



# **SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

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## **SOUTH COAST AIR QUALITY MANGEMENT DISTRICT ANNUAL AIR QUALITY MONITORING NETWORK PLAN**

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## **Introduction**

An annual review of the Air Quality Monitoring Network is required by Federal Regulations as a means to identify needs for additions, relocations, or terminations of monitoring sites or instrumentation. This report describes the network of ambient air quality monitors in the jurisdiction of and operated by the South Coast Air Quality Management District (SCAQMD). It includes a review of actions taken during the 2007-2008 fiscal year, and plans for action in the year ahead. This draft plan addresses the 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 regulations require that the report be submitted to the U.S. Environmental Protection Agency (EPA) by July 1 of each year.

The SCAQMD staff, along with the California Air Resources Board (CARB), conducted an extensive review of the air monitoring sites in the South Coast Air Basin (Basin) in late 1980. National (NAMS) or State and Local (SLAMS) designations, monitoring objectives, and spatial scales of representativeness were assigned to the criteria pollutants monitored by site. Since that time, EPA Region IX staff and CARB staff visited all sites to confirm compliance with applicable siting criteria and related requirements. The most recent site visits occurred in 2000 to evaluate the PM<sub>2.5</sub> monitoring network. Each year, SCAQMD staff conducts an annual review of its air monitoring network, and submits it to U.S. EPA. The review process focuses on current and future network air monitoring strategies, and all network changes are made in consultation with U.S. EPA and CARB. When re-locations are required, site reports are updated in U.S. EPA's Air Quality System (AQS) to document compliance with established siting criteria for the new locations.

## **Public Comments**

Pursuant to Federal regulations, this draft plan is to be made available for public inspection and comments for at least 30 days prior to submission to U.S. EPA. Hard copies of this document were made available on June 1, 2008 at the SCAQMD Public Information Desk in Diamond Bar, CA. The document was also posted to the public SCAQMD website at [www.aqmd.gov](http://www.aqmd.gov) on June 1, 2008, with links under the SCAQMD home page titled "Item of Interest!" Links to the document were also provided in the "Air Quality" area of the website. The draft document will also be made available to U.S. EPA during this period for review. This 30-day pre-submittal period is the mechanism by which the public can provide comments and the U.S. EPA will approve any changes to the PM<sub>2.5</sub> Network or any other Network changes.

## **Network Design**

The SCAQMD operates 36 permanent air monitoring sites in the South Coast Air Basin and a portion of the Salton Sea Air Basin in Coachella Valley. This area includes Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino Counties. The newest permanent site was added in 2005 at Mira Loma. Table 1 provides a list of monitoring locations with the pollutants measured at each site and the U.S. EPA AQS site codes. Table 2 provides the spatial scale and monitoring objective for each monitor at each site.

Table 3 describes the monitoring purpose for each monitor at each site. Table 4 describes the spatial scale, monitoring objective, and purpose for continuous particulate analyzers at each site. A new requirement of the annual network plans implemented in 2007, the monitoring purpose is

the reason why a certain pollutant is being measured at a certain site. A list and description of monitoring purposes is provided below, and portions are adapted from the CARB annual network plan for 2007.

*Background Level* monitoring is used to determine general background levels of air pollutants as they enter the South Coast Air Basin.

*High Concentration* monitoring is conducted 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 (i.e., due to varying meteorology year to year).

*Pollutant Transport* is the movement of pollutant between air basins or areas within an air basin. 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 rural areas.

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

*Representative Concentration* monitoring is conducted to represent the air quality 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.

*Source Impact* monitoring is used 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.

*Trend Analysis* monitoring is useful for comparing and analyzing air pollution concentrations over time. Usually, trend analyses show the progress or lack of progress in improving air quality for an area over a period of many years.

*Site Comparison* monitoring is used to assess the effect on measured pollutant levels of moving a monitoring location a short distance (usually less than two miles). Some monitoring stations become no longer usable due to development, change of lease terms, or eviction. In these cases, attempts are made to conduct concurrent monitoring at the old and new site for a period of at least one year in order to compare pollutant concentrations.

Real Time Reporting/Modeling is used to provide data to EPA's AIRNOW system which reports conditions for air pollutants on a real time basis to the general public. Data is also used to provide accurate and timely air quality forecast guidance to residents of the South Coast basin.

Multiple purposes for measuring a pollutant at a particular site are possible. There is some overlap between monitoring objectives as defined by EPA and given in Table 2, and the monitoring purposes provided in Table 3.

A brief description of the network for each criteria pollutant monitored is provided below:

### **OZONE**

The SCAQMD operates 30 sites where ozone measurements are made as part of the Air Monitoring Network. Figure 1 in Appendix A shows the spatial distribution of these sites.

### **PM10**

Size-selective inlet high volume samplers are operated at 22 sites to meet the requirements for PM10 FRM sampling; at 12 of the sampling sites, PM10 continuous analyzers are also operated. These real-time devices are capable of making hourly particulate concentration measurements. Figure 2 in Appendix A shows the spatial distribution of the sampling sites. Real-time monitors, for the most part, are clustered in the high concentration areas, with two located in the desert area where wind-blown crustal material has caused exceedences of the 24-hour Standard. In downwind areas of the South Coast Air Basin, a large fraction of particulate is formed in the atmosphere. PM10 reaches maximum levels during late summer through early winter months. All PM10 FRM monitors operate on a one day in six schedule with the exception of Indio and Rubidoux which operate on one day in three schedule.

