	360°	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	Teflon	Teflon	N/A
Pollutant Sample Residence Time	9.0 seconds	N/A	9.0 seconds	10.0 seconds	N/A
Distance from Supporting Structure	2.5 meters	2.5 meters	2.5 meters	2.5 meters	2.1 meters
Distance from Obstructions	None	None	None	None	None
Distance to Furnace Flue	None	None	None	None	None
Spacing from Trees	None	None	None	None	None
Nearest Major Roadway A	16 th Street				
Distance and Direction to Road	88 meters, W	88 meters, W	88 meters, W	88 meters, W	91 meters, W
Traffic Count (ADT)	24,000	24,000	24,000	24,000	24,000
Nearest Major Roadway B	Roosevelt St.				
Distance and Direction to Road	75 meters, N				
Traffic Count (ADT)	Unknown	Unknown	Unknown	Unknown	Unknown
Groundcover	Paved	Paved	Paved	Paved	Paved

DEER VALLEY
County ID: DV
AQS ID: 04-013-4018
Address: 1030 West Deer Valley Road, Phoenix
Coordinates: 33.684627N, -112.08635W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	Pb
Sampling Schedule	1 in 6 day
Analysis Method (filters only)	EQL-0995-110
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Flow Rate Checks Performed Annually	28 (collocated)
# Accuracy Audit Performed Annually & Date of Last Two 2014 Checks	2 03/04/14 08/09/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	Weekly
Frequency of Flow Rate Audits	Semi-Annual
-Appendix C Requirements	
Sampler Make & Model	Hi-Q TSP Sampler (109)
Date Established	07/01/2010
Classification	SLAMS
Method (FRM, FEM, ARM)	FRM
-Appendix D Requirements	
Monitoring Type	Source-oriented
Monitoring Scale	Middle Scale
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	2.7 meters
Probe Inlet Height	4.1 meters
Airflow Arc	360°
Probe Sample Line Material	N/A
Pollutant Sample Residence Time	N/A
Distance from Supporting Structure	1.1 meters
Distance from Obstructions	None
Distance to Furnace Flue	None
Spacing from Trees	None
Nearest Major Roadway	Deer Valley
Distance and Direction to Road	300 meters, S
Traffic Count (ADT)	6,452
Groundcover	Paved

DIABLO
County ID: DI
AQS ID: 04-013-4019
Address: 1919 W. Fairmount Dr., Tempe
Coordinates: 33.3961N, -111.9680
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information			
Pollutant	CO	NO ₂	PM _{2.5}
Sampling Schedule	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A
-Appendix A Requirements			
# Precision Checks Performed Annually	23	23	16
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	5 11/19/14	3 08/27/14	3 08/27/14 10/29/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	N/A	Semi-monthly
-Appendix C Requirements			
Sampler Make & Model	API M300 (093)	API M200 (099)	TEOM 1405 DF (182)
Date Established	2/13/2014	02/13/2014	05/01/2014
Classification	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FRM	FRM	FEM
-Appendix D Requirements			
Monitoring Type	Max. Conc. Source	Max. Conc. Source	Max Conc. Source
Monitoring Scale	Micro	Micro	Micro
Sampling Season	Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes
-Appendix E Requirements			
Distance between collocated samplers	N/A	N/A	N/A
Probe Inlet Height	5 meters	5 meters	5 meters
Airflow Arc	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A
Pollutant Sample Residence Time	4.5 seconds	4.5 seconds	N/A
Distance from Supporting Structure	2.6 meters	2.6 meters	2.4 meters
Distance from Obstructions	None	None	None
Distance to Furnace Flue	None	None	None
Spacing from Trees	None	None	None

Nearest Major Roadway A	Interstate-10	Interstate-10	Interstate-10
Distance and Direction to Road	30 meters, E	30 meters, E	30 meters, E
Traffic Count (ADT)	275,000	275,000	275,000
Nearest Major Roadway B	Fairmount Dr.	Fairmount Dr.	Fairmount Dr.
Distance and Direction to Road	18 meters, N	18 meters, N	18 meters, N
Traffic Count (ADT)	3,000	3,000	3,000
Groundcover	Paved/Gravel	Paved/Gravel	Paved/Gravel

DURANGO COMPLEX
County ID: DC
AQS ID: 04-013-9812
Address: 2702 RC Esterbrooks Blvd, Phoenix
Coordinates: 33.42650N, -112.11814W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information			
Pollutant	PM ₁₀	PM _{2.5}	SO ₂
Sampling Schedule	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	Yes	N/A
-Appendix A Requirements			
# Precision Checks Performed Annually	25	24	27
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	2 01/03/14 07/03/14	2 01/03/14 07/03/14	3 10/09/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	N/A	N/A	Bi-Weekly
Frequency of Flow Rate Verification	Semi-monthly	Semi-monthly	N/A
-Appendix C Requirements			
Sampler Make & Model	TEOM 1400AB (079)	FDMS-TEOM 1400AB (181)	API M100 (100)
Date Established	07/01/1999	07/01/2005	01/01/2011
Classification	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FEM	FRM
-Appendix D Requirements			
Monitoring Type	Highest Concentration	Highest Concentration	Highest Concentration
Monitoring Scale	Middle	Middle	Middle
Sampling Season	Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes
-Appendix E Requirements			
Distance between collocated samplers	N/A	N/A	N/A
Probe Inlet Height	3.9 meters	4.8 meters	3.9 meters
Airflow Arc	360°	360°	360°
Probe Sample Line Material	N/A	N/A	Teflon
Pollutant Sample Residence Time	N/A	N/A	10.0 sec
Distance from Supporting Structure	3.7 meters	2 meters	2 meters
Distance from Obstructions	8 meters	2 meters	2 meters
Distance to Furnace Flue	None	None	None

