



**Annual Monitoring Network Report  
for  
Small Districts in California**

**June 2009**



**ANNUAL MONITORING NETWORK REPORT  
for  
SMALL DISTRICTS IN CALIFORNIA**

**Planning and Technical Support Division  
Air Quality Data Branch  
California Air Resources Board**

**June 2009**

**Principal Authors**

**Ron Rothacker  
Pheng Lee  
Xiaomang Pan**

**Contributing Staff**

***Quality Management Branch*  
Merrin Wright**

**AIR QUALITY DATA SECTION  
CALIFORNIA AIR RESOURCES BOARD**

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## **Section 1. Purposes, scope, and organization of report**

In California, there are more than 250 locations where the ambient air quality is routinely measured for gaseous and particulate air pollutants. The measured data form a backbone for air quality management programs, provide the public with information on the status of the air quality and the progress in improving air quality, and are used by health researchers, business interests, environmental groups, and others.

This report describes the network of ambient air quality monitors in parts of California. The report meets requirements for an annual network plan as listed in Title 40, Part 58, Section 10 of the Code of Federal Regulations (40 CFR 58.10). The language of 40 CFR 58.10 is included in Appendix A. The regulations require that the report be submitted to the U.S. Environmental Protection Agency (U.S. EPA) by July 1 of each year.

Fourteen local air agencies in California that operate monitoring sites are reporting separately on the ambient monitoring within their jurisdictions. The geographical scope of this report consists of 19 counties or portions of counties with ambient monitoring sites for which the local air agencies are not drafting a separate report. Table 1 lists the local agencies that are drafting their own reports and those whose monitoring is included in this report. Figure 1 shows the areas covered by this report and the locations of the included monitoring sites. Table 2 lists the elements required in 40 CFR 58.10 to be in the network plan. Also listed in Table 2 is the location(s) within the report that includes information on each required element. Table 3 in Section 3 of the report lists the monitoring sites that are fully covered in this report and includes the monitoring purposes of the monitors. Table 4 in Section 4 of the report lists additional information about the same monitors, such as monitoring objective and spatial scale information. Table 5 in Section 5 of the report lists the numbers of required and existing monitoring sites by metropolitan statistical areas (MSA) that are covered in the geographical scope of this report. Table 6 in Section 7 of the report lists the current operating schedules of the PM<sub>2.5</sub> monitors at PM<sub>2.5</sub> monitoring sites that are covered in this report.

While this report covers monitoring in limited parts of California, the California Air Resources Board (ARB) produces other publicly available information on air quality monitoring throughout all of California. Section 10 of this report lists references and web links to this information and more.

As required by the regulations, this report includes monitors which are federal reference methods (FRM) or federal equivalent methods (FEM) and operated by air agencies. While the Code of Federal Regulations (CFR) also requires reporting of monitoring conducted by yet another category of monitoring methods, there are no plans to operate monitors of this type in California. The terms FRM and FEM denote monitoring instruments that can produce

measurements of the ambient levels (or concentrations) that the regulations allow to be compared to the ambient air quality standards for regulatory purposes. The areas covered in the report are not subject to U.S. EPA requirements for photochemical assessment monitoring stations (PAMS) and for NCore monitoring.

Given the interest in fine particulate matter, i.e., PM2.5, this report also includes information regarding routine monitoring by PM2.5 continuous monitoring and PM2.5 speciation monitoring. During the drafting of this report, one monitoring agency in the 19 counties or portions of counties referred to above is currently using an FEM to routinely collect PM2.5 continuous data. However, the continuous FEM data are not being reported into the EPA's Air Quality System (AQS) database at this time.

In compiling this report, ARB solicited input from and review by the local air districts whose jurisdictions are included. Also, the report was available for a 30 day public inspection period prior to its submittal to the U.S. EPA.

This report can be downloaded from the internet at [www.arb.ca.gov/aqd/amnr/amnr.htm](http://www.arb.ca.gov/aqd/amnr/amnr.htm).

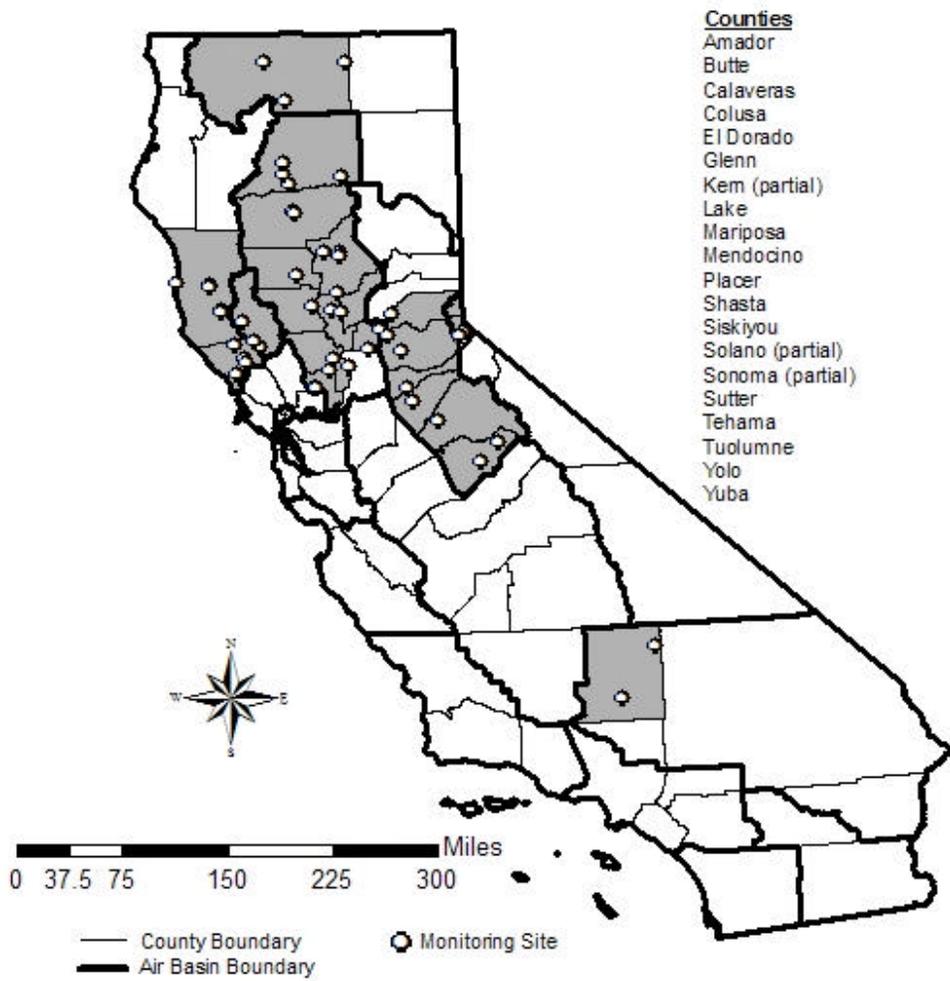
**Table 1**

Agencies Drafting Annual Network Plans

Air districts drafting their own Annual Network Plans	Air districts that are included in this ARB report
Great Basin Unified APCD Imperial County APCD Mojave Desert AQMD Monterey Bay Unified APCD North Coast Unified AQMD Northern Sierra AQMD Sacramento Metropolitan AQMD San Diego County APCD San Francisco Bay Area AQMD San Joaquin Valley Unified APCD San Luis Obispo County APCD Santa Barbara County APCD South Coast AQMD Ventura County APCD	Amador County APCD Butte County AQMD Calaveras County APCD Colusa County APCD El Dorado County AQMD Feather River AQMD Glenn County APCD Kern County APCD Lake County AQMD Mariposa County APCD Mendocino County AQMD Modoc County APCD Northern Sonoma County APCD Placer County APCD Shasta County AQMD Siskiyou County APCD Tehama County APCD Tuolumne County APCD Yolo-Solano AQMD

Notes: APCD stands for Air Pollution Control District  
 AQMD stands for Air Quality Management District

**Figure 1**  
**Counties and Monitoring Sites in this Report**



**Table 2**

## Location of Information Required for Annual Network Plan

Elements required by 40 CFR 58.10	Location in Annual Network Plan
Monitoring purpose information	Section 3
Evidence that siting and operation criteria are met Appendix A Appendix C Appendix D Appendix E	Section 6 Section 6 Section 5 Section 6
Air Quality System Site Identification Number (AQS Site ID)	Section 3, Table 3 Section 4, Table 4
Location of sites Street address Geographic coordinates	Section 3, Table 3 Section 4, Table 4
Sampling and analysis methods of monitors	Section 4, Table 4
Operating schedules for monitors	Section 7
Proposals to move/remove stations	Section 9
Monitoring objectives and spatial scale	Section 4, Table 4
Sites suitable or not for comparison to the annual PM2.5 National Ambient Air Quality Standard (NAAQS)	Section 8.1
Metropolitan Statistical Area (MSA) information	Section 3, Table 3 Section 4, Table 4
Review of changes to PM2.5 Network	Section 8.2

## **Section 2. General information about the monitoring network**

California's ambient air monitoring network is one of the most extensive in the world, consisting of over 250 sites where air pollution levels are monitored and more than 700 monitors used to measure the pollutant levels. The monitoring network needs to be large to cover the diverse range of topography, meteorology, emissions, and air quality in California, while adequately representing a large population. The monitoring network is critical in assessing the State's clean air progress and in determining pollutant exposures in California.