### **NITROGEN DIOXIDE**

The nitrogen dioxide (NO<sub>2</sub>) network consists of 25 sites. These sites are mostly located within areas of highest NO<sub>2</sub> concentration. The spatial distribution of NO<sub>2</sub> monitors is shown in Figure 3 in Appendix A. Review of 1992 through 2007 data indicates that the Federal annual average standard was not exceeded.

### **CARBON MONOXIDE**

Ambient carbon monoxide (CO) monitors measure concentrations at 27 locations. Figure 4, Appendix A, shows the spatial distribution of these sites. Carbon monoxide emissions, primarily from motor vehicles, show a pattern congruent with major freeway arteries.

### **SULFUR DIOXIDE**

Sulfur dioxide (SO<sub>2</sub>) monitors are located at 7 sites. Figure 5 in appendix A shows the spatial distribution of the sites. Most SO<sub>2</sub> emissions come from federal transportation sources such as marine vessels. The monitors are clustered mostly in the areas where these sources are located. The federal standard has not been exceeded for nearly 30 years.

### **PARTICULATE LEAD**

Particulate lead measurements are collected at 12 sites as part of the network. The spatial distribution of these sites is shown in Figure 6 in Appendix A. With the phasing out of

lead in gasoline, ambient lead levels decreased to the point that a reduction in the network was made—reducing the number of sites from 27 to ten.

In 1990, U.S. EPA requested the SCAQMD to collect ambient air particulate lead samples near several large lead handling (battery recycling) facilities. Long-term source impacted monitoring began in 1991. A facility in the City of Industry exceeded the federal ambient particulate lead standard during the second quarter of Fiscal Year 1991-92. Lead monitoring at a facility in the City of Torrance ended in 1993 when measurements were consistently below the ambient standard. Sampling ended at a facility in the City of Commerce in 2006 when the business was closed. Out of the two facilities currently being monitored, the facility in the City of Vernon exceeded the federal ambient particulate lead standard during the first quarter of 2008; the other facility was found to be in compliance after ongoing sampling. These source-related lead sites are also depicted in Figure 6.

### **PAMS Network Plan**

The PAMS (Photochemical Assessment Monitoring Stations) network was initiated in June 1994 at Pico Rivera and Upland, and in 1995 at Banning and Azusa, to determine speciated hydrocarbon compounds in ambient air. PAMS monitoring at Hawthorne commenced in June 1997, and the Burbank station became a PAMS site in July 1997. In May 2001, the Santa Clarita location was established as a PAMS site. In August 2005, the Pico Rivera station was moved to a new location one half mile south of the previous site due to the end of the property lease. Figure 7 in Appendix A shows the distribution of the PAMS network. In April 2004, the Hawthorne site was replaced by LAX Hastings, also due to the end of a property lease.

An automated gas chromatography flame ionization detector (GC\FID) VOC system is in operation at the Pico Rivera air monitoring station with a VOC canister and carbonyl sampling. During the intensive sampling season from July 1, until September 30, GC\FID is run continuously; twenty four hour VOC canisters are run every 6<sup>th</sup> day, and carbonyl samples are run continuously every three hours with one additional twenty-four hour sample run every 6<sup>th</sup> day. During the non intensive season from October 1, through June 30, twenty four hour VOC canister samples are run every 6<sup>th</sup> day and twenty-four hour carbonyl samples are run every 6<sup>th</sup> day. Pico Rivera is a collocated site for VOC canister and carbonyl sampling.

A similar automated gas chromatography flame ionization detector GC\FID VOC system was installed at the Burbank air monitoring station in July 1997. During the intensive sampling season from July 1, until September 30, GC\FID is run continuously; twenty-four hour VOC canisters are run every 6<sup>th</sup> day, and carbonyl samples are run continuously every three hours with one additional twenty four hour sample run every 6<sup>th</sup> day. During the non intensive season from October 1, through June 30, twenty four hour VOC canister samples are run every 6<sup>th</sup> day and twenty four hour carbonyl samples are run every 6<sup>th</sup> day.

Manual VOC canister and carbonyl systems are in operation at Banning and Santa Clarita air monitoring stations. During the intensive season from July 1, until September 30, VOC canisters are run every three hours for a period of twenty four hours every 3<sup>rd</sup> day and a twenty four hour sample is run every 6<sup>th</sup> day. Carbonyl samples are run every three hours for a period of twenty-four hours every third day and a twenty four hour sample is run every 6<sup>th</sup> day. During the non intensive season from October 1, through June 30, twenty four hour VOC canister samples are run every 6<sup>th</sup> day and twenty four hour carbonyl samples are run every 6<sup>th</sup> day.