Spacing from Trees	8 meters, S	8 meters, S	8 meters, S
Nearest Major Roadway	27 th Ave	27 th Ave	27 th Ave
Distance and Direction to Road	78 meters, E	76 meters, E	76 meters, E
Traffic Count (ADT)	16,000	16,000	16,000
Groundcover	Paved	Paved	Paved

DYSART
County ID: DY
AQS ID: 04-013-4010
Address: 16825 N Dysart Rd, Surprise
Coordinates: 33.63713N, -112.34184W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information			
Pollutant	O₃	CO	PM₁₀
Sampling Schedule	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A
-Appendix A Requirements			
# Precision Checks Performed Annually	26	15	25
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	4 10/29/14	2 09/03/14	2 01/09/14 07/09/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	N/A	Semi-monthly
-Appendix C Requirements			
Sampler Make & Model	API M400 (087)	API M300 (093)	TEOM 1400AB (079)
Date Established	7/21/2003	09/01/2003	07/14/2003
Classification	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FRM
-Appendix D Requirements			
Monitoring Type	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Sep-Mar	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes
-Appendix E Requirements			
Distance between collocated samplers	N/A	N/A	N/A
Probe Inlet Height	3.3 meters	3.3 meters	2.6 meters
Airflow Arc	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A
Pollutant Sample Residence Time	4.8 seconds	4.8 seconds	N/A
Distance from Supporting Structure	1.6 meters	1.6 meters	2 meters
Distance from Obstructions	None	None	None
Distance to Furnace Flue	None	None	None
Spacing from Trees	None	None	None
Nearest Major Roadway A	Dysart	Dysart	Dysart
Distance and Direction to Road	17 meters, W	17 meters, W	12 meters, W
Traffic Count (ADT)	12,000	12,000	12,000
Nearest Major Roadway B	Bell Rd	Bell Rd	Bell Rd
Distance and Direction to Road	495 meters, N	495 meters, N	460 meters, N
Traffic Count (ADT)	43,000	43,000	43,000
Groundcover	Paved/Gravel	Paved/Gravel	Paved/Gravel

FALCON FIELD
County ID: FF
AQS ID: 04-013-1010
Address: 4530 E McKellips Rd, Mesa
Coordinates: 33.45223N, -111.73331W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	O₃
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	27
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzer	4 10/08/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly
Frequency of Flow Rate Verification	N/A
-Appendix C Requirements	
Sampler Make & Model	API M400 (087)
Date Established	06/01/1989
Classification	SLAMS
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Population Exposure
Monitoring Scale	Neighborhood
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	9.3 meters
Airflow Arc	360°
Probe Sample Line Material	Teflon
Pollutant Sample Residence Time	16.4 seconds
Distance from Supporting Structure	2.5 meters
Distance from Obstructions	None
Distance to Furnace Flue	None
Spacing from Trees	25+ meters
Nearest Major Roadway	McKellips
Distance and Direction to Road	58 meters, S
Traffic Count (ADT)	29,000
Groundcover	Paved

FOUNTAIN HILLS
County ID: FH
AQS ID: 04-013-9704
Address: 16426 E. Palisades Blvd., Fountain Hills
Coordinates: 33.61103N, -111.72529W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	O ₃
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	Shutdown 8/27/13 for construction. Reopened 5/14/14
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	16
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzer	3 11/17/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly
Frequency of Flow Rate Verification	N/A
-Appendix C Requirements	
Sampler Make & Model	API M400 (087)
Date Established	04/01/1996
Classification	SLAMS
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Max Ozone Concentration
Monitoring Scale	Neighborhood
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	4.3 meters
Airflow Arc	360°
Probe Sample Line Material	Teflon
Pollutant Sample Residence Time	4.8 seconds
Distance from Supporting Structure	2 meters
Distance from Obstructions	Canopy 1 meter higher than probe, located 9 meters to the south
Distance to Furnace Flue	None
Spacing from Trees	15 meters, W
Nearest Major Roadway	Palisades Blvd
Distance and Direction to Road	70 meters, SW
Traffic Count (ADT)	8,000
Groundcover	Paved

GLENDALE
County ID: GL
AQS ID: 04-013-2001
Address: 6001 W Olive, Glendale
Coordinates: 33.56936N, -112.19153W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information				
Pollutant	O ₃	CO	PM ₁₀	PM _{2.5}
Sampling Schedule	Continuous	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A	Yes
-Appendix A Requirements				
# Precision Checks Performed Annually	24	13	23	22
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	4 10/29/14	2 09/04/14	2 05/14/14 10/29/14	2 05/14/14 10/29/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A	N/A
Frequency of Flow Rate Verification	N/A	N/A	Semi-monthly	Semi-monthly
-Appendix C Requirements				
Sampler Make & Model	API M400 (087)	API M300 (093)	TEOM 1400AB (079)	FDMS-TEOM 1400AB (181)
Date Established	01/01/1974	01/01/1974	07/01/1987	6/1/2011
Classification	SLAMS	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FEM	FEM
-Appendix D Requirements				
Monitoring Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Sep-Mar	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes	Yes
-Appendix E Requirements				
Distance between collocated samplers	N/A	N/A	N/A	N/A
Probe Inlet Height	3.7 meters	3.7 meters	3.4 meters	4.0 meters
Airflow Arc	360°	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A	N/A
Pollutant Sample Residence Time	4.5 seconds	4.5 seconds	N/A	N/A
Distance from Supporting Structure	2 meters	2 meters	2.1 meters	3.1 meters
Distance from Obstructions	2.5m	2.5m	None	None