The network of monitoring sites for a pollutant tends to be denser where the air quality problem is worse and where the population is greater. The monitoring network also strives to provide representative data to all the broad geographical areas in California, including the coastal areas, the interior valleys, the desert regions, and the mountainous areas. Monitoring is also conducted in Mexico, across the border from San Diego and Calexico.

Some of the monitoring is operated by ARB, much of it is operated by local air quality districts, and a small amount is operated by other entities including the National Park Service, private contractors, and tribal authorities.

Ambient concentration data is collected for a wide variety of pollutants. The most important of these are usually thought of as being ozone (O<sub>3</sub>), fine particulate matter of a size of 2.5 micrometers or less (PM<sub>2.5</sub>), particulate matter of a size of 10 micrometers or less (PM<sub>10</sub>), and a number of toxic compounds. Monitoring for meteorological parameters is also conducted at a number of sites. One way or another, data for all of the pollutants is needed to better understand the nature of the ambient air quality problems in California, as well as to inform the public regarding where the air quality is poor and where it is clean.

Not all pollutants are monitored at all sites. While most sites monitor for multiple pollutants and some sites collect data for many pollutants, other sites monitor for only one or two pollutants. The State and local air quality agencies in California make the effort to only collect data that is needed from each site.

The needs for the monitoring data are varied. A sense of this can be gathered from the information on monitoring purposes in the next section of this report.

A fundamental purpose of monitoring is to distinguish between areas where pollutant levels exceed the ambient air quality standards and areas where the standards are not exceeded. Health-based ambient air standards are set at levels of pollutant concentration that result in adverse impacts to human health. Evidence of a standard being exceeded in an area leads to efforts to reduce the sources of pollution that result in the exceedances. In other words, air quality

agencies develop strategies and regulations to achieve needed emission reductions. Data from the ambient monitoring network are then used to indicate the success of this, in terms of the rate of progress towards attaining the standards or to show that standards have been attained. So there is a feedback process between the emission reduction programs and the monitoring programs.

Section 10 of this volume includes references to more information on California monitoring networks.

### **Section 3. Purposes served by the monitors**

The data from a network of air quality monitors serves many purposes that benefit a number of groups of society in different ways. The data are useful to health researchers, the general public, regulatory agency staff, environmentalists, business interests, and others. For example, the measurements of pollutant concentrations that come from the air quality monitors in the network are used: to determine compliance with ambient air quality standards; as the basis of daily reports to the public in newspapers and on TV; and in determining the levels of pollution above which there are significant adverse health effects. Each monitor in the network serves at least one purpose and most of the monitors serve multiple purposes.

By their nature, some of the purposes are met by a limited number of monitors, e.g., the purpose of monitoring for the highest concentrations of a pollutant in an area. Other purposes are general in nature, e.g., most all monitors can be said to be useful for public reporting of the ambient air quality in the vicinity of the monitor and for providing spatial representation of air quality in the sub-regions of a larger region. And yet other purposes are more ad hoc in nature in that the purpose may be served infrequently, such as for a special study on health consequences or for air quality modeling of an episode of particularly bad air quality.

Some purposes may, in one context, be said to apply to almost all monitoring for a pollutant and in another context be thought of as more selectively applying to a small subset of the monitors. Take the purpose of determining compliance with the ambient air quality standards. The State does this in order to determine if an area is in attainment or non-attainment of California Ambient Air Quality Standards. In this process of “State designations”, the data from all monitors in an area can be looked at but only the data from a small number of monitors with the highest concentrations will drive the determination of the designation for the area. So as used in this report, a smaller number of monitors are given the “State designation” purpose.

A list of purposes along with short descriptions is included below. After that, a table (Table 3) lists the purposes served by each monitor included in the scope of this report and for which official data for 2008 was reported. In Table 3, codes for the monitoring purposes are listed for each monitor. These codes are defined at the end of Table 3. Note that although the “general” purposes apply to most if not all of the monitors, the code for the general purposes only appears if those purposes are the most important purposes for the monitor. Also, no effort was made to indicate whether any monitors are serving ad hoc purposes at this time. Such conditions can change quickly.

Note that Table 4 in Section 4 of this report lists the “monitoring objectives” of the monitors, and that this is different than how the term “monitoring purposes” is used in this report. The CFR requires that the monitoring objectives be listed in

this annual network report. These monitoring objectives are the federal monitoring objectives as defined by the U.S. EPA. These do not include a number of additional State and local monitoring objectives. This section of the report lists the broader purposes served by the monitors, including the State, local, and federal purposes for monitoring. The federal monitoring objectives are a subset of this broader list of monitoring purposes.

Also listed in Table 3 are the locations of the monitors, including the MSAs in which the monitors are located. Certain requirements in 40 CFR 58 are based on MSAs. MSAs are part of a classification of geographical regions developed by the U.S. Office of Management and Budget (OMB). An MSA may include one or more counties. However, not all counties are within an MSA. In Table 3, the appropriate MSA for an area is listed after the county name.

#### List of purposes with descriptions

*Agricultural Burning* refers to the intentional use of fire for vegetation management, both in agricultural settings, such as fields and orchards, as well as in wildlands, including rangeland and forests to improve land for wildlife and game habitat or as a tool for disease or pest prevention. Monitors with this purpose are used to assess when and where burning can occur.

*Background Level* monitoring is used to determine general background levels of air pollutants. Background concentrations vary between different air pollutants.

*Expected High Concentration* monitoring is done at sites to measure pollutant concentrations in areas where air pollution is expected to be at its highest in an area. The state designation criteria contain the requirement for this type of monitoring in order to show that an area attains the air quality health standards.

The *Geyser Air Monitoring Program (GAMP)* was established to monitor ambient air quality in geothermal areas, mainly monitoring for hydrogen sulfide.

*High Concentration* monitoring is done at sites to determine the highest concentration of an air pollutant in an area within the monitoring network. A monitoring network may have multiple high concentration sites, e.g., due to varying meteorology year to year. This is a purpose listed by the U.S. EPA.

*Pollutant Transport* is the movement of pollutant between air basins or regions. Transport monitoring is used to assess and mitigate upwind areas when transported pollutant affects neighboring downwind areas. Also, transport monitoring is used to determine the extent of regional pollutant transport among populated areas and to agricultural and wildland areas.

*Population Exposure* monitoring is done to represent the air pollutant concentrations a populated area is exposed to.

*Public Reporting* means providing air quality data to the general public in a timely manner. Data can be presented in a number of ways which includes newspapers and TV, internet web pages, air quality maps, and hardcopies.

*Representative Concentration* monitoring is done at sites with pollutant concentrations that represent the concentrations for a pollutant expected to be similar throughout a geographical area. These sites do not necessarily indicate the highest concentrations in the area for a particular pollutant.

*Residential Burning* or Backyard Burning is the open burning of yard wastes by household residents. Backyard burning includes dry weeds, plant pruning, shrubbery, tree trimmings, and branches. Data from monitors with this purpose help guide decisions regarding appropriate times to allow residential burning.

*Spatial/Geographical Representation* means locating a site to represent a geographical region with common topography and meteorology. This type of monitoring is practically the same as Representative Concentration monitoring.

*Source Impact* monitoring is use to determine the impact of significant sources or source categories of air quality emissions on ambient air quality. The air pollutant sources may be stationary or mobile.

*State Area Designation* is the process used to determine compliance with the State ambient air quality standards for a particular pollutant. The State does this by monitoring the ambient air quality of an area and determining if the area is in attainment or non-attainment of the California Ambient Air Quality Standards. In this process of State area designations, the data from all monitors in an area can be looked at, but only the data from a small number of monitors with the highest concentrations will determine the designation of the area.

*State Implementation Plan (SIP) Maintenance Requirement* is part of the comprehensive SIP strategy designed to attain federal air quality standards as quickly as possible through a combination of technologically feasible, cost-effective, and far reaching measures. The SIP is a plan prepared by States and submitted to the U.S. EPA describing how each area will attain and maintain NAAQS. Once an area attains a NAAQS, the area is required to show and maintain that status, which requires continued monitoring in the area.

*Trend Analysis* monitoring is useful for comparing and analyzing air pollution concentrations over time and distance. Usually, trend analyses show the progress or lack of progress in improving air quality for an area over a period of years. Some sites are more useful than others for trend analyses. For example, it is better to have a history of monitoring at a site that includes the full time period of a trend analysis.

*Welfare Effects* monitoring is use to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts.