Manual VOC canister systems are in operation at Azusa, LAX Hastings, and Azusa air monitoring stations. During the intensive season from July 1 until September 30, VOC canisters are run every three hours for a period of twenty four hours every 3<sup>rd</sup> day and a twenty four hour sample is run every 6<sup>th</sup> day. During the non intensive season from October 1 though June 30, twenty four hour VOC canister samples are run every 6<sup>th</sup> day

The first SCAQMD upper air monitoring station was established at Los Angeles International Airport (LAX) in 1994. Subsequent upper air stations include Ontario International Airport (ONT), installed in 1996, Moreno Valley (MOV) installed in 2001 at the Moreno Valley Municipal Water Treatment Plant in Riverside County, Irvine installed at the University of California Research and Extension Center in 2006, and Pacoima at Whiteman Airport during May 2007. The upper air stations use a combination of remote sensing and surface meteorological instrumentation, including the Vaisala (formerly Radian/URS) LAP-3000 radar wind profiler with a Radio Acoustic Sounding System (RASS), the Atmospheric Systems Corporation (formerly AeroVironment Inc.) mini Sodar acoustic wind profiler, and tower-mounted meteorological measurements of wind, pressure, temperature, relative humidity, solar radiation and ultraviolet radiation.

### **PM2.5**

A network of 17 Federal Reference Method (FRM) samplers was first implemented in January 1999. On December 26, 1999, a second Coachella Valley PM2.5 sampling site was established in Palm Springs. On June 20, 2003, PM2.5 sampling began at the South Long Beach site. The final addition to the PM2.5 FRM network occurred in October 2005, at the new Mira Loma site. This brings the total number of PM2.5 FRM sampling sites to 20. The sites are depicted in Figure 8, Appendix A and the actual starting date of each sampler is listed in Table 5. Collocated sampler sites are at Rubidoux, Central Los Angeles, and Indio. All sites in the Network using FRM samplers are suitable for comparison against the annual PM2.5 National Ambient Air Quality Standard (NAAQS).

Continuous PM2.5 Met One Beta Attenuation Monitors (BAMs) were first deployed in Fiscal Year 2001–02. Ten monitors are now operating in the Basin, two at Rubidoux (collocated), and one each at Anaheim, Los Angeles, South Long Beach, Burbank, Mira Loma (Van Buren), and Banning. In January 2006, two additional samplers were added at Lake Elsinore and Glendora as part of the Children’s Health Study. In the coming year SCAQMD will purchase and deploy seven FEM BAM samplers to enhance wildfire

response capabilities and the Children’s Health study both described in the section titled, “Proposed Modifications to Network.”

PM2.5 speciation sampling is also a part of the SCAQMD PM2.5 program. Two Speciation Trends Network (STN) and one SCAQMD Met One SASS PM2.5 samplers were deployed in March 2001 at Rubidoux. One more STN and two SCAQMD SASS samplers were deployed at Central Los Angeles in 2002. In 2003, SASS PM2.5 speciation samplers were installed at Fontana and Anaheim air monitoring sites. In 2004, a sampler was installed at Long Beach as part of the MATES III project and continues to run as part of the Port Area Monitoring Program (see below). Analysis of the filters from the ambient network SASS samplers is being conducted at SCAQMD’s laboratory. The STN filters are shipped to RTI for analysis. This approach has the concurrence of CARB and U.S. EPA, Region IX.

### **Special Programs**

Special monitoring programs are conducted for rule compliance purposes or to characterize the levels of toxic air contaminants and other criteria pollutants in sub-regional areas of the Basin. The following is a list of special monitoring programs that were active during the past year. Note that this is being provided for informational purposes only. At this time, none of the Special Monitoring Programs are designated as a “Special Purpose Monitor” under 40 CFR 58.20.

#### **Multiple Air Toxics Exposure Study (MATES-III)**

MATES is the most comprehensive urban air quality study to date. In April 2004, the SCAQMD initiated the third round of MATES (MATES-III) to assess the ambient levels of airborne compounds linked to adverse health effects in humans. The previous study, MATES-II, was a year-long intensive sampling program. During the study, air toxics were monitored at ten fixed sites and additional short-term “micro-scale” monitoring was conducted at 14 sites using five mobile sampling platforms. Fixed sites were established to assess regional air toxics, while micro-scale sites assess source impacts on a more local level, such as an area of heavy industrial activity in close proximity to a residential area. MATES-III incorporated elements of the two prior studies to establish trend assessments with similar sampling methodologies. Enhancements to the sampling network with the latest air monitoring technologies and more frequent sampling schedules were also incorporated. Instrumentation at each site measured PM10, speciated PM2.5, VOCs, and air toxics such as heavy metals, hexavalent chromium, and carbonyls.

The 2004-05 winter season in Southern California produced record levels of rainfall in most areas of the South Coast Air Basin. As expected, this led to lower than expected levels of airborne constituents including PM concentrations. As a result, MATES-III was extended an additional year to collect more representative air toxics data. Sampling at the fixed sites was completed in April 2006. Micro-scale sampling has been completed at the Indio, San Bernardino, Commerce, La Puente, Santa Ana, and Sun Valley sites. The final micro-scale site is located adjacent to Long Beach Airport and was completed in October 2006. A draft report for the Mates III study has been made available for public review and the final draft is expected to be published in summer 2008.

### **Fugitive Dust Study**

In support of SCAQMD Rule 403 - Fugitive Dust, SSI PM10 samplers are deployed on an episodic basis upwind and downwind of potential sources as required under Rule 403. Since 2003, periodic sampling has been conducted around gravel quarries and other industries which seem to be producing large volumes of dust. This sampling will continue through 2008 and 2009.