Distance to Furnace Flue	None	None	None	None
Spacing from Trees	None	None	None	None
Nearest Major Roadway A	Olive Ave	Olive Ave	Olive Ave	Olive Ave
Distance and Direction to Road	225 meters, S	225 meters, S	227 meters, S	227 meters, S
Traffic Count (ADT)	25,000	25,000	25,000	25,000
Nearest Major Roadway B	59 th Ave	59 th Ave	59 th Ave	59 th Ave
Distance and Direction to Road	475 meters, E	475 meters, E	430 meters, E	430 meters, E
Traffic Count (ADT)	30,500	30,500	30,500	30,500
Groundcover	Paved	Paved	Paved	Paved

GREENWOOD
County ID: GR
AQS ID: 04-013-3010
Address: 1128 N 27th Ave., Phoenix
Coordinates: 33.46093N, -112.11748W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information			
Pollutant	CO	NO₂	PM₁₀
Sampling Schedule	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A
-Appendix A Requirements			
# Precision Checks Performed Annually	26	26	24
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	2 11/10/14	4 12/23/14	2 02/05/14 09/16/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	N/A	Semi-monthly
-Appendix C Requirements			
Sampler Make & Model	API M300 (093)	API M200 (099)	TEOM 1400AB (079)
Date Established	11/01/1993	11/01/1993	11/01/1993
Classification	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FRM	FRM	FEM
-Appendix D Requirements			
Monitoring Type	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Middle	Middle	Middle
Sampling Season	Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes
-Appendix E Requirements			
Distance between collocated samplers	N/A	N/A	N/A
Probe Inlet Height	4.2 meters	4.2 meters	4.4 meters
Airflow Arc	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A
Pollutant Sample Residence Time	4.3 seconds	4.3 seconds	N/A
Distance from Supporting Structure	2 meters	2 meters	2 meters
Distance from Obstructions	25+ meters	25+ meters	25+ meters
Distance to Furnace Flue	None	None	None
Spacing from Trees	20 meters, NW	20 meters, NW	20 meters, NW
Nearest Major Roadway A	27 th Ave	27 th Ave	27 th Ave
Distance and Direction to Road	10 meters, E	10 meters, E	10 meters, E
Traffic Count (ADT)	18,500	18,500	18,500
Nearest Major Roadway B	I-10	I-10	I-10
Distance and Direction to Road	85 meters, N	85 meters, N	85 meters, N
Traffic Count (ADT)	229,000	229,000	229,000
Groundcover	Paved	Paved	Paved

HIGLEY
County ID: HI
AQS ID: 04-013-4006
Address: 15400 South Higley Road, Gilbert
Coordinates: 33.31074N, -111.72255W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	PM₁₀
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	Yes in 2014
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	18
# Accuracy Audits Performed Annually & Date of Last Two 2014 Checks for PM	2 07/14/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	N/A
Frequency of Flow Rate Verification	Bi-Weekly
-Appendix C Requirements	
Sampler Make & Model	TEOM 1400AB (079)
Date Established	07/01/2000
Classification	SLAMS
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Population Exposure
Monitoring Scale	Neighborhood
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	2.9 meters
Airflow Arc	360°
Probe Sample Line Material	N/A
Pollutant Sample Residence Time	N/A
Distance from Supporting Structure	2.2 meters
Distance from Obstructions	10 meters
Distance to Furnace Flue	None
Spacing from Trees	10 meters
Nearest Major Roadway A	Higley Rd
Distance and Direction to Road	117 meters, E
Traffic Count (ADT)	11,500
Nearest Major Roadway B	Williams Field Rd
Distance and Direction to Road	410 meters, S
Traffic Count (ADT)	11,500
Groundcover	Paved

HUMBOLDT MOUNTAIN

County ID: HM

AQS ID: 04-013-9508

Address: Seven Springs Rd-FAA Radar Station, Tonto National Forest

Coordinates: 33.98280N, -111.79870W

Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	O ₃
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	24
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzer	4 11/13/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly
Frequency of Flow Rate Verification	N/A
-Appendix C Requirements	
Sampler Make & Model	API M400 (087)
Date Established	01/01/1993
Classification	SLAMS
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Max Ozone Concentration
Monitoring Scale	Regional
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	4.5 meters
Airflow Arc	360°
Probe Sample Line Material	Teflon
Pollutant Sample Residence Time	6.2 seconds
Distance from Supporting Structure	2.8 meters
Distance from Obstructions	9 meters
Distance to Furnace Flue	None
Spacing from Trees	None
Nearest Major Roadway	N/A (Remote mountaintop site, only reachable by small access road)
Distance and Direction to Road	N/A
Traffic Count (ADT)	N/A
Groundcover	Dirt/Vegetated

MESA
County ID: ME
AQS ID: 04-013-1003
Address: 310 S Brooks, Mesa
Coordinates: 33.41045N, -111.86507W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information				
Pollutant	O₃	CO	PM₁₀	PM_{2.5}
Sampling Schedule	Continuous	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A	Yes
-Appendix A Requirements				
# Precision Checks Performed Annually	27	16	26	26
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	4 11/20/14	3 10/23/14	2 02/26/14 10/07/14	2 02/26/14 08/28/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A	N/A
Frequency of Flow Rate Verification	N/A	N/A	Bi-Weekly	Bi-Weekly
-Appendix C Requirements				
Sampler Make & Model	API M400 (087)	API M300 (093)	TEOM 1400AB (079)	TEOM 1405-DF (182)
Date Established	11/1/2012	01/01/1978	11/1/2012	11/1/2012
Classification	SLAMS	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FEM	FEM	FEM
-Appendix D Requirements				
Monitoring Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Sep-Mar	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes	Yes
-Appendix E Requirements				
Distance between collocated samplers	N/A	N/A	N/A	N/A
Probe Inlet Height	7 meters	7 meters	6.2 meters	6.9 meters
Airflow Arc	360°	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A	N/A
Pollutant Sample Residence Time	4.6 seconds	4.6 seconds	N/A	N/A
Distance from Supporting Structure	2 meters	2 meters	2.5 meters	3 meters
Distance from Obstructions	25+ meters	25+ meters	25+ meters	25+ meters
Distance to Furnace Flue	None	None	None	None
Spacing from Trees	25+ meters	25+ meters	25+ meters	25+ meters
Nearest Major Roadway	Broadway Rd.	Broadway Rd.	Broadway Rd.	Broadway Rd.
Distance and Direction to Road	305 meters, S	305 meters, S	305 meters, S	305 meters, S
Traffic Count (ADT)	33,000	33,000	33,000	33,000
Groundcover	Paved/Gravel	Paved/Gravel	Paved/Gravel	Paved/Gravel