**Table 3**  
**Monitoring Purposes**  
(Monitors reporting data in 2008)

Station/Address	AQS Site #	OZONE	CO	NO2	SO2	PM2.5*	PM10*
<b>LAKE COUNTY AIR BASIN</b>							
<b>Lake County N/A**</b>							
Anderson Springs 11270 Anderson Road, Anderson Springs	060333010						Gnrl/GAMP
Glenbrook-High Valley Road 8276 High Valley Road, Glenbrook	060333011						Gnrl/GAMP
Lakeport-Lakeport Blvd 905 Lakeport Blvd, Lakeport	060333001	Gnrl/StateD				Gnrl/StateD	Gnrl/StateD
<b>LAKE TAHOE AIR BASIN</b>							
<b>EI Dorado County Sacramento-Arden-Arcade-Roseville MSA</b>							
South Lake Tahoe-Airport 1901 Airport Road, South Lake Tahoe	060170013	StateD/Trans					
South Lake Tahoe-Sandy Way 3337 Sandy Way, South Lake Tahoe	060170011						CONT
<b>MOJAVE DESERT AIR BASIN</b>							
<b>Kern County Bakersfield MSA</b>							
Mojave-923 Poole Street 923 Poole Street, Mojave	060290011	HConc/StateD SIPMain/Trans				StateD/RConc	StateD
Ridgecrest-100 West California Avenue 100 West California Avenue, Ridgecrest	060290015					StateD/RConc	StateD/RConc SIPMain
<b>MOUNTAIN COUNTIES AIR BASIN</b>							
<b>Amador County N/A</b>							
Jackson-Clinton Road 201 Clinton Road, Jackson	060050002	Gnrl/StateD Trans					
<b>Calaveras County N/A</b>							
San Andreas-Gold Strike Road 501 Gold Strike Road, San Andreas	060090001	Gnrl/StateD Trans				Gnrl	Gnrl
<b>EI Dorado County Sacramento-Arden-Arcade-Roseville MSA</b>							
Cool-Highway 193 1400 American River Trail, Cool	060170020	EHConc/Trans StateD					
Echo Summit 21200 Highway 50-Little Norway	060170012	Hconc/Trans					
Placerville-Gold Nugget Way 3111 Gold Nugget Way, Placerville	060170010	StateD/Trans					Gnrl/StateD
<b>Mariposa County N/A</b>							
Jerseydale-6440 Jerseydale 6440 Jerseydale Road, Jerseydale	060430006	StateD/Trans					
Yosemite National Park-Turtleback Dome	060430003	StateD/HConc Trans	Gnrl	Gnrl			
Yosemite Village-Visitor Center	060431001					CONT	Gnrl/StateD
<b>Placer County Sacramento-Arden-Arcade-Roseville MSA</b>							
Colfax-City Hall 33 South Main Street, Colfax	060610004	Gnrl/StateD					
<b>Tuolumne County N/A</b>							
Sonora-Barretta Street 251 South Barretta Street, Sonora	061090005	Gnrl/StateD Trans					

**Table 3 (Cont.)**  
**Monitoring Purposes**  
(Monitors reporting data in 2008)

Station/Address	AQS Site #	OZONE	CO	NO2	SO2	PM2.5*	PM10*
<b>NORTH COAST AIR BASIN</b>							
<b>Mendocino County N/A</b>							
Fort Bragg-North Franklin Street 416 North Franklin Street, Fort Bragg	060450002						Gnrl/StateD AgBn/ResBn
Ukiah-County Library 105 North Main Street, Ukiah	060450006					Gnrl/StateD CONT-FEM***	CONT StateD AgBn/ResBn
Ukiah-East Gobbi Street 306 East Gobbi Street, Ukiah	060450008	Trans/StateD	Gnrl	Gnrl			
Willits-899 South Main Street 899 South Main Street, Willits	060450009	Trans	Gnrl	Gnrl			
Willits-Firehouse 74 East Commercial Street, Willits	060452001					CONT-FEM***	StateD AgBn/ResBn
<b>Sonoma County Santa Rosa-Petaluma MSA</b>							
Colverdale 100 Washington Street, Colverdale	060970001						AgBn/ResBn
Guerneville-Church and 1st 16255 1st Street, Guerneville	060973002						AgBn/ResBn
Healdsburg-133 Matheson Street 133 Matheson Street, Healdsburg	060970002						Gnrl AgBn/ResBn
Healdsburg-Municipal Airport 200a Heidelberg Way, Healdsburg	060971003	Gnrl/Trans StateD					
<b>NORTHEAST PLATEAU AIR BASIN</b>							
<b>Siskiyou County N/A</b>							
Lava Beds National Monument P.O. Box 867, Lava Beds	060930005						Gnrl/StateD AgBn
Mount Shasta-N Old Stage Road 3 North Old Stage Road, Mount Shasta	060930004						Gnrl/AgBn
Yreka-Foothill Drive 528 Foothill Drive, Yreka	060932001	Gnrl/StateD Trans				Gnrl	Gnrl/StateD AgBn
<b>SACRAMENTO VALLEY AIR BASIN</b>							
<b>Butte County Chico MSA</b>							
Chico-Manzanita Avenue 468 Manzanita Avenue, Chico	060070002	Gnrl/StateD AgBn	Gnrl	Gnrl		Gnrl/StateD CONT/SPEC	Gnrl/StateD AgBn
Gridley-Cowee Avenue 608 Cowee Avenue, Gridley	060074001					CONT	
Paradise-4405 Airport Road 4405 Airport Road, Paradise	060070007	Gnrl/StateD AgBn					
Paradise-Fire Station #1 767 Birch Street, Paradise	060072001						AgBn/ResBn
<b>Colusa County N/A</b>							
Colusa-Sunrise Blvd 100 Sunrise Blvd, Colusa	060111002	Gnrl/AgBn StateD				Gnrl CONT	Gnrl/StateD AgBn
<b>Glenn County N/A</b>							
Willows-E Laurel Street 720 N Colusa Street, Willows	060210003	Gnrl/StateD AgBn				CONT	StateD/AgBn

## Table 3 (Cont.)

### Monitoring Purposes (Monitors reporting data in 2008)

Station/Address	AQS Site #	OZONE	CO	NO2	SO2	PM2.5*	PM10*
<b>Placer County Sacramento-Arden-Arcade-Roseville MSA</b>							
Auburn-Dewitt-C Avenue 108 C Avenue, Auburn	060610002	StateD					
Roseville-N Sunrise Blvd 151 N Sunrise Blvd, Roseville	060610006	StateD/AgBn		Gnrl		Gnrl/StateD CONT	StateD/AgBn
<b>Shasta County Redding MSA</b>							
Anderson-North Street 2220 North Street, Anderson	060890007	StateD				CONT*** ResBn	StateD
Lassen Volcanic Natl Park-Manzanita Lake	060893003	Gnrl/StateD					
Redding-Health Department Roof 2630 Hospital Lane, Redding	060890004	Gnrl/StateD				Gnrl	Gnrl/StateD
Shasta Lake-4066 La Mesa Avenue 4066 La Mesa Avenue, Shasta Lake	060890008						Gnrl
<b>Solano County Vallejo-Fairfield MSA</b>							
Vacaville-Merchant Street 650 Merchant Street, Vacaville	060953001						Gnrl
Vacaville-Ulatis Drive 2012 Ulatis Drive, Vacaville	060953003	StateD/Trans				CONT	
<b>Sutter County Yuba City MSA</b>							
Sutter Buttes-S Buttes	061010004	HConc/Trans StateD/AgBn					
Yuba City-Almond Street 773 Almond Street, Yuba City	061010003	Gnrl/StateD AgBn		Gnrl		Gnrl CONT	Gnrl/StateD
<b>Tehama County N/A</b>							
Red Bluff-Oak Street 502 Oak Street, Red Bluff	061030005	Gnrl/StateD					
Red Bluff-Messer Drive 700 Messer Drive, Red Bluff	061030002						Gnrl/StateD
Tuscan Butte	061030004	Gnrl/StateD Trans					
<b>Yolo County Sacramento-Arden-Arcade-Roseville MSA</b>							
Davis-UCD Campus	061130004	AgBn/StateD		Gnrl		CONT	
West Sacramento-15th Street 132 15th Street, West Sacramento	061132001						StateD
Woodland-Gibson Road 41929 E Gibson Road, Woodland	061131003	StateD				Gnrl/StateD CONT	AgBn/StateD

Lead (Pb) monitors are not included in this list because there is no lead monitoring in these areas.

\* CONT, CONT-FEM, or SPEC in a PM column denotes that a continuous (CONT) PM or speciation (SPEC) PM monitor is located at the site. CONT-FEM stands for a continuous federal equivalent method. Continuous PM monitoring provides realtime hourly concentration values. This is useful for public reporting, better understanding of episodes of high PM concentrations, identification of sources of pollutants, possible allowance for less frequent filter sampling, etc. Monitoring purposes for continuous PM monitors are not listed.

\*\* After a county name, the table lists the U.S. Office of Management and Budget's Metropolitan Statistical Area (MSA) that includes the county.

\*\*\* Continuous PM monitors for which the data were not being submitted to ARB or EPA in 2008.

**Table 3 (cont.)**  
**Codes for Monitoring Purposes**

Federal monitoring purposes

HConc	High concentrations
RConc	Representative concentrations
Sourc	Source impact
Bkgnd	Background levels
Trans	Pollutant transport
Welfr	Welfare effects

State and local purposes (the above purposes plus these below)

EHConc	Monitoring at expected high concentration sites relative to California Ambient Air Quality Standards
AgBn	Support agricultural/prescribed burn decisions
ResBn	Support residential burn program
Trnds	Trends analysis
StateD	Support State area designation
SIPMain	State Implementation Plan (SIP) maintenance requirement
GAMP	Geyser Air Monitoring Program

The following purposes apply in a general sense to monitors throughout the network. For these, we use the code "Gnrl" in the table above. We list this code for a monitor when these purposes are some of the predominant purposes for the monitor.