### **Hexavalent Chrome**

The SCAQMD has an ongoing program of collecting ambient hexavalent chromium in the vicinity of several chrome plating and cement production facilities located throughout the basin. Monitoring continues at Newport Beach, Riverside, and other locations throughout the SCAQMD jurisdiction.

### **Port Area Monitoring Program**

The SCAQMD has initiated an intensive air monitoring program in the communities adjacent to the Ports of Los Angeles and Long Beach. Monitoring consists of all gaseous criteria pollutants, air toxics compounds as measured in MATES III, as well as continuous PM2.5 and PM2.5 speciation. Sampling began at four sites in February 2007. Two more sites began operation in June 2007 and an additional site was added during November, 2007. Monitoring activities are being coordinated with the two Ports' air monitoring programs as well as several CARB Research studies in the area.

### **National Ambient Toxics Trends Sites (NATTS)**

The National Air Toxics Trends Sites (NATTS) program was developed to fulfill the need for long-term hazardous air pollutant (HAPs) monitoring data of consistent quality. SCAQMD has conducted several air toxics measurement campaigns in the past which demonstrate that due to the variety and spatial distribution of air toxics sources across the large area of the South Coast Air Basin a single air toxics measurement site could not reflect the levels and trends of air toxics throughout the basin. For this reason, two NATTS sites are used to characterize the South Coast Air Basin's AM toxics levels. The first site is a central urban core site in central Los Angeles that reflects concentrations and trends due primarily to mobile source emissions. A second rural, inland site at Rubidoux captures the transport of pollutants from a variety of upwind mobile and industrial sources in the most populated areas of the air basin. Monitoring began in February 2007 at Central Los Angeles and Rubidoux air monitoring sites.

## **Recent or Proposed Modifications to Network**

### **Temecula AMS**

During October 2007, Southern California experienced the most severe wildfires in recent history. To measure particulate matter for comparison to NAAQS, South Coast AQMD uses twenty-four hour filter-based PM measurements. However, providing public information based on real-time hourly data is more appropriate for fire events. Currently SCAQMD does not have a location to represent the Temecula Valley. During

2008 SCAQMD proposes establishing a location in the Temecula Valley to monitor PM<sub>2.5</sub> on a continuous basis.

### **Crestline**

SCAQMD has been operating the Crestline station since 1973. The deteriorating state of the shelter along with compromises made to the siting criteria due to obstructions has made it necessary to relocate the station. As part of regular air monitoring station improvements a new station shelter as been ordered and will be installed at a new location within one mile of the current Crestline site. Collocated monitoring will take place for data comparison prior to permanent move to the new site.

### **Lynwood**

SCAQMD has been operating the Lynwood station since 1973. The deteriorating state of the leased building has made it necessary to propose the relocation of the station to nearby Compton, a former MATES III site, located two miles from current site. Collocated CO monitoring began at the new site in May 2005. A comparison between the two sites found data trends to be comparable. A permanent move to the new site for pollutant measurements will take place in 2008.

### **Mira Loma**

SCAQMD has been operating the Mira Loma (Jurupa) station as part of the Children's Health Study. The deteriorating state of the leased trailer along with the compromises made to the siting criteria because of school expansion makes it necessary to relocate the station. Collocated monitoring began at the Mira Loma (Van Buren) station in November, 2005. A comparison between the two sites found data trends to be comparable. A permanent move to the new site is planned during 2008.

### **PM<sub>2.5</sub> Monitoring Network**

As part of the actions to enhance continuous data collection capability for PM<sub>2.5</sub> SCAQMD will add seven continuous Beta Attenuation monitors (BAM). The seven new BAMs are Met One BAM 1020 Federal Equivalency Method (FEM) approved monitors. The proposed sites for FEM monitors include Anaheim, Burbank, Long Beach, Los Angeles, Mira Loma (Van Buren), Rubidoux, and South Long Beach. Non – FEM monitors will be located at the Banning, Crestline, Glendora, Lake Elsinore, Mission Viejo, Riverside Magnolia, Santa Clarita, Temecula, and Upland sites. Rubidoux will have a non – FEM BAM 1020 collocated with a FEM BAM 1020. Installation of the BAM samplers will take place during 2008. FEM BAMS will be designated Special Purpose Monitoring (SPM) for two years in order to compare to FRM.

SCAQMD also proposes making changes to the current FRM monitoring schedule. Proposed changes include moving the Burbank and Mira Loma (Van Buren) RAAS samplers to 1:1 from the current 1:3 schedule. It is also proposed the Azusa air monitoring station FRM move from its current 1:1 schedule to 1:3.

During 2009 SCAQMD proposes additional speciated PM<sub>2.5</sub> sampling in preparation for the next air quality management plan. Met One speciation samplers (SASS) will

potentially be operated for a period of one year at the Long Beach and Burbank air monitoring stations.

**NCore**

NCore monitoring rules require that SCAQMD make stations operational by January 1<sup>st</sup>, 2011. To meet this goal, SCAQMD has purchased trace level analyzers for CO, NOy and SO2. NCore will be located at Rubidoux, which is an existing rural STN and NATTS site. Los Angeles is also under consideration and is an existing urban STN and NATTS site.