NORTH PHOENIX

County ID: NP
 AQS ID: 04-013-1004
 Address: 601 E Butler Dr., Phoenix
 Coordinates: 33.56033N, -112.06626W
 Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information				
Pollutant	O₃	CO	PM₁₀	PM_{2.5}
Sampling Schedule	Continuous	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A	Yes
-Appendix A Requirements				
# Precision Checks Performed Annually	27	15	25	23
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	3 11/03/14	3 11/03/14	2 03/10/14 09/10/14	3 08/26/14 09/10/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A	N/A
Frequency of Flow Rate Verification	N/A	N/A	Bi-Weekly	Bi-Weekly
-Appendix C Requirements				
Sampler Make & Model	API M400 (087)	API M300 (093)	BAM 1020 (122)	BAM 1020 (122) / TEOM 1400AB (079)
Date Established	01/01/1975	01/01/1974	9/1/2011	9/1/2011
Classification	SLAMS	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FEM	FEM
-Appendix D Requirements				
Monitoring Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Sep-Mar	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes	Yes
-Appendix E Requirements				
Distance between collocated samplers	N/A	N/A	N/A	N/A
Probe Inlet Height	4.6 meters	4.6 meters	4.5 meters	4.5 meters
Airflow Arc	360°	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A	N/A
Pollutant Sample Residence Time	5.0 seconds	5.0 seconds	N/A	N/A
Distance from Supporting Structure	2.1 meters	2.1 meters	2.1 meters	3.3 meters
Distance from Obstructions	4 meters	4 meters	4 meters	5 meters
Distance to Furnace Flue	None	None	None	None
Spacing from Trees	None	None	None	None
Nearest Major Roadway	7 th Street	7 th Street	7 th Street	7 th Street
Distance and Direction to Road	75 meters, E	75 meters, E	75 meters, E	75 meters, E
Traffic Count (ADT)	32,000	32,000	32,000	32,000
Groundcover	Gravel	Gravel	Gravel	Gravel

PINNACLE PEAK
 County ID: PP
 AQS ID: 04-013-2005
 Address: 24295 N Alma School Rd, Scottsdale
 Coordinates: 33.70655N, -111.85557W
 Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	O ₃
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	27
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzer	3 07/17/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly
Frequency of Flow Rate Verification	N/A
-Appendix C Requirements	
Sampler Make & Model	API M400 (087)
Date Established	02/01/1988
Classification	SLAMS
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Max Ozone Concentration
Monitoring Scale	Urban
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	5.9 meters
Airflow Arc	360°
Probe Sample Line Material	Teflon
Pollutant Sample Residence Time	6.2 seconds
Distance from Supporting Structure	3 meters
Distance from Obstructions	4.2 meters
Distance to Furnace Flue	None
Spacing from Trees	None
Nearest Major Roadway	Happy Valley Rd.
Distance and Direction to Road	61 meters, S
Traffic Count (ADT)	16,000
Groundcover	Paved/Grass

RIO VERDE
County ID: RV
AQS ID: 04-013-9706
Address: 25608 N Forest Rd., Rio Verde
Coordinates: 33.71881N, -111.67183W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	O ₃
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	27
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzer	3 11/03/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly
Frequency of Flow Rate Verification	N/A
-Appendix C Requirements	
Sampler Make & Model	API M400 (087)
Date Established	01/01/1997
Classification	SLAMS
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Max Ozone Concentration
Monitoring Scale	Urban
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	6.2 meters
Airflow Arc	360°
Probe Sample Line Material	Teflon
Pollutant Sample Residence Time	9.7 seconds
Distance from Supporting Structure	3 meters
Distance from Obstructions	3 meters
Distance to Furnace Flue	None
Spacing from Trees	None
Nearest Major Roadway	Forest Rd
Distance and Direction to Road	43 meters, E
Traffic Count (ADT)	Unknown
Groundcover	Paved

SOUTH PHOENIX
County ID: SP
AQS ID: 04-013-4003
Address: 33 W Tamarisks, Phoenix
Coordinates: 33.40316N, -112.07533W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information				
Pollutant	O₃	CO	PM₁₀	PM_{2.5}
Sampling Schedule	Continuous	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A	Yes
-Appendix A Requirements				
# Precision Checks Performed Annually	24	14	22	22
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	4 12/26/14	4 10/02/14	2 04/16/14 10/30/14	2 05/01/14 10/30/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A	N/A
Frequency of Flow Rate Verification	N/A	N/A	Semi-Monthly	Semi-Monthly
-Appendix C Requirements				
Sampler Make & Model	API M400 (087)	API M300 (093)	TEOM 1400AB (079)	TEOM 1405-DF (182)
Date Established	10/01/1999	10/01/1999	7/1/2007	05/01/2010
Classification	SLAMS	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FEM	FEM
-Appendix D Requirements				
Monitoring Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Sep-Mar	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes	Yes
-Appendix E Requirements				
Distance between collocated samplers	N/A	N/A	N/A	N/A
Probe Inlet Height	4.9 meters	4.9 meters	5.4 meters	5.5 meters
Airflow Arc	360°	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A	N/A
Pollutant Sample Residence Time	6.9 seconds	6.9 seconds	N/A	N/A
Distance from Supporting Structure	5 meters	5 meters	2 meters	5 meters
Distance from Obstructions	25+m	25+m	25+m	25+m
Distance to Furnace Flue	None	None	None	None
Spacing from Trees	9 meters	9 meters	2 meters	4 meters
Nearest Major Roadway A	Central Ave	Central Ave	Central Ave	Central Ave
Distance and Direction to Road	168 meters, E	168 meters, E	165 meters, E	168 meters, E
Traffic Count (ADT)	24,000	24,000	24,000	24,000
Nearest Major Roadway B	Broadway Rd	Broadway Rd	Broadway Rd	Broadway Rd
Distance and Direction to Road	385 meters, N	385 meters, N	385 meters, N	385 meters, N
Traffic Count (ADT)	18,000	18,000	18,000	18,000
Groundcover	Paved	Paved	Paved	Paved