Gnrl	Population exposure/population representation Spatial representation/spatial coverage (geographical representation) Public reporting
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Most monitors are also considered to be of potential use for purposes such as: evaluation of emissions inventories, model validation, and source/pollutant relationships. These purposes are not separately listed in the above table.

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#### **Section 4. Additional information about the monitors**

U.S. EPA regulations require that the annual network plan lists specific additional information about the monitors that characterizes the nature and location of the monitoring. Table 4 lists the monitoring objectives, spatial scales, and sampling methods of the monitors that are covered in this report. Also included in Table 4 are the geographical coordinates of the monitoring sites.

The regulations also require that the annual network plan lists the laboratory analysis methods of the monitors. However, there is no separate analysis method for the gaseous monitors and continuous PM monitors. Also, for the filter-based PM monitors, only simple mass weighing is done.

As already pointed out in Section 3, the “monitoring objectives” listed below in Table 4 are not the same as the “monitoring purposes” listed in Table 3 in Section 3. The monitoring objectives used for Table 4 are the federal monitoring objectives as defined by the U.S. EPA. At the end of Table 4, the codes used for the monitoring objectives, spatial scales, and sampling methods are defined.

**Table 4**

**Additional Information About the Monitors**  
(Monitors reporting data in 2008)

Station/Coordinates	AQS Site #	OZONE	CO	NO2	SO2	PM2.5*	PM10*
<b>LAKE COUNTY AIR BASIN</b>							
(Monitoring Objective/Spatial Scale/Sampling Method)							
<b>Lake County N/A**</b>							
Anderson Springs 38.7744, -122.6994	060333010						RC/US/SI
Glenbrook-High Valley Road 38.8502, -122.7361	060333011						RC/RS/SI
Lakeport-Lakeport Blvd 39.0330, -122.9219	060333001	HC/NS/UV				HC/NS/SCH	RC/NS/XG
<b>LAKE TAHOE AIR BASIN</b>							
<b>El Dorado County Sacramento-Arden-Arcade-Roseville MSA</b>							
South Lake Tahoe-Airport 38.9102, -119.9952	060170013	HC,TR/RS/ UV					
South Lake Tahoe-Sandy Way 38.9450, -119.9703	060170011						CONT
<b>MOJAVE DESERT AIR BASIN</b>							
<b>Kern County Bakersfield MSA</b>							
Mojave-923 Poole Street 35.0503, -118.1478	060290011	HC,TR/RS/ UV				HC/NS/SQ	HC/RS/SI
Ridgecrest-100 West California Avenue 35.6211, -117.6731	060290015					HC/NS/SI	HC/NS/SI
<b>MOUNTAIN COUNTIES AIR BASIN</b>							
<b>Amador County N/A</b>							
Jackson-Clinton Road 38.3427, -120.7644	060050002	HC,TR/US/ UV					
<b>Calaveras County N/A</b>							
San Andreas-Gold Strike Road 38.2019, -120.6802	060090001	HC,TR/RS/ UV				RC/NS/SCH	RC/RS/SI
<b>El Dorado County Sacramento-Arden-Arcade-Roseville MSA</b>							
Cool-Highway 193 38.8906, -121.0000	060170020	HC,TR/RS/ UV					
Echo Summit 38.8117, -120.0331	060170012	HC,TR/RS/ UV					
Placerville-Gold Nugget Way 38.7247, -120.8219	060170010	HC,TR/RS/ UV					HC/RS/SI
<b>Mariposa County N/A</b>							
Jerseydale-6440 Jerseydale 37.5466, -119.8416	060430006	HC,TR/RS/ UV					
Yosemite National Park-Turtleback Dome 37.7133, -119.7058	060430003	HC,TR/RS/ UV	BL/US/IR	BL/US/CL			
Yosemite Village-Visitor Center 37.7486, -119.5869	060431001					CONT	HC/NS/SI
<b>Placer County Sacramento-Arden-Arcade-Roseville MSA</b>							
Colfax-City Hall 39.0997, -120.9541	060610004	HC/US/UV					
<b>Tuolumne County N/A</b>							
Sonora-Barretta Street 37.9819, -120.3786	061090005	HC/NS/UV					

**Table 4 (Cont.)**

**Additional Information About the Monitors**  
(Monitors reporting data in 2008)

Station/Coordinates	AQS Site #	OZONE	CO	NO2	SO2	PM2.5*	PM10*
<b>NORTH COAST AIR BASIN</b>							
<b>Mendocino County N/A</b>							
Fort Bragg-North Franklin Street 39.4458, -123.8044	060450002						HC/NS/SI CONT
Ukiah-County Library 39.1511, -123.2066	060450006					HC/NS/SCH CONT-FEM***	HC/NS/SI
Ukiah-East Gobbi Street 39.1447, -123.2002	060450008	HC,TR/US/ UV	RC/NS/IR	RC/US/CL			
Willits-899 South Main Street 39.4044, -123.3497	060450009	TR/US/UV	RC/NS/IR	RC/NS/CL			
Willits-Firehouse 39.4130, -123.3536	060452001					CONT-FEM***	HC/NS/SI
<b>Sonoma County Santa Rosa-Petaluma MSA</b>							
Colverdale 38.8047, -123.0177	060970001						RC/NS/SI
Guerneville-Church and 1st 38.5016, -122.9977	060973002						RC/NS/SI
Healdsburg-133 Matheson Street 38.6111, -122.8686	060970002						RC/NS/SI
Healdsburg-Municipal Airport 38.6536, -122.9005	060971003	RC,TR/US/ UV					
<b>NORTHEAST PLATEAU AIR BASIN</b>							
<b>Siskiyou County N/A</b>							
Lava Beds National Monument 41.7117, -121.5067	060930005						HC/US/SI
Mount Shasta-N Old Stage Road 41.3089, -122.3300	060930004						RC/NS/SI
Yreka-Foothill Drive 41.7267, -122.6336	060932001	HC,TR/NS/ UV					HC/NS/SI
<b>SACRAMENTO VALLEY AIR BASIN</b>							
<b>Butte County Chico MSA</b>							
Chico-Manzanita Avenue 39.7575, -121.8422	060070002	HC/US/UV	RC/NS/IR	RC/NS/CL		HC/NS/SCH CONT/SPEC	HC/NS/SI
Gridley-Cowee Avenue 39.3272, -121.6686	060074001					CONT	
Paradise-4405 Airport Road 39.7141, -121.6177	060070007	HC,TR/RS/ UV					
Paradise-Fire Station #1 39.7538, -121.6244	060072001						RC/US/SI
<b>Colusa County N/A</b>							
Colusa-Sunrise Blvd 39.1888, -121.9980	060111002	RC/RS/UV				RC/NS/SQ CONT	HC/RS/SI
<b>Glenn County N/A</b>							
Willows-E Laurel Street 39.5172, -122.1897	060210003	HC/US/UV				CONT	HC/RS/SI

**Table 4 (Cont.)**

**Additional Information About the Monitors**  
(Monitors reporting data in 2008)

Station/Coordinates	AQS Site #	OZONE	CO	NO2	SO2	PM2.5*	PM10*
<b>Placer County Sacramento-Arden-Arcade-Roseville MSA</b>							
Auburn-Dewitt-C Avenue 38.9394, -121.1055	060610002	HC/US/UV					
Roseville-N Sunrise Blvd 38.7461, -121.2647	060610006	HC/US/UV		RC/NS/CL		HC/NS/SCH CONT	HC/US/SI
<b>Shasta County Redding MSA</b>							
Anderson-North Street 40.4531, -122.2986	060890007	HC/NS/UV				CONT***	HC/NS/SI
Lassen Volcanic Natl Park-Manzanita Lake 40.5372, -121.5764	060893003	RC/RS/UV					
Redding-Health Department Roof 40.5514, -122.3808	060890004	HC/NS/UV				RC/NS/SCH	HC/NS/SI
Shasta Lake-4066 La Mesa Avenue 40.6775, -122.3733	060890008						RC/RS/SI
<b>Solano County Vallejo-Fairfield MSA</b>							
Vacaville-Merchant Street 38.3516, -121.9933	060953001						RC/US/SI
Vacaville-Ulatis Drive 38.3583, -121.9500	060953003	HC,TR/US/ UV				CONT	
<b>Sutter County Yuba City MSA</b>							
Sutter Buttes-S Buttes 39.1583, -121.7500	061010004	HC,TR/RS/ UV					
Yuba City-Almond Street 39.1388, -121.6191	061010003	HC/US/UV		RC/NS/CL		RC/NS/SCH CONT	HC/NS/SI
<b>Tehama County N/A</b>							
Red Bluff-Oak Street 40.1749, -122.2366	061030005	HC/US/UV					
Red Bluff-Messer Drive 40.1638, -122.2213	061030002						HC/NS/SI
Tuscan Butte 40.2622, -122.0928	061030004	HC,TR/RS/ UV					
<b>Yolo County Sacramento-Arden-Arcade-Roseville MSA</b>							
Davis-UCD Campus 38.5352, -121.7730	061130004	HC/US/UV		RC/NS/CL		CONT	
West Sacramento-15th Street 38.5713, -121.5258	061132001						HC/NS/SI
Woodland-Gibson Road 38.6605, -121.7305	061131003	HC/US/UV				HC/NS/SQ CONT	HC/US/SI

Lead (Pb) monitors are not included in this list because there is no lead monitoring in these areas.