**Air Monitoring Station Improvements**

As part of the actions to enhance quality of data collected; SCAQMD will replace existing deteriorated shelters at the Glendora, Indio, La Habra, Pasadena, Redlands, Rubidoux, San Bernardino, and West Los Angeles sites. The new shelters will remain at the same locations.

**Minimum Monitoring Requirements**

The SCAQMD jurisdictional boundaries encompass two Metropolitan Statistical Areas (MSA) as defined by the U.S. Office of Management and Budget and the U.S. Census Bureau. The Los Angeles-Long Beach-Santa Ana MSA (Code 31100) had a population of 12,365,627 based on the year 2000 U.S. Census. The Riverside-San Bernardino-Ontario MSA (Code 40140) had a population of 3,254,821 in 2000. The minimum number of monitors for each pollutant is based on MSA population as described in 40 CFR 58 Appendix D. The SCAQMD network exceeds the minimum monitoring requirements for all criteria pollutants. Details are provided below.

Ozone

| MSA   | Min. #<br>Monitors<br>Required | #<br>Monitors<br>Active |
|-------|--------------------------------|-------------------------|
| 31100 | 4                              | 17                      |
| 40140 | 2                              | 13                      |

PM2.5

| MSA   | Min. #<br>Monitors<br>Required | #<br>Monitors<br>Active |
|-------|--------------------------------|-------------------------|
| 31100 | 3                              | 12                      |
| 40140 | 3                              | 11                      |

PM10

| MSA   | Min. #<br>Monitors<br>Required | #<br>Monitors<br>Active |
|-------|--------------------------------|-------------------------|
| 31100 | 4-8                            | 9                       |
| 40140 | 6-10                           | 16                      |

NO2

| MSA   | Min. #<br>Monitors<br>Required | #<br>Monitors<br>Active |
|-------|--------------------------------|-------------------------|
| 31100 | 0                              | 16                      |
| 40140 | 0                              | 9                       |

Monitors required for PAMS: 7

SO2

| MSA   | Min. #<br>Monitors<br>Required | #<br>Monitors<br>Active |
|-------|--------------------------------|-------------------------|
| 31100 | 0                              | 5                       |
| 40140 | 0                              | 2                       |

CO

| MSA   | Min. #<br>Monitors<br>Required | #<br>Monitors<br>Active |
|-------|--------------------------------|-------------------------|
| 31100 | 0                              | 18                      |
| 40140 | 0                              | 9                       |

Pb

| MSA   | Min. #<br>Monitors<br>Required | #<br>Monitors<br>Active |
|-------|--------------------------------|-------------------------|
| 31100 | 0                              | 7                       |
| 40140 | 0                              | 5                       |

**Table 1. List of Monitoring Sites**

| Location              | AQS No.   | Pollutants Monitored            |
|-----------------------|-----------|---------------------------------|
| Anaheim               | 060590007 | CO,NO2,O3,PM10,PM2.5            |
| Azusa                 | 060370002 | CO,NO2,O3,PM10,PM2.5,SO4        |
| Banning Airport       | 060650012 | NO2,O3,PM10, PM2.5              |
| Big Bear              | 060718001 | PM2.5                           |
| Burbank               | 060371002 | CO,NO2,SO2,O3,PM10,PM2.5        |
| Compton               |           | CO,NO2,O3,Pb,PM2.5              |
| Costa Mesa            | 060591003 | CO,NO2,SO2,O3                   |
| Crestline             | 060710005 | O3,PM10                         |
| Fontana               | 060712002 | CO,NO2,SO2,O3,PM10,PM2.5,SO4    |
| Glendora              | 060370016 | CO,NO2,O3,PM2.5,PM10            |
| Indio                 | 060652002 | O3,PM10,PM2.5                   |
| La Habra              | 060595001 | CO,NO2,O3                       |
| Lake Elsinore         | 060659001 | CO,NO2,O3,PM2.5,PM10            |
| LAX Hastings          | 060375005 | CO,NO2,O3,PM10,Pb,SO4           |
| Long Beach            | 060374002 | CO,NO2,SO2,O3,PM10,PM2.5,Pb,SO4 |
| Los Angeles           | 060371103 | CO,NO2,SO2,O3,PM10,Pb,PM2.5,SO4 |
| Lynwood               | 060371301 | CO,NO2,O3,Pb,PM2.5              |
| Mira Loma (Jurupa)    |           | CO,NO2,O3,PM10                  |
| Mira Loma (Van Buren) | 060658005 | CO,NO2,O3,PM10,PM2.5            |
| Mission Viejo         | 060592022 | CO,O3,PM10,PM2.5                |
| Norco                 | 060650003 | PM10                            |
| Ontario Fire Station  | 060710025 | PM10,PM2.5                      |
| Palm Springs          | 060655001 | CO,NO2,O3,PM10,PM2.5            |
| Pasadena              | 060372005 | CO,NO2,O3,PM2.5,SO4             |
| Perris                | 060656001 | O3,PM10                         |
| Pico Rivera           | 060371602 | CO,NO2,O3,Pb,PM2.5,SO4,PM10     |
| Pomona                | 060371701 | CO,NO2,O3                       |
| Redlands              | 060714003 | O3,PM10                         |
| Reseda                | 060371201 | CO,NO2,O3,PM2.5                 |
| Riverside             | 060651003 | CO,Pb,PM2.5,SO4                 |
| Rubidoux              | 060658001 | CO,NO2,SO2,O3,PM10,Pb,PM2.5,SO4 |
| San Bernardino        | 060719004 | CO,NO2,O3,PM10,Pb,PM2.5         |
| Santa Clarita         | 060376012 | CO,NO2,O3,PM10,PM2.5            |
| South Long Beach      | 060374004 | PM10,Pb,PM2.5,SO4               |
| Temecula              | TBD*      | PM2.5                           |
| Upland                | 060711004 | CO,NO2,O3,Pb,PM2.5,PM10,SO4     |
| West Los Angeles      | 060370113 | CO,NO2,O3,SO4                   |