SOUTH SCOTTSDALE
County ID: SS
AQS ID: 04-013-3003
Address: 2857 N Miller Rd., Scottsdale
Coordinates: 33.47968N, -111.91721W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information			
Pollutant	O ₃	CO	PM ₁₀
Sampling Schedule	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A
-Appendix A Requirements			
# Precision Checks Performed Annually	27	16	26
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	5 11/05/14	2 09/04/14	2 04/10/14 10/23/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	N/A	Bi-Weekly
-Appendix C Requirements			
Sampler Make & Model	API M400 (087)	API M300 (093)	TEOM 1405 (079)
Date Established	01/01/1974	01/01/1974	09/01/2012
Classification	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FEM
-Appendix D Requirements			
Monitoring Type	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Sep-Mar	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes
-Appendix E Requirements			
Distance between collocated samplers	N/A	N/A	N/A
Probe Inlet Height	5.8 meters	5.8 meters	6.1 meters
Airflow Arc	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A
Pollutant Sample Residence Time	7.3 seconds	7.3 seconds	N/A
Distance from Supporting Structure	2.5 meters	2.5 meters	2.5 meters
Distance from Obstructions	2.5 meters	2.5 meters	3 meters
Distance to Furnace Flue	None	None	None
Spacing from Trees	10 meters	10 meters	10 meters
Nearest Major Roadway A	Thomas	Thomas	Thomas
Distance and Direction to Road	66 meters, N	66 meters, N	62 meters, N
Traffic Count (ADT)	33,000	33,000	33,000
Nearest Major Roadway B	Miller	Miller	Miller
Distance and Direction to Road	32 meters, W	32 meters, W	35 meters, W
Traffic Count (ADT)	13,000	13,000	13,000
Groundcover	Paved	Paved	Paved

TEMPE
 County ID: TE
 AQS ID: 04-013-4005
 Address: 1525 S College, Tempe
 Coordinates: 33.4124N, -111.93473W
 Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information				
Pollutant	O₃	CO	PM₁₀	PM_{2.5}
Sampling Schedule	Continuous	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A	Yes
-Appendix A Requirements				
# Precision Checks Performed Annually	26	15	25	25
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	2 11/10/14	3 09/04/14	2 04/14/14 11/10/14	3 11/04/14 11/10/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A	N/A
Frequency of Flow Rate Verification	N/A	N/A	Bi-Weekly	Bi-Weekly
-Appendix C Requirements				
Sampler Make & Model	API M400 (087)	API M300 (093)	TEOM 1400 AB (079)	TEOM1405 DF (182)
Date Established	07/01/2000	07/01/2000	3/1/2012	3/1/2012
Classification	SLAMS	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FEM	FEM
-Appendix D Requirements				
Monitoring Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Sep-Mar	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes	Yes
-Appendix E Requirements				
Distance between collocated samplers	N/A	N/A	N/A	N/A
Probe Inlet Height	4.4 meters	4.4 meters	2.7 meters	3.7 meters
Airflow Arc	360°	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A	N/A
Pollutant Sample Residence Time	4.5 seconds	4.5 seconds	N/A	N/A
Distance from Supporting Structure	2.5 meters	2.5 meters	2 meters	3 meters
Distance from Obstructions	2.5 meters	2.5 meters	8 meters	7 meters
Distance to Furnace Flue	None	None	None	None
Spacing from Trees	None	None	None	None
Nearest Major Roadway A	College Ave	College Ave	College Ave	College Ave
Distance and Direction to Road	11 meters, W	11 meters, W	11 meters, W	11 meters, W
Traffic Count (ADT)	Unknown	Unknown	Unknown	Unknown
Nearest Major Roadway B	Apache	Apache	Apache	Apache
Distance and Direction to Road	370 meters, N	370 meters, N	370 meters, N	370 meters, N
Traffic Count (ADT)	25,000	25,000	25,000	25,000
Groundcover	Gravel	Gravel	Gravel	Gravel