\* CONT, CONT-FEM, or SPEC in a PM column denotes that a continuous (CONT) PM or speciation (SPEC) PM monitor is located at the site. CONT-FEM stands for a continuous federal equivalent method. Continuous PM monitoring provides realtime hourly concentration values. This is useful for public reporting, better understanding of episodes of high PM concentrations, identification of sources of pollutants, possible allowance for less frequent filter sampling, etc. Monitoring objectives, spatial scales, and sampling methods are not listed for continuous PM monitors.

\*\* After a county name, the table lists the U.S. Office of Management and Budget's Metropolitan Statistical Area (MSA) that includes the county.

\*\*\* Continuous PM monitors for which the data were not being submitted to ARB or EPA in 2008.

**Table 4 (cont.)**  
**Codes for Monitoring Information**

Federal monitoring objectives

BL	Background levels
HC	High concentrations
IM	Source impact
RC	Representative concentrations
TR	Pollutant transport

Spatial scales

MI	Microscale
MS	Middle scale
NS	Neighborhood scale
RS	Regional scale
US	Urban scale

Sampling methods

CL	Chemiluminescent
FL	Fluorescence
IR	Nondispersive infrared
SCH	Low volume single channel sampler, size selective inlet
SI	High volume sampler, size selective inlet
SQ	Low volume sequential sampler, size selective inlet
UV	Ultraviolet absorption
XG	X-ray fluorescence

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## **Section 5. Monitoring required by the U.S. EPA**

U.S. EPA regulations specify the minimum number of sites at which State and local air agencies must deploy monitors. In practice, the State and local agencies find they need to deploy significantly more monitors. The additional monitors are needed to fulfill State and local purposes for monitoring that are in addition to the federal purposes. For example, because State air quality standards tend to be more stringent than national standards, some areas may need more monitors than needed to only show compliance with the national standards. Another example comes from the expectation from the public to be informed of the actual air quality conditions where they live and work, for example, in a number of sub-areas of an urban area. This objective is not explicitly built into the federal regulatory requirements. State and local air agencies in California attempt to be responsive to the public in this regard.

Requirements for minimum numbers of monitors appear in Appendix D of Part 58 of the CFR. For ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>, the required minimum number is based on the population of an area and the severity of the air quality for the pollutant in the area. For other pollutants, no monitoring is required by Appendix D unless an area exceeds or is close to exceeding a national ambient air quality standard, which is true for very few if any areas in the U.S. For purposes of the minimum requirements, the areas are defined by the MSAs developed by the OMB (more information on MSAs appears on page 8). Note that elsewhere in the CFR there are requirements for monitoring to indicate whether an area designated as attaining an air quality standard is maintaining the attainment status. This annual network plan is not required to address this.

For the parts of the State included in this report, Table 5 lists information on the number of existing O<sub>3</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> monitors and the number required by Appendix D. In all cases, sufficient monitoring exists. The information is listed by MSA. The number of required monitors is based on the population of the MSA, taken from the 2000 U.S. Census, in combination with the degree to which air quality in the MSA is greater or less than the national air quality standards.

Monitoring for carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), and sulfur dioxide (SO<sub>2</sub>) is not currently required anywhere in California in order to comply with the Appendix D requirements of 40 CFR 58. Ambient concentrations for these pollutants do not exceed the national air quality standards and do not trigger these requirements for monitoring. As required by a different part of 40 CFR 58 that takes effect in a couple years, a few sites in major urban areas in California will include monitoring for these pollutants. Even without federal requirements, dozens of sites in California monitor for CO and NO<sub>2</sub>.

In November, 2008, the U.S. EPA strengthened the national air quality standard for Lead (Pb). The revised standard requires both source-oriented and non-

source (i.e., population-oriented) Pb monitoring in California (40 CFR 58, Appendix D, Sections 4.5 (a)-(d)). Source-oriented monitoring is required for all sources with Pb emissions of one ton or greater per year. Population-oriented monitoring is required in all Core-Based Statistical Areas (CBSA) with a population of 500,000 or greater. The CFR requires that monitoring plans for source-oriented monitoring be included in this year's annual network plan. Furthermore, the CFR also requires that the source-oriented monitoring network be operational by January 1, 2010. However, no sites in the ARB Primary Quality Assurance Organization (PQAO) will be required to conduct source-oriented monitoring.

The ARB will address the population-oriented Pb monitoring requirements in next year's annual network plan when the population-oriented Pb monitoring plan is due.

**Table 5**

Numbers of Required and Existing Sites by Metropolitan Statistical Area (MSA)  
(MSAs that include the small air districts included in this report)

Metropolitan Statistical Area (MSA)	Pop.	Ozone		PM2.5				PM10 (SSI) <sup>3</sup>	
		Required	Existing	Required FRM <sup>1</sup>	Existing FRM	Required Cont. <sup>2</sup>	Existing Cont.	Required	Existing
Bakersfield*	661,645	2	8	2	5	1	1	2	4
Chico	203,171	1	2	1	1	1	2	0	2
Redding	163,256	1	3	0	1	0	0	0	3
Sacramento-Arden Arcade-Roseville*	1,796,857	2	16	3	5	2	6	4	10
Santa Rosa-Petaluma*	458,614	1	2	0	1	0	0	0	4
Vallejo-Fairfield*	394,542	2	4	1	1	1	2	0	3
Yuba City	139,149	1	2	1	1	1	1	0	1

Notes:

2005-2007 air quality data was used in determining the number of required sites.

Population is based on year 2000 Census data.

\* Parts of these MSAs are included in the geographical scope of this report, and parts are within the geographical scope of the reports being completed by the districts. The numbers of sites listed are for the entire MSA.

<sup>1</sup> FRM: Federal Reference Method

<sup>2</sup> Cont.: Refers to a continuous PM2.5 monitor, i.e., one that measures hourly data.

<sup>3</sup> SSI: Size Selective Inlet. The SSI is an FRM for PM10.

## **Section 6. Required quality assurance of the monitoring program**

The information below, along with the information available via the web link below, provides information on the status of compliance with the requirements of 40 CFR 58 Appendices A, C, and E. The annual network plan is required to include such information.

Annually, the Quality Assurance Section (QAS) of ARB conducts performance evaluations (audits) for each SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, and CO analyzer with National Institute of Standards and Technology (NIST) traceable gases. Each analyzer is audited at three levels using known concentrations of gases. Annual Particulate Matter (PM) monitor flow rate audits are conducted with a BGI (Bob Gussman Incorporated) variable orifice mass flow meter, or TertaCal, which is certified against NIST traceable primary standards. Semi-annual flow rate audits for PM monitors are required. QAS conducts one annual PM flow rate audit and U.S. EPA Region 9 conducts the second PM flow rate audit.

O<sub>3</sub> audits are performed using O<sub>3</sub> transfer standards that are certified quarterly by comparing the transfer standard to a NIST Standard Reference Photometer. Laboratory audits for the toxics program are conducted using certified gases and/or materials. Meteorological audits are conducted with instruments that are NIST traceable and/or manufacturer-certified. All of the audits performed by QAS are conducted in accordance with the 40 CFR 58, Appendix A.

As part of the annual audit at each air monitoring station, QAS conducts siting evaluations. Physical measurements and observations, including probe/sensor height above ground level, distance from trees, type of ground cover, residence time, obstructions to air flow, and distance to local sources, topography, vehicle counts, predominant wind direction, probe material, etc., are taken to determine compliance with 40 CFR Part 58, Appendix E requirements.

QAS also ensures the quality of the data collected by the air monitoring sites operating in California through analysis of precision data submitted to the U.S. EPA's ambient air quality database, the AQS. Precision checks for gaseous/continuous samplers are performed once every two weeks. Precision checks for non-continuous, collocated particulate samplers are done at least every sixth day. Submission rates are adjusted for verified analyzer/sampler non-operating time periods. On a quarterly basis, staff reviews the frequency of flow rate verifications for manual PM samplers and automated PM analyzers, and the frequency of one-point quality control checks for gaseous instruments. Annually, staff performs an analysis of precision data that concentrates on three parameters: precision data submission, precision data validity, and precision data usability. The data analyses are conducted in accordance with 40 CFR 58, Appendix A.

In addition, QAS conducts system audits to determine if a district's air monitoring program satisfies the requirements of 40 CFR 58 and U.S. EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, April 1994. Compliance with these regulations is necessary if the data are to be considered data-for-record per the California Code of Regulations (Title 17, Article 3, section 70301). Data meeting these requirements are eligible to be used in actions taken pursuant to the Federal Clean Air Act and the California Clean Air Act.

Information about each air monitoring station audited by QAS is available at <http://www.arb.ca.gov/gaweb/site.php>. This web page includes maps of each site, latitude and longitude coordinates as determined by GPS, site photos, precision and accuracy data, and a detailed site survey of the physical parameters and conditions at each site. This site also includes an area for district precision and accuracy reports. These reports are available on a limited basis to district staff.