\*Site to begin operation in Fiscal Year 2008-2009

**TABLE 2. Criteria Pollutant Monitoring Objective and Spatial Scales**

|  |  |
|--|--|
| <p><b>MONITORING OBJECTIVE</b><br/>                 HC – High Concentrations<br/>                 RC – Representative Concentrations<br/>                 IM – Impact<br/>                 BL – Background</p> | <p><b>SPATIAL SCALE</b><br/>                 MI – Microscale<br/>                 MS – Middle Scale<br/>                 NS – Neighborhood Scale<br/>                 US – Urban Scale</p> |
|--|--|

| Location              | CO    | NO2   | SO2   | O3    | PM10  | PM2.5 | Pb    |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|
| Anaheim               | NS/RC | US/RC |       | NS/RC | NS/RC | NS/RC |       |
| Azusa                 | NS/RC | US/RC |       | US/HC | NS/RC | NS/RC |       |
| Banning Airport       |       | NS/RC |       | NS/RC | NS/RC |       |       |
| Big Bear              |       |       |       |       |       | NS/RC |       |
| Burbank               | NS/HC | NS/RC | NS/RC | US/HC | NS/RC | NS/RC |       |
| Compton               | MS/HC |       |       |       |       |       |       |
| Costa Mesa            | NS/RC | NS/RC | NS/RC | NS/RC |       |       |       |
| Crestline             |       |       |       | NS/HC | NS/RC |       |       |
| Fontana               | NS/RC | US/RC | NS/RC | US/RC | NS/HC | NS/RC |       |
| Glendora              | NS/RC | NS/RC |       | NS/HC |       |       |       |
| Indio                 |       |       |       | NS/RC | NS/HC | NS/RC |       |
| La Habra              | NS/RC | US/RC |       | NS/RC |       |       |       |
| Lake Elsinore         | NS/RC | NS/RC |       | NS/RC |       |       |       |
| LAX Hastings          | MS/RC | MS/RC | NS/RC | MS/RC | NS/RC |       | NS/RC |
| Long Beach            | MI/HC | MS/RC | NS/HC | MS/RC | MI/RC | NS/HC | MI/RC |
| Los Angeles           | NS/RC | NS/HC | NS/RC | NS/RC | NS/RC | NS/HC | NS/RC |
| Lynwood               | MS/HC | MS/RC |       | NS/RC |       | NS/RC | NS/RC |
| Mira Loma (Jurupa)    | NS/RC | NS/RC |       | NS/RC | NS/HC |       |       |
| Mira Loma (Van Buren) | NS/RC | NS/RC |       | NS/RC | NS/HC | NS/RC |       |
| Mission Viejo         | NS/RC |       |       | NS/RC | NS/RC | NS/RC |       |
| Norco                 |       |       |       |       | NS/RC |       |       |
| Ontario Fire Station  |       |       |       |       | NS/HC | NS/RC |       |
| Palm Springs          | NS/RC | NS/RC |       | NS/RC | NS/RC | NS/RC |       |
| Pasadena              | MS/RC | MS/HC |       | NS/RC |       | NS/RC |       |
| Perris                |       |       |       | NS/RC | NS/RC |       |       |
| Pico Rivera           | NS/RC | NS/HC |       | NS/HC |       | NS/RC | NS/RC |
| Pomona                | MI/RC | MS/RC |       | MS/HC |       |       |       |
| Redlands              |       |       |       | NS/RC | NS/RC |       |       |
| Reseda                | NS/RC | US/RC |       | US/HC |       | NS/RC |       |
| Riverside             | MI/HC |       |       |       |       | NS/RC | MI/HC |
| Rubidoux              | MS/RC | US/RC | NS/RC | US/HC | NS/HC | NS/HC | NS/RC |
| San Bernardino        | MS/RC | US/RC |       | NS/HC | NS/HC | NS/RC | NS/RC |
| Santa Clarita         | NS/RC | NS/RC |       | US/HC | NS/RC | NS/RC |       |
| South Long Beach      |       |       |       |       | NS/HC | NS/RC | NS/HC |
| Upland                | NS/RC | NS/RC |       | NS/RC |       |       | NS/RC |
| West Los Angeles      | NS/RC | MS/HC |       | MS/RC |       |       |       |