WEST CHANDLER

County ID: WC
 AQS ID: 04-013-4004
 Address: 275 S Ellis, Chandler
 Coordinates: 33.29898N, -111.88431W
 Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information			
Pollutant	O₃	CO	PM₁₀
Sampling Schedule	Continuous	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A	N/A
Any Proposal to Remove or Move Monitor?	Yes in 2014	Yes in 2014	Yes in 2014
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A
-Appendix A Requirements			
# Precision Checks Performed Annually	27	16	23
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	4 10/09/14	2 09/12/14	2 01/03/14 07/03/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	N/A	Bi-Weekly
-Appendix C Requirements			
Sampler Make & Model	API M400 (087)	API M300 (093)	TEOM 1400 AB (079)
Date Established	07/01/2000	07/01/2000	07/01/2000
Classification	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FRM
-Appendix D Requirements			
Monitoring Type	Population Exposure	Population Exposure	Population Exposure
Monitoring Scale	Neighborhood	Neighborhood	Middle
Sampling Season	Jan-Dec	Sep-Mar	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes
-Appendix E Requirements			
Distance between collocated samplers	N/A	N/A	N/A
Probe Inlet Height	4.4 meters	4.4 meters	4.4 meters
Airflow Arc	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	N/A
Pollutant Sample Residence Time	4.6 seconds	4.6 seconds	N/A
Distance from Supporting Structure	1.5 meters	1.5 meters	2.5 meters
Distance from Obstructions	3.5 meters	3.5 meters	3.5 meters
Distance to Furnace Flue	None	None	None
Spacing from Trees	14 meters, E	14 meters, E	14 meters, E
Nearest Major Roadway A	Frye Rd	Frye Rd	Frye Rd
Distance and Direction to Road	3.5 meters, S	3.5 meters, S	3.5 meters, S
Traffic Count (ADT)	Unknown (secondary street)	Unknown (secondary street)	Unknown (secondary street)
Nearest Major Roadway B	Ellis St	Ellis St	Ellis St
Distance and Direction to Road	73 meters, W	73 meters, W	71 meters, W
Traffic Count (ADT)	Unknown (secondary street)	Unknown (secondary street)	Unknown (secondary street)
Groundcover	Paved/Gravel	Paved/Gravel	Paved/Gravel

WEST 43RD AVENUE
County ID: WF
AQS ID: 04-013-4009
Address: 3940 W Broadway, Phoenix
Coordinates: 33.40642N, -112.14434W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	PM₁₀
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	26
# Accuracy Audits Performed Annually & Date of Last Two 2014 Checks for PM	2 05/12/14 11/12/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	N/A
Frequency of Flow Rate Verification	Bi-Weekly
-Appendix C Requirements	
Sampler Make & Model	TEOM 1400AB (079)
Date Established	04/01/2002
Classification	SLAMS
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Highest Concentrations
Monitoring Scale	Middle
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	5 meters
Airflow Arc	360°
Probe Sample Line Material	N/A
Pollutant Sample Residence Time	N/A
Distance from Supporting Structure	2.6 meters
Distance from Obstructions	None
Distance to Furnace Flue	None
Spacing from Trees	None
Nearest Major Roadway	Broadway Road
Distance and Direction to Road	37 meters, SE
Traffic Count (ADT)	Unknown
Groundcover	Gravel

WEST PHOENIX

County ID: WP
 AQS ID: 04-013-0019
 Address: 3847 W Earll, Phoenix
 Coordinates: 33.48385N, -112.14257W
 Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information						
Pollutant	O ₃	CO	NO ₂	PM ₁₀	PM _{2.5}	PM _{2.5}
Sampling Schedule	Continuous	Continuous	Continuous	Continuous	1 in 12 days	Continuous
Analysis Method (filter samples only)	N/A	N/A	N/A	N/A	<i>As per 40 CFR Part 50, Appendix L</i>	N/A
Any Proposal to Remove or Move Monitor?	No	No	No	No	No	No
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A	N/A	N/A	N/A	Yes	Yes
-Appendix A Requirements						
# Precision Checks Performed Annually	27	27	27	26	30 (collocated QA samples)	26
# Accuracy Audits Performed Annually & Date of Last 2014 Check on Gaseous Analyzers & Last Two 2014 Checks for PM	4 11/18/14	2 12/02/14	4 09/09/14	2 02/12/14 08/26/14	2 05/15/14 12/23/14	4 02/12/14 08/26/14
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes	Yes	Yes	Yes	Yes
Annual Data Certification Submitted?	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015	Submitted May 2015
Frequency of One-Point QC Check	Bi-Weekly	Bi-Weekly	Bi-Weekly	N/A	N/A	N/A
Frequency of Flow Rate Verification	N/A	N/A	N/A	Bi-Weekly	Every 6 weeks	Bi-Weekly
-Appendix C Requirements						
Sampler Make & Model	API M400 (087)	API M300 (093)	API M200 (099)	BAM 1020 (122) / TEOM 1400AB (079)	THERMO 2025	BAM 1020 (170)
Date Established	01/01/84	01/01/84	05/24/90	02/01/88	06/13/00	09/01/05
Classification	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Method (FRM, FEM, ARM)	FEM	FRM	FRM	FEM	FRM	FEM
-Appendix D Requirements						
Monitoring Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Highest Concentration	Highest Concentration
Monitoring Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Season	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes	Yes	Yes	Yes
-Appendix E Requirements						
Distance between collocated samplers	N/A	N/A	N/A	N/A	2.3 meters	N/A
Probe Inlet Height	4.3 meters	4.3 meters	4.3 meters	2.7 meters	2.8 meters	3.6 meters

-General Information						
Pollutant	O₃	CO	NO₂	PM₁₀	PM_{2.5}	PM_{2.5}
Airflow Arc	360°	360°	360°	360°	360°	360°
Probe Sample Line Material	Teflon	Teflon	Teflon	N/A	N/A	N/A
Pollutant Sample Residence Time	4.4 seconds	4.4 seconds	4.4 seconds	N/A	N/A	N/A
Distance from Supporting Structure	1.3 meters	1.3 meters	1.3 meters	3 meters	2.6 meters	2.5 meters
Distance from Obstructions	None	None	None	None	11 meters	None
Distance to Furnace Flue	None	None	None	None	None	None
Spacing from Trees	None	None	None	None	None	None
Nearest Major Roadway	Thomas	Thomas	Thomas	Thomas	Thomas	Thomas
Distance and Direction to Road	360 meters, S	360 meters, S	360 meters, S	360 meters, S	360 meters, S	360 meters, S
Traffic Count (ADT)	29,000	29,000	29,000	29,000	29,000	29,000
Groundcover	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel

ZUNI HILLS
County ID: ZH
AQS ID: 04-013-4016
Address: 10851 West Williams Rd., Sun City
Coordinates: 33.68674N, -112.29417W
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa

-General Information	
Pollutant	PM₁₀
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	Shutdown June-August 2014
Is site suitable for comparison to PM _{2.5} NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	21
# Accuracy Audits Performed Annually & Date of Last Two 2014 Checks for PM	2 05/01/14 10/29/14
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	Submitted May 2015
Frequency of One-Point QC Check	N/A
Frequency of Flow Rate Verification	Bi-Weekly
-Appendix C Requirements	
Sampler Make & Model	TEOM 1400AB (079)
Date Established	12/01/09
Classification	SPM
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Monitoring Type	Population Exposure
Monitoring Scale	Neighborhood Scale
Sampling Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	2.3 meters
Airflow Arc	360°
Probe Sample Line Material	N/A
Pollutant Sample Residence Time	N/A
Distance from Supporting Structure	2.6 meters
Distance from Obstructions	None
Distance to Furnace Flue	None
Spacing from Trees	None
Nearest Major Roadway	Williams Rd
Distance and Direction to Road	200 meters, N
Traffic Count (ADT)	Unknown (residential street)
Groundcover	Lawn/Dirt

APPENDIX III - PUBLIC NOTICE AND COMMENT INFORMATION

Public Notice Period

To fulfill the requirements of *40 CFR Part 58, §58.10*, the MCAQD posted a draft copy of this Network Review on our website on July 31, 2015 and held a Network Review Public Information Workshop on September 3, 2015 at 1:00 p.m. The outlets used to notify the public of this network review and associated workshop were:

- the MCAQD's website,
- by electronic feed to MCAQD subscribers, and
- the Arizona Republic, a newspaper of general circulation in Maricopa County.

Public Notice Announcement Language

The public notice read as follows:

The Maricopa County Air Quality Department will hold a public meeting to discuss its 2014 Air Monitoring Network Plan (AMNP) on September 3, 2015 at 1:00 p.m. at the Air Monitoring Division's office located at: 2145 S. 11th Ave. Suite 170, Phoenix, AZ 85007. The purpose of the meeting is to receive comments from the public on the draft ANMP. Members of the public may comment in person at the meeting or through written statements to the department.

The AMNP reports the ambient air monitoring activity captured by the department's 25 air monitoring sites throughout Maricopa County in 2014. The AMNP provides a summary of the airborne pollutants measured, the air monitoring network design, air monitoring site details, and statistical analyses of pollutant data from 2014 among other information. Additional information on the draft AMNP may be obtained by contacting Ben Davis at: 2145 S. 11th Avenue #170, Phoenix, AZ 85007 or (602) 258-5155, ext. 221.

An electronic copy of the draft AMNP is currently available on the department's website at: <http://www.maricopa.gov/aq/divisions/monitoring/network.aspx>.

Hard copies of the document may be requested from the department's Records Management Coordinator at (602) 506-6201 or at the department's address: 1001 North Central Avenue, Phoenix, Arizona 85004. Arrangements may be made to view the information every Monday through Friday (excluding major holidays) between 8:00 a.m. and 4:30 p.m. There is a small fee for copying available documents.

Written comments must state the name and mailing address of the person making comment and be signed by that person, an authorized agent, or attorney. Written comments may be mailed to the Air Monitoring Division's address shown above or emailed to: bdavis@mail.maricopa.gov. All comments are due to the department by 5:00 p.m. on September 3, 2015.

A sign language and/or Spanish interpreter will be made available upon request with a 72-hour notice. Additional reasonable accommodations will be made available to the extent possible within the timeframe of the request.

News Release

The following is a copy of the news release that was advertised in the following newspapers: the Arizona Gazette and the Record Recorder. In addition, the public announcement was posted on the MCAQD's website.

Public Notice Announcement

Air Quality Department, Bob Huhn, PIO

The Maricopa County Air Quality Department will hold a public meeting to discuss its 2014 Air Monitoring Network Plan (AMNP) on September 3, 2015 at the Air Monitoring Division's office. The purpose of the meeting is to receive comments from the public on the draft ANMP. Members of the public may comment in person at the meeting or through written statements to the department.

The AMNP reports the ambient air monitoring activity captured by the department's 25 air monitoring sites throughout Maricopa County in 2014. The AMNP provides a summary of the airborne pollutants measured, the air monitoring network design, air monitoring site details, and statistical analyses of pollutant data from 2014 among other information. Additional information on the draft AMNP may be obtained by contacting Air Monitoring Division Manager, Ben Davis.

An electronic copy of the draft AMNP is currently available on the department's website at the link below.

Hard copies of the document may be requested from the department's Records Management Coordinator at (602) 506-6201 or at the department's address: 1001 North Central Avenue, Phoenix, Arizona 85004. Arrangements may be made to view the information every Monday through Friday (excluding major holidays) between 8:00 a.m. and 4:30 p.m. There is a small fee for copying available documents.

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A sign language and/or Spanish interpreter will be made available upon request with a 72-hour notice. Additional reasonable accommodations will be made available to the extent possible within the timeframe of the request.