Appendix A of 40 CFR 58 also includes requirements for collocation of samplers as part of quality checks for the PM<sub>2.5</sub>, PM<sub>10</sub>, and Pb monitoring networks. The CFR contains separate collocation requirements for PM<sub>2.5</sub>, PM<sub>10</sub>, and Pb. The requirements are to be met for each PQAQ. Five PQAQs exist in California, one each for the San Francisco Bay Area AQMD, San Diego County APCD, South Coast AQMD, and Great Basin Unified APCD, and one for the remainder of the State that is called the ARB PQAQ.

For PM<sub>2.5</sub>, the CFR requires that for each PM<sub>2.5</sub> FRM monitoring method, 15% of the sites within a PQAQ have a collocated monitor of the same type. Three types of PM<sub>2.5</sub> FRMs exist currently in the ARB PQAQ. Collocation requirements apply to each type. One type of sampler is the Rupprecht & Patashnick (R&P) PM<sub>2.5</sub> sequential air sampler. For this type of sampler, the collocation requirement is met.

The PQAQ also has R&P non-sequential samplers deployed. Given the 21 sites expected to have this type of sampler by the end of the year, four of these sites are required to have a collocation sampler. Three of the sites already have collocation samplers. The ARB will be adding a fourth collocation sampler to an ARB operated site at some time in the next year.

The third type of PM<sub>2.5</sub> FRM sampler is the Graseby Anderson PM<sub>2.5</sub> sequential sampler. Within the ARB PQAQ, only San Joaquin Valley Unified APCD and Ventura County APCD operate this type of sampler. By the end of 2009, San Joaquin Valley Unified APCD plans to reduce the number of FRM sites it operates with this type of sampler to the point at which the district will have two such FRM sites. At that time, there will be six such sites in the ARB PQAQ. Because one of these six sites already has a collocation monitor, the collocation requirement for this method will be met.

The CFR also requires that 15% of the sites with PM<sub>2.5</sub> FEM monitors be collocated, but that the first collocation monitor be an FRM, the second be an FEM, and so on alternating FRM with FEM as additional collocation monitors are required. One district intends to soon become the first district in the ARB PQAO to begin submitting PM<sub>2.5</sub> data from FEM monitors. Other agencies expect to deploy PM<sub>2.5</sub> FEM monitors in other parts of the PQAO by the end of the year. As has been done for PM<sub>10</sub> and PM<sub>2.5</sub> FRMs, it makes sense that agencies with the most deployed FEM sites also provide the required collocation monitors. However, it is currently unknown how many sites will have FEMs and which agencies will be operating them. Given the unknowns at this time and the expectation of having a much clearer understanding of the FEM network next year, the 2010 annual network report will be able to describe how the FEM collocation requirement will be met. Even so, by the end of the year when a number of sites are expected to be submitting FEM data, we will in all likelihood have at least one of those sites submitting both FEM and FRM data, and thus meet the collocation requirement for the first collocated site.

California is a very large state in which environmental conditions, e.g., temperature, precipitation, humidity, wind speeds, and elevation, vary widely and the composition of the PM<sub>2.5</sub> varies significantly. Also, a large number of operating agencies operate sites in the statewide PM<sub>2.5</sub> network. ARB and local air districts designed the locations of collocated PM<sub>2.5</sub> samplers to strike a balance in adequately representing all of these factors. In this way, the quality control function of the collocated monitoring is best realized. While Appendix A requires 80% of the collocated monitors to be within  $\pm 20\%$  of the applicable NAAQS, focusing on achieving this was deemed to result in too much clustering of the collocated monitors in too few of the factors needing representation.

The CFR also requires that 15% of PM<sub>10</sub> sites with manual monitoring have collocated samplers. However, the CFR language is much less specific as to what is required to meet the requirements. A U.S. EPA guidance document provides needed clarification. Agencies in the ARB PQAO deploy two types of PM<sub>10</sub> FRM samplers that require appropriate collocation. Both are filter-based samplers that use size selective inlets and high flow rates. One type uses a Volumetric Flow Controller (VFC) and the other type uses a Mass Flow Controller (MFC).

Given the 72 sites expected to have the PM<sub>10</sub> VFC type of sampler in the ARB PQAO by the end of the year, 11 of the sites will need to have collocation samplers of this same type. Six of the sites have collocated samplers now, so five more are required. The ARB will add collocation samplers to three of its sites, and the Mojave Desert AQMD and San Joaquin Valley Unified APCD have both agreed to add one. These deployments are expected to take place over the next year or so, in conjunction with other changes in the PM<sub>10</sub> FRM network, so that the collocation requirement will be met.

As for the other type of PM10 FRM sampler, i.e., the MFC type, six sites will have this type of sampler in the ARB PQAO once some anticipated changes occur over the next year. One of those sites already has a collocated sampler, so the collocation requirement will be met.

In response to recent changes to the lead (Pb) national ambient air quality standard, sites monitoring for Pb will be added in California in two stages over the next couple years. The first stage, which is occurring through early 2010, includes source-oriented monitoring, and the second stage, which will occur next year, includes population-oriented monitoring. No sites in the ARB PQAO will be required to conduct source-oriented monitoring. However, several sites in the ARB PQAO will need to conduct population-oriented monitoring for Pb. The collocation requirements for population-oriented Pb monitoring will be more specifically addressed in next year's annual network plan.

For PM2.5, PM10, and Pb, if the network needs to have additional collocation monitors in order to meet the requirements, we will work with the appropriate air monitoring agencies to deploy the required number of additional collocation monitors.

## Section 7. Operating schedules

The CFR requires that the annual network plan include information about operating schedules. While gaseous monitors (e.g., O<sub>3</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>) and particulate monitoring with FEMs usually operate continuously and all year, particulate monitoring with FRMs often operate one day out of every three days or one day out of every six days. The primary reason why particulate FRMs operate less frequently is that the particulate FRMs are filter-based and therefore much more labor intensive, requiring that field staff frequently retrieve and replace filters and that laboratory staff pre- and post-weigh filters. Of course, the intended operating schedule can be disrupted by instrument failures and other unanticipated situations. The continuous gaseous and particulate monitors produce hourly measurements of the gaseous and particulate pollutants, while the particulate filter-based monitors produce 24-hour measurements of particulate pollutants.

### Particulate matter operating schedules

Current operating schedules for PM<sub>2.5</sub> FRM monitors in the areas included in this report are listed in Table 6 below. The current operating schedules of the PM<sub>2.5</sub> FRM monitors listed in Table 6 were obtained from the U.S. EPA's AQS database.

While there are a number of continuous PM<sub>2.5</sub> monitors deployed, most of these are not federal reference or equivalent methods. In March of 2008, the U.S. EPA approved the first continuous PM<sub>2.5</sub> FEM. At the present time, to our knowledge, eight California air districts have purchased continuous PM<sub>2.5</sub> FEMs or upgraded continuous PM<sub>2.5</sub> monitors to continuous PM<sub>2.5</sub> FEMs. For the areas covered by this report, there are no continuous PM<sub>2.5</sub> FEMs that are reporting data into the AQS database at this time.

Operating schedules for the manual PM<sub>10</sub> samplers in the areas included in this report operate on a one day (24-hour) in every six day schedule. There are two continuous PM<sub>10</sub> monitors operating in the area that this report covers. These monitors are located at the South Lake Tahoe-Sandy Way and Fort Bragg sites.

**Table 6**  
**Current PM2.5 Operating Schedules\***  
(Monitors for the small air districts included in this report)

Site Name	AQS Site #	Current	Laboratory
<b>LAKE COUNTY AIR BASIN</b>			
<b>Lake County</b>			
Lakeport-Lakeport Blvd	060333001	1 in 6 day	LAKE COUNTY
<b>MOJAVE DESERT AIR BASIN</b>			
<b>Kern County</b>			
Mojave-923 Poole Street	060290011	1 in 6 day	SAN DIEGO COUNTY
Ridgecrest-100 West California	060290015	1 in 6 day	SAN DIEGO COUNTY
<b>MOUNTAIN COUNTIES AIR BASIN</b>			
<b>Calveras County</b>			
San Andreas-Gold Strike Road	060090001	1 in 6 day	ARB
<b>NORTH COAST AIR BASIN</b>			
<b>Mendocino County</b>			
Ukiah-County Library	060450006	1 in 6 day	LAKE COUNTY
<b>NORTHEAST PLATEAU AIR BASIN</b>			
<b>Siskiyou County</b>			
Yreka-Foothill Drive	060932001	1 in 6 day	ARB
<b>SACRAMENTO VALLEY AIR BASIN</b>			
<b>Butte County</b>			
Chico-Manzanita Avenue	060070002	1 in 6 day	ARB
<b>Colusa County</b>			
Colusa-Sunrise Blvd	060111002	1 in 6 day	ARB
<b>Placer County</b>			
Roseville-N Sunrise Blvd	060610006	1 in 6 day	ARB
<b>Shasta County</b>			
Redding-Health Department Roof	060890004	1 in 6 day	ARB
<b>Sutter County</b>			
Yuba City-Almond Street	061010003	Everyday	ARB
<b>Yolo County</b>			
Woodland-Gibson Road	061131003	1 in 6 day	ARB

\* All PM10 monitors in the area included in this report are operated on a 1 in 6 day schedule except the continuous PM10 monitors at the South Lake Tahoe (060170011) and Fort Bragg (060450002) sites.