**TABLE 3. Criteria Pollutant Monitoring Purposes**

MONITORING PURPOSE

|                          |                                   |
|--------------------------|-----------------------------------|
| BK – Background Level    | RC – Representative Concentration |
| HC – High Concentration  | SO – Source Impact                |
| TP – Pollutant Transport | TR – Trend Analysis               |
| EX – Population Exposure | CP – Site Comparisons             |

| Location              | CO    | NO2   | SO2   | O3    | PM10  | PM2.5    | Pb |
|-----------------------|-------|-------|-------|-------|-------|----------|----|
| Anaheim               | TR    | TR/RC |       | TR    | TR    | TR/EX    |    |
| Azusa                 | TR    | TR/RC |       | TR    | TR    | TR/EX    |    |
| Banning Airport       |       | TP/RC |       | TP    | TP    |          |    |
| Big Bear              |       |       |       |       |       | EX/SO/TP |    |
| Burbank               | TR    | TR/RC | TR    | TR    | TR    | TR/EX    |    |
| Compton               | CP    |       |       |       |       |          |    |
| Costa Mesa            | RC    | TR/RC | TR    | RC    |       |          |    |
| Crestline             |       |       |       | HC    | TP/RC |          |    |
| Fontana               | RC    | TP/RC | TR    | RC    | HC    | EX/TP    |    |
| Glendora              | RC    | TR/RC |       | HC    |       |          |    |
| Indio                 |       |       |       | TP    | HC    | TP/EX    |    |
| La Habra              | RC    | TR/RC |       | RC    |       |          |    |
| Lake Elsinore         | TP/RC | TP/RC |       | TP/RC |       |          |    |
| LAX Hastings          | BK    | BK    | BK    | BK    | BK    |          | BK |
| Long Beach            | HC    | TR/RC | TR/HC | TR    | TR/RC | EX/HC    | EX |
| Los Angeles           | SO/RC | SO/HC | TR    | TR/RC | TR/RC | EX/HC    | EX |
| Lynwood               | TR/HC | TR/RC |       | TR/RC |       | EX/RC    | EX |
| Mira Loma             | TP/RC | TP/RC |       | TR/RC | HC    |          |    |
| Mira Loma (Van Buren) | CP    | CP    |       | CP    | CP    | CP       |    |
| Mission Viejo         | RC    |       |       | TR/RC | TR/RC | EX/RC    |    |
| Norco                 |       |       |       |       | TR/RC |          |    |
| Ontario Fire Station  |       |       |       |       | HC    | EX/RC    |    |
| Palm Springs          | TP/RC | TP/RC |       | TP    | TP/RC | EX/TP    |    |
| Pasadena              | TR/RC | TR/HC |       | TR/RC |       | EX/RC    |    |
| Perris                |       |       |       | TP    | TR    |          |    |
| Pico Rivera           | RC    | HC    |       | HC    |       | EX/RC    | EX |
| Pomona                | RC    | RC    |       | HC    |       |          |    |
| Redlands              |       |       |       | TP/RC | TP/RC |          |    |
| Reseda                | RC    | TR/RC |       | HC    |       | EX/RC    |    |
| Riverside             | HC    |       |       |       |       | EX/RC    | EX |
| Rubidoux              | TR/RC | TR/RC | TR    | TR/HC | TR/HC | EX/TR/HC | EX |
| San Bernardino        | TR/RC | TP/RC |       | TR/HC | TR/HC | EX/TR    | EX |
| Santa Clarita         | RC    | TP/RC |       | TP/HC | RC    | EX/RC    |    |
| South Long Beach      |       |       |       |       | HC    | EX/SO    | EX |
| Upland                | RC    | TR/RC |       | TR/RC |       |          | EX |
| West Los Angeles      | RC    | TR/HC |       | RC    |       |          |    |

**TABLE 4. Continuous PM<sub>10</sub>/PM<sub>2.5</sub> Monitoring Purpose, Objective and Spatial Scales**

|                                    |                         |
|------------------------------------|-------------------------|
| MONITORING OBJECTIVE               | SPATIAL SCALE           |
| HC – High Concentrations           | MI - Microscale         |
| RC – Representative Concentrations | NS – Neighborhood Scale |

|                          |  |
|--------------------------|--|
| MONITORING PURPOSE       | TYPE                                   |
| SO – Source Impact       | RM – Real-Time Reporting/Modeling TEOM |
| TP – Pollutant Transport | TR – Trend Analysis BAM (NON-FEM)      |
|                          | BAM (FEM)                              |