Date: 9/3/2015

Time: 1:00 PM

Registration Required: No

Fee: None

More Info: <http://www.maricopa.gov/aq/divisions/monitoring/network.aspx>

Contact: Ben Davis

Air Monitoring Division Manager

(602)258-5155 (x221)

Location: Air Monitoring Division's Office

Address:

2145 S 11th Ave., Suite 170

Phoenix, Arizona, AZ 85007

Public Comments Received

The MCAQD received comments from the MAG regarding some changes needed in the draft ANMP. The comments were:

Comments on MCAQD Draft 2014 Air Monitoring Network Plan Maricopa Association of Governments	
Page	Comment
7	In the ninth item, "AQS", revise "define" to "defined".
24	In the last sentence of the fifth paragraph, delete "been".
24	Recommend deleting the last sentence of the sixth paragraph beginning with, "The Maricopa Association of Governments..." MAG prepares the regional air quality plans, but individual agencies (e.g., MCAQD, ADEQ, etc.) commit to implement the control measures in the MAG plans.
25	In the first through third sentences of the second paragraph, suggest revising the sentences to read, "In November 2014, EPA signed a notice to revise the ozone NAAQS. EPA proposed a new primary and secondary ozone standard to a level within the range of 0.065 to 0.070 ppm. EPA is under court order to issue a final rule on the revised ozone NAAQS by October 1, 2015."
25	In the second to last sentence, and final sentence, recommend revising "will" to "may".
27	In the last sentence of the fourth paragraph, revise "drive-up" to "drive up".
28	In the second sentence of the second paragraph, recommend deleting, "MAG committed to implementing"; MAG prepares the regional air quality plans, but individual agencies (e.g., MCAQD, ADEQ, etc.) commit to implement the control measures in the MAG plans.
28	In the third sentence of the third paragraph, replace "draft" with "interim" and replace "May 2, 2011 and July 12, 2012" with "May 10, 2013".
28	Recommend deleting the second sentence in the last paragraph beginning with, "The MAG is responsible..." MAG prepares the regional air quality plans, but individual agencies (e.g., MCAQD, ADEQ, etc.) commit to implement the control measures in the MAG plans.
33	In the fifth sentence of the second paragraph, revise "event the of" to "event of".
41	Recommend deleting the second to last sentence in the second paragraph beginning with, "At this time..." EPA has explained what is required of areas when the 20-year maintenance period ends. See http://www.epa.gov/ozonedesignations/1997standards/redesig/documents/2ndymaintfaq.pdf for more information.
42	In the last sentence, revise "Table 12" to "Table 13".
43	In Table 12, recommend deleting "Date: Hour" from two columns as the data is not included in the Table.
46	Formatting issues in first paragraph created a new page in the middle of the first paragraph.
47	In the third sentence, revise "nine (9) violations" to "three violations".
50	Recommend deleting the last sentence beginning with, "To date..."; Exceptional events for PM-2.5 have also been submitted to EPA.

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September 3, 2015

Comments on MCAQD Draft 2014 Air Monitoring Network Plan

Maricopa Association of Governments

Page	Comment
53	Recommend deleting the last sentence beginning with, "The data are..." and replace with "See Tables 20-23."
57	In Table 27 for ozone, revise "twelve unique days" to "eleven unique days" and "nine violations" to "three violations".
58	In the first sentence of the first paragraph, there is a missing Word reference.
61	In the first sentence, recommend deleting ", i.e., the 24-hour average block-average (midnight-to-midnight) concentration at a site is $\geq 155 \mu\text{g}/\text{m}^3$," to reduce confusion about what constitutes a violation of the PM-10 standard.
61	Recommend revising the title of Table 31 to "2014 Violations of the 24-hour PM10 Standard With EPA-Concurred Exceptional Event Data Excluded" to better reflect the data included in Table 31.
61	In the body of Table 31, include the following data corrections: (1) Revise "3.022" to "4.02" in the 2013 Expected Exceedances column; (2) Revise "2" to "3.01" in the 2013 Expected Exceedances column for the Greenwood monitor; (3) Revise "1.7" to "2.03" in the 2013 Expected Exceedances column; (4) Revise "1.674" to "2.007" in the Rate of Expected Exceedances column; (5) Revise "1.337" to "1.674" in the Rate of Expected Exceedances column; and (6) Revise "1.574" to "1.684" in the Rate of Expected Exceedances column.
61	In the footnotes to Table 31, (1) delete the footnote beginning with, "Bold font = Expected..." as there are no bolded values in the table; and (2) Revise the footnote beginning with, "*Calculated with all..." to "*Only EE data with EPA concurrence (2012 data) have been excluded."
62	In the first sentence, add "and six exceedance days in 2013" to the end of the first sentence.
62	In the second sentence, replace "drop from four to one at Buckeye" with "be zero".
62	Recommend changing the title of Table 32 to "2014 Violations of the 24-hour PM10 Standard With all Exceptional Event Data Excluded, Regardless of EPA Concurrence" to better reflect the data included in Table 32. EPA has yet to concur with the 2013 and 2014 EEs.
62	In the body of Table 32, revise all values in the 2014 24-hour Max. column to the reflect the maximum values without excluding exceptional events. This will make this column consistent with the Max. columns for years 2012 and 2013.
62	In the footnotes to Table 32, revise the sentence beginning with "*Calculated minus..." to "*All EE data has been excluded, regardless of EPA concurrence."
63	In the last sentence, revise "exceedances" to "exceedance days".
67	In the last sentence of the second paragraph, revise "2014" to "2015".
68	In the fourth sentence of the third paragraph, revise "publics ' " to "public's ".
70	In the second sentence of the third paragraph, revise "designed" to "designated".

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September 3, 2015

Comments on MCAQD Draft 2014 Air Monitoring Network Plan

Maricopa Association of Governments

Page	Comment
70	In the fifth sentence of the third paragraph, revise "departments' " to "department's ".
75	In the 2014 Annual NO ₂ Avg. cell, revise "102.0" to "8.65".
81	(1) In the 2014 Max. 24-hr PM ₁₀ Avg. cell, revise "172 $\frac{1}{2}$ " to "163 $\frac{1}{2}$ "; (2) In the 2014 Number exceedances 24-hr PM ₁₀ cell, revise "2" to "1"; and (3) In the 2014 Annual PM ₁₀ Avg. cell, revise "42.1" to "26.7".
85	In the 2014 Number exceedances 24-hr PM ₁₀ cell, revise "1" to "2".
86	In the 2014 Number exceedances 24-hr PM ₁₀ cell, revise "1" to "2".
91	Recommend deleting the last sentence as no meteorological monitors operate at this site.

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