### Ozone operating schedules

While most O<sub>3</sub> monitors operate continuously all year, a small number of O<sub>3</sub> sites in the areas included in this volume operate only in the warmer six months of the year. Several of these sites are at higher elevation where access during the winter can be problematic. Also, for most of the State, O<sub>3</sub> is a summertime problem and concentrations during the winter are well below the levels of the ambient air quality standards. The following seasonal O<sub>3</sub> sites in the areas included in this report all operate from May through October:

Cool	(El Dorado County)
Echo Summit	(El Dorado County)
Jerseydale	(Mariposa County)
Sutter Buttes	(Sutter County)
South Lake Tahoe-Airport	(El Dorado County)
Tuscan Butte	(Tehama County)

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## **Section 8. Additional information on PM2.5 monitors**

This section includes information for two required annual network plan elements that relate specifically to PM2.5 and do not fit well elsewhere in the report. One required element relates to whether data for a PM2.5 monitor can be used to determine compliance with the national annual PM2.5 air quality standard. In the CFR, this is termed as the suitability for comparison to the annual standard. The other element requires including in the annual network plan information regarding the review process followed by air agencies when changes are made to the location of a PM2.5 monitor that is violating a PM2.5 NAAQS.

### **8.1 Suitability for comparison to the annual PM2.5 NAAQS**

The CFR requires that a PM2.5 FRM or FEM monitor be located at a neighborhood scale in order for the data from the monitor to be used in regulatory determinations of compliance with the annual PM2.5 NAAQS. For a PM2.5 monitor to be representative at a neighborhood scale, the concentration values measured by the monitor should be representative of concentrations expected over an area with dimensions of a few kilometers. So the monitor should not be located too close to a hot spot of PM2.5 concentrations that only extend over distances less than a few hundred meters, for example. All of the PM2.5 FRM monitors in California are sited to be representative of a neighborhood scale and meet this suitability requirement.

### **8.2 Review of changes to PM2.5 network**

The PM2.5 network of FRM monitors in California was largely established in 1999 and completed in 2000. Little has changed in the siting of the FRM monitoring network between then and now. However, in March of 2008, the U.S. EPA approved a continuous monitor as the first type of PM2.5 FEM. A number of agencies around the State are now in various stages of purchasing and test-deploying these FEMs. No agency in the areas covered by this report has yet submitted data from these monitors to the U.S. EPA or ARB. While there is some interagency review of proposed changes to the State and Local Air Monitoring Stations (SLAMS) network, i.e., the network that includes PM2.5 as well as O3, CO, PM10, and other pollutants, no unique review process exists specially for PM2.5 FRM or FEM monitors.

ARB requests the opportunity to review and comment on the possible regulatory consequences of any proposal to move or discontinue a monitor for any pollutant that violates a national or State air quality standard. Furthermore, when a local agency proposes to move or discontinue a monitor indicating the highest concentrations of a pollutant in an area, ARB requests that the agency conduct a period of concurrent monitoring at that site and at the replacement site being proposed to represent the area as the required high site for the pollutant. This is

expected even when the site is close to but not exceeding any standard for the pollutant. The concurrent monitoring is typically for a period of many months or a year, depending on the pollutant, the standard that is of most concern, and other factors.

The CFR requires that the U.S. EPA review and approve modifications to the SLAMS monitoring network, and requires that the responsible State or local agency inform the U.S. EPA of any proposed modifications. These requirements are in 40 CFR 58.14(b).

## **Section 9. Proposed and recently implemented monitoring site changes**

This section lists the proposed and recently implemented monitoring site changes in the areas included in this report, as well as changes to the monitoring sites that the ARB conducts in areas outside the stated geographical scope of this report. Proposed monitoring site changes include proposals by the ARB or by districts that are covered in this report to add, remove, or move sites and/or monitors in the monitoring network before the end of 2010. Recently implemented monitoring site changes include deployed sites and monitors in the monitoring network that the ARB has become aware since last year's report and for which no official 2008 data were reported. The scope of recently implemented monitoring site changes also includes terminated sites and/or monitors that the ARB has become aware since last year's report.

The Kern County APCD added PM10 monitoring at the Canebrake site. In addition, the Kern County APCD is proposing to start reporting O3 and PM10 data in mid-2009 at the Tehachapi-Curry site.

The Mendocino County AQMD discontinued the Willits-899 South Main Street site because collected O3, CO, and NO2 concentrations have been well below both State and federal ambient air quality standards in recent years. In addition, the district discontinued the PM10 monitors at the Ukiah and Willits-Firehouse sites, and added continuous PM2.5 FEMs to the sites. Moreover, the district added a PM10 Beta Attenuation Monitor (BAM) to the Fort Bragg site.

The Placer County APCD is proposing to relocate an O3 monitor and PM10 monitor to a new location in Auburn so that the monitors are at one location. Currently, the O3 and PM10 monitors are located at the DeWitt Center in Auburn, but are stationed at separate buildings.

The Shasta County AQMD added an O3 monitor in the Shasta Lake area. The district is currently working with EPA to establish an AQS site number for the monitoring site so that the district can start submitting the data into the AQS database.

The Siskiyou County APCD proposed to discontinue the PM10 monitors at the Lava Beds and Mount Shasta sites. The ARB evaluated the request and approved discontinuing the PM10 monitors. The ARB informed the district that approval from the U.S. EPA is needed as well before the district discontinues the PM10 monitors at the sites. The district is currently working with the U.S. EPA to get approval. The district restarted PM2.5 monitoring at the Yreka site in August of 2008.

The Tehama County APCD added a continuous PM2.5 FEM to their monitoring network. The district is currently working with ARB staff to establish an AQS site number for the monitoring site so that the data can be submitted into the AQS database.

The ARB plans to add CO<sub>2</sub> monitoring to the Roseville, Fresno-First Street, and Bakersfield-California Street sites sometime in 2009 as part of the CO<sub>2</sub> Pilot Network. The ARB plans to relocate the Fresno-First Street site to a new location within a half mile of the current site. As part of the NCORE requirements, the ARB plans to add trace CO, trace SO<sub>2</sub>, and NO<sub>y</sub> monitors to this new site in Fresno once the site is established in its new location. In addition to the relocation of the Fresno-First Street site, the ARB plans to relocate the Chico site to better accommodate siting criteria. Moreover, as part of a program called the Pilot Methane Network, the ARB plans to monitor methane, CO<sub>2</sub>, trace CO, and H<sub>2</sub>O vapor at the Arvin, Parlier, Madera, and Tranquility sites by October 2009. Per U.S. EPA regulations, the ARB is currently assessing whether source-oriented Pb monitoring is required in the ARB PQAO. As of March 2009, monitoring for black carbon, PAHs, endotoxins, hourly particulate sulfate, nitrate, and ammonium, and non-methane hydrocarbons was terminated at the Fresno-First Street site. The ARB has purchased twenty 3-D Sonic Anemometers to measure vertical winds, and will deploy the sensors at various sites in ARB's monitoring network. The ARB plans to purchase twelve continuous PM<sub>2.5</sub> FEMs to add to its monitoring network. Furthermore, the ARB has ongoing special purpose monitoring at Mount Wilson Observatory and plans to monitor for PM fallout in Loyalton. The ARB plans to discontinue the PM<sub>10</sub> monitors at the Placerville and Santa Maria sites. These discontinued PM<sub>10</sub> monitors will be used for collocation monitoring elsewhere in ARB's PQAO.

## Section 10. Access to more information about the network

While this report includes a great deal of information about the ambient air quality monitoring network, much more information is readily available, including summaries of the pollutant data from the monitors around the State. Much of this information is available on the web. This section lists a number of additional sources of such information. Also listed is contact information for the agencies responsible for the monitoring covered in this report.

A broad overview of information about ambient air quality data in general that is in a question and answer format can be found at the following web page: <http://www.arb.ca.gov/aqd/aqfaq/>. This web page includes dozens of links to additional technical and non-technical information.

ARB's Monitoring and Laboratory Division (MLD) maintains web pages with information about all the existing monitoring sites that routinely monitor and submit air quality data in California. The pages also include detailed local maps showing the location of the sites. This information can be found at <http://www.arb.ca.gov/aaqm/mldaqsb/amn.htm>. A more general MLD web page that provides links to other aspects of ambient monitoring is located at <http://www.arb.ca.gov/aaqm/aaqm.htm>.

In addition to this report, there is another report that contains listings of monitoring in the State, along with the years for which data is available for each monitor and regional maps showing the locations of the monitoring sites. To view this report on the web, go to <http://www.arb.ca.gov/aqd/netrpt/netrpt.htm>. ARB's Planning and Technical Support Division (PTSD) maintains this information.

To view summaries of the official air quality data from sites around the State, go to <http://www.arb.ca.gov/adam/welcome.html>. For summaries of the data monitored today, yesterday, last week, and the last few months, go to <http://www.arb.ca.gov/aqd/aqinfo.htm>. These last two sources of information are maintained by the PTSD, as is the following more general web page that lists links to other aspects of the ambient air quality data program: <http://www.arb.ca.gov/aqd/aqdpage.htm>.