| Location              | Continuous PM10 |         |           |       | Continuous PM2.5             |         |           |       |
|-----------------------|-----------------|---------|-----------|-------|------------------------------|---------|-----------|-------|
|                       | Type            | Purpose | Objective | Scale | Type                         | Purpose | Objective | Scale |
| Anaheim               | TEOM            | RM      | RC        | NS    | BAM/NON-FEM/FEM <sup>1</sup> | RM      | RC        | NS    |
| Banning Airport       |                 |         |           |       | BAM/NON-FEM                  | RM      | RC        | NS    |
| Burbank               | TEOM            | RM      | RC        | NS    | BAM/NON-FEM/FEM <sup>1</sup> | RM      | RC        | NS    |
| Crestline             |                 |         |           |       | BAM/NON-FEM <sup>2</sup>     |         |           |       |
| Glendora              | TEOM            |         | RC        | NS    | BAM/NON-FEM                  | RM      | RC        | NS    |
| Indio                 | BAM             | RM      | HC        | NS    |                              |         |           |       |
| Lake Elsinore         | TEOM            |         | RC        | NS    | BAM/NON-FEM                  | RM      | RC        | NS    |
| Long Beach            | TEOM            |         | RC        | MI    | BAM/NON-FEM/FEM <sup>1</sup> |         |           |       |
| Los Angeles           | BAM             | RM      | RC        | NS    | BAM/NON-FEM/FEM <sup>1</sup> | RM      | HC        | NS    |
| Mira Loma (Jurupa)    | TEOM            | RM      | HC        | NS    |                              |         | RC        | NS    |
| Mira Loma (Van Buren) |                 |         |           |       | BAM/NON-FEM/FEM <sup>1</sup> | RM      | RC        | NS    |
| Mission Viejo         |                 |         |           |       | BAM/NON-FEM <sup>2</sup>     |         |           |       |
| Palm Springs          | BAM             | RM      | HC        | NS    |                              |         |           |       |
| Riverside             |                 |         |           |       | BAM/NON-FEM <sup>2</sup>     |         |           |       |
| Rubidoux              | TEOM            | RM      | HC        | NS    | BAM/NON-FEM/FEM <sup>1</sup> | TR/RM   | HC        | NS    |
| San Bernardino        | TEOM            | RM      | RC        | NS    |                              |         |           |       |
| Santa Clarita         |                 |         |           |       | BAM/NON-FEM <sup>2</sup>     |         |           |       |
| South Long Beach      |                 |         |           |       | BAM/NON-FEM/FEM <sup>1</sup> | SO/RM   | RC        | NS    |
| Temecula              |                 |         |           |       | BAM/NON-FEM <sup>2,3</sup>   |         |           |       |
| Upland                | TEOM            | RM      | RC        | NS    | BAM/NON-FEM <sup>2</sup>     |         |           |       |

<sup>1</sup> FEM BAM Samplers to replace NON-FEM Samplers during 2008 and be designated as special purpose monitors

<sup>2</sup> NON-FEM BAM Samplers to be deployed during Fiscal Year 2008/2009

<sup>3</sup> Site planned during Fiscal Year 2008/2009

**TABLE 5. PM<sub>2.5</sub> Monitoring Stations Assigned Site Numbers**

| Location              | Site Code | ARB No. | AQS No.   | Start Date | Schedule            |
|-----------------------|-----------|---------|-----------|------------|---------------------|
| Anaheim               | ANAH      | 30178   | 060590007 | 1/3/99     | Daily               |
| Azusa                 | AZUS      | 70060   | 060370002 | 1/4/99     | Daily <sup>1</sup>  |
| Big Bear              | BGBR      | 36001   | 060718001 | 2/8/99     | 1-in-6              |
| Burbank               | BURK      | 70069   | 060371002 | 1/21/99    | 1-in-3 <sup>2</sup> |
| Fontana               | FONT      | 36197   | 060712002 | 1/3/99     | 1-in-3              |
| Indio "A"             | INDI      | 33157   | 060652002 | 1/30/99    | 1-in-3              |
| Indio "B"             | INDI      | 33157   | 060652002 | 5/12/00    | 1-in-6              |
| Long Beach            | LGBH      | 70072   | 060374002 | 1/3/99     | Daily               |
| Los Angeles "A"       | CELA      | 70087   | 060371103 | 1/3/99     | Daily               |
| Los Angeles "B"       | CELA      | 70087   | 060371103 | 1/6/99     | 1-in-6              |
| Lynwood               | LYNN      | 70084   | 060371301 | 1/3/99     | 1-in-3              |
| Mira Loma (Van Buren) | MRLM      | 33165   | 060658005 | 11/09/05   | 1-in-3 <sup>2</sup> |
| Mission Viejo         | MSVJ      | 30002   | 060592022 | 6/15/99    | 1-in-3              |
| Ontario Fire Station  | ONFS      | 36025   | 060710025 | 1/3/99     | 1-in-3              |
| Palm Springs          | PLSP      | 33137   | 060655001 | 12/26/99   | 1-in-3              |
| Pasadena              | PASA      | 70088   | 060372005 | 3/4/99     | 1-in-3              |
| Pico Rivera           | PICO      | 70185   | 060371602 | 9/05       | 1-in-3              |
| Reseda                | RESE      | 70074   | 060371201 | 1/24/99    | 1-in-3              |
| Riverside             | RIVM      | 33146   | 060651003 | 1/6/99     | 1-in-3              |
| Rubidoux "A"          | RIVR      | 33144   | 060658001 | 1/3/99     | Daily               |
| Rubidoux "B"          | RIVR      | 33144   | 060658001 | 1/3/99     | 1-in-6              |
| San Bernardino        | SNBO      | 36203   | 060719004 | 1/3/99     | 1-in-3              |
| South Long Beach      | SLGB      | 70110   | 060374004 | 6/20/03    | Daily               |

<sup>1</sup> Proposed change to 1-in-3 during Fiscal Year 2008/2009

<sup>2</sup> Proposed change to Daily during Fiscal Year 2008/2009 for comparison to FEM BAM