### Agency contacts for ARB

Regarding this report and questions relating to the collected ambient air quality data:

Ron Rothacker, Manager, Air Quality Data Section, [rrothack@arb.ca.gov](mailto:rrothack@arb.ca.gov), (916) 324-7672

or

Pheng Lee, Air Pollution Specialist, [plee@arb.ca.gov](mailto:plee@arb.ca.gov), (916) 445-6059

Regarding the collection of the ambient data:

Ken Stroud, Chief, Air Quality Surveillance Branch, [kstroud@arb.ca.gov](mailto:kstroud@arb.ca.gov),  
(916) 324-7591

Regarding quality oversight of the monitoring program:

Merrin Wright, Manager, Quality Assurance Section, [mwright@arb.ca.gov](mailto:mwright@arb.ca.gov),  
(916) 324-6191

Agency contacts for the air districts covered in this report

Amador County Air Pollution Control District, Jackson, CA

Jim Harris, Air Pollution Control Officer

[jharris@amadorapcd.org](mailto:jharris@amadorapcd.org)

(209) 257-0112

Butte County Air Quality Management District, Chico, CA

Gail Williams, Senior Air Quality Planner

[gwilliams@bcaqmd.org](mailto:gwilliams@bcaqmd.org)

(530) 891-2882

Calaveras County Air Pollution Control District, San Andreas, CA

Lakhmir Grewal, Air Pollution Control Officer

[lgrewal@co.calaveras.ca.us](mailto:lgrewal@co.calaveras.ca.us)

(209) 754-6504

Colusa County Air Pollution Control District, Colusa, CA

Harry Krug, Air Pollution Control Officer

[hak@countyofcolusa.org](mailto:hak@countyofcolusa.org)

(530) 458-0590

El Dorado County Air Quality Management District, Placerville, CA

Marcella McTaggart, Air Pollution Control Officer

[marcella.mctaggart@edcgov.us](mailto:marcella.mctaggart@edcgov.us)

(530) 621-6662

Feather River Air Quality Management District, Marysville, CA

David Valler, Air Pollution Control Officer

[fracmd@fracmd.org](mailto:fracmd@fracmd.org)

(530) 634-7659

Glenn County Air Pollution Control District, Willows, CA

Kevin Tokunaga, Environmental Program Manager

[ktokunaga@countyofglenn.net](mailto:ktokunaga@countyofglenn.net)

(530) 934-6500

Kern County Air Pollution Control District, Bakersfield, CA  
Dave Jones, Air Pollution Control Officer  
[JonesDa@co.kern.ca.us](mailto:JonesDa@co.kern.ca.us)  
(661) 862-5250

Lake County Air Quality Management District, Lakeport, CA  
Doug Gearhart, Air Pollution Control Officer  
[bohr@pacific.net](mailto:bohr@pacific.net)  
(707) 263-7000

Mariposa County Air Pollution Control District, Mariposa, CA  
Charles Mosher, Air Pollution Control Officer  
[air@mariposacounty.org](mailto:air@mariposacounty.org)  
(209) 966-2220

Mendocino County Air Quality Management District, Ukiah, CA  
Christopher Brown, Air Pollution Control Officer  
[mcagmd@co.mendocino.ca.us](mailto:mcagmd@co.mendocino.ca.us)  
(707) 463-4354

Northern Sonoma County Air Pollution Control District, Healdsburg, CA  
Barbara Lee, Air Pollution Control Officer  
Randy Woodward, Air Pollution Specialist  
[nsc@sonic.net](mailto:nsc@sonic.net)  
(707) 433-5911

Placer County Air Pollution Control District, Auburn, CA  
Tom Christofk, Air Pollution Control Officer  
[pcapcd@placer.ca.gov](mailto:pcapcd@placer.ca.gov)  
(530) 745-2330

Shasta County Air Quality Management District, Redding, CA  
Russ Mull, Air Pollution Control Officer  
[scdrm@snowcrest.net](mailto:scdrm@snowcrest.net)  
(530) 225-5789

Siskiyou County Air Pollution Control District, Yreka, CA  
Eric Olson, Air Pollution Specialist  
[eolson@co.siskiyou.ca.us](mailto:eolson@co.siskiyou.ca.us)  
(530) 841-4029

Tehama County Air Pollution Control District, Red Bluff, CA  
Carol Golsh, Air Pollution Control Specialist  
[cgolsh@tehcoapcd.net](mailto:cgolsh@tehcoapcd.net)  
(530) 527-3717

Tuolumne County Air Pollution Control District, Columbia, CA  
Bill Sandman, Deputy Air Pollution Control Officer  
[bsandman@co.tuolumne.ca.us](mailto:bsandman@co.tuolumne.ca.us)  
(209) 533-5693

Yolo-Solano Air Quality Management District, Davis, CA  
Mat Ehrhardt, Air Pollution Control Officer  
[meharhard@ysaqmd.org](mailto:meharhard@ysaqmd.org)  
(530) 757-3673

## APPENDIX A

### Regulatory language of 40 CFR 58.10

#### **§ 58.10 Annual monitoring network plan and periodic network assessment.**

(a)(1) Beginning July 1, 2007, the State, or where applicable local, agency shall adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCore stations, STN stations, State speciation stations, SPM stations, and/or, in serious, severe and extreme O<sub>3</sub> nonattainment areas, PAMS stations, and SPM monitoring stations. The plan shall include a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to submission to EPA.

(2) Any annual monitoring network plan that proposes SLAMS network modifications including new monitoring sites is subject to the approval of the EPA Regional Administrator, who shall provide opportunity for public comment and shall approve or disapprove the plan and schedule within 120 days. If the State or local agency has already provided a public comment opportunity on its plan and has made no changes subsequent to that comment opportunity, and has submitted the received comments together with the plan, the Regional Administrator is not required to provide a separate opportunity for comment.

(3) The plan for establishing required NCore multipollutant stations shall be submitted to the Administrator not later than July 1, 2009. The plan shall provide for all required stations to be operational by January 1, 2011.

(4) A plan for establishing Pb monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to the EPA Regional Administrator no later than July 1, 2009 as part of the annual network plan required in paragraph (a)(1) of this section. The plan shall provide for the required source-oriented Pb monitoring sites to be operational by January 1, 2010, and for all required non-source-oriented Pb monitoring sites to be operational by January 1, 2011. Specific site locations for the sites to be operational by January 1, 2011 are not required as part of the July 1, 2009 annual network plan, but shall be included in the annual network plan due to be submitted to the EPA Regional Administrator on July 1, 2010.

(b) The annual monitoring network plan must contain the following information for each existing and proposed site:

- (1) The AQS site identification number.
  - (2) The location, including street address and geographical coordinates.
  - (3) The sampling and analysis method(s) for each measured parameter.
  - (4) The operating schedules for each monitor.
  - (5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
  - (6) The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part.
  - (7) The identification of any sites that are suitable and sites that are not suitable for comparison against the annual  $PM_{2.5}$ NAAQS as described in §58.30.
  - (8) The MSA, CBSA, CSA or other area represented by the monitor.
  - (9) The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR part 58.
  - (10) Any source-oriented monitors for which a waiver has been requested or granted by the EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.
  - (11) Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the EPA Regional Administrator for the use of Pb- $PM_{10}$  monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.
- (c) The annual monitoring network plan must document how States and local agencies provide for the review of changes to a  $PM_{2.5}$  monitoring network that impact the location of a violating  $PM_{2.5}$  monitor or the creation/change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making comparisons to the annual  $PM_{2.5}$ NAAQS as set forth in appendix N to part 50 of this chapter. The affected State or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.
- (d) The State, or where applicable local, agency shall perform and submit to the EPA Regional Administrator an assessment of the air quality surveillance system every 5 years to determine, at a minimum, if the network meets the monitoring

objectives defined in appendix D to this part, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any sites that are being proposed for discontinuance, the effect on data users other than the agency itself, such as nearby States and Tribes or health effects studies. For PM<sub>2.5</sub>, the assessment also must identify needed changes to population-oriented sites. The State, or where applicable local, agency must submit a copy of this 5-year assessment, along with a revised annual network plan, to the Regional Administrator. The first assessment is due July 1, 2010.

(e) All proposed additions and discontinuations of SLAMS monitors in annual monitoring network plans and periodic network assessments are subject to approval according to §58.14.

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## APPENDIX B

### Acronyms

<b>APCD</b>	Air Pollution Control District
<b>AQMD</b>	Air Quality Management District
<b>AQS</b>	Air Quality System
<b>ARB</b>	Air Resources Board
<b>CFR</b>	Code of Federal Regulations
<b>CBSA</b>	Core-Based Statistical Area
<b>FEM</b>	federal equivalent method
<b>FRM</b>	federal reference method
<b>MSA</b>	Metropolitan Statistical Area
<b>NAAQS</b>	National Ambient Air Quality Standard
<b>NO<sub>2</sub></b>	nitrogen dioxide
<b>Pb</b>	lead
<b>PM<sub>10</sub></b>	particulate matter (0 to 10 microns aerodynamic diameter)
<b>PM<sub>2.5</sub></b>	particulate matter (0 to 2.5 microns aerodynamic diameter)
<b>PQAO</b>	primary quality assurance organization
<b>SIP</b>	State Implementation Plan
<b>SLAMS</b>	State and Local Air Monitoring Stations
<b>SO<sub>2</sub></b>	sulfur dioxide
<b>U.S. EPA</b>	United States Environmental Protection Agency