



2007 Air Monitoring Network Plan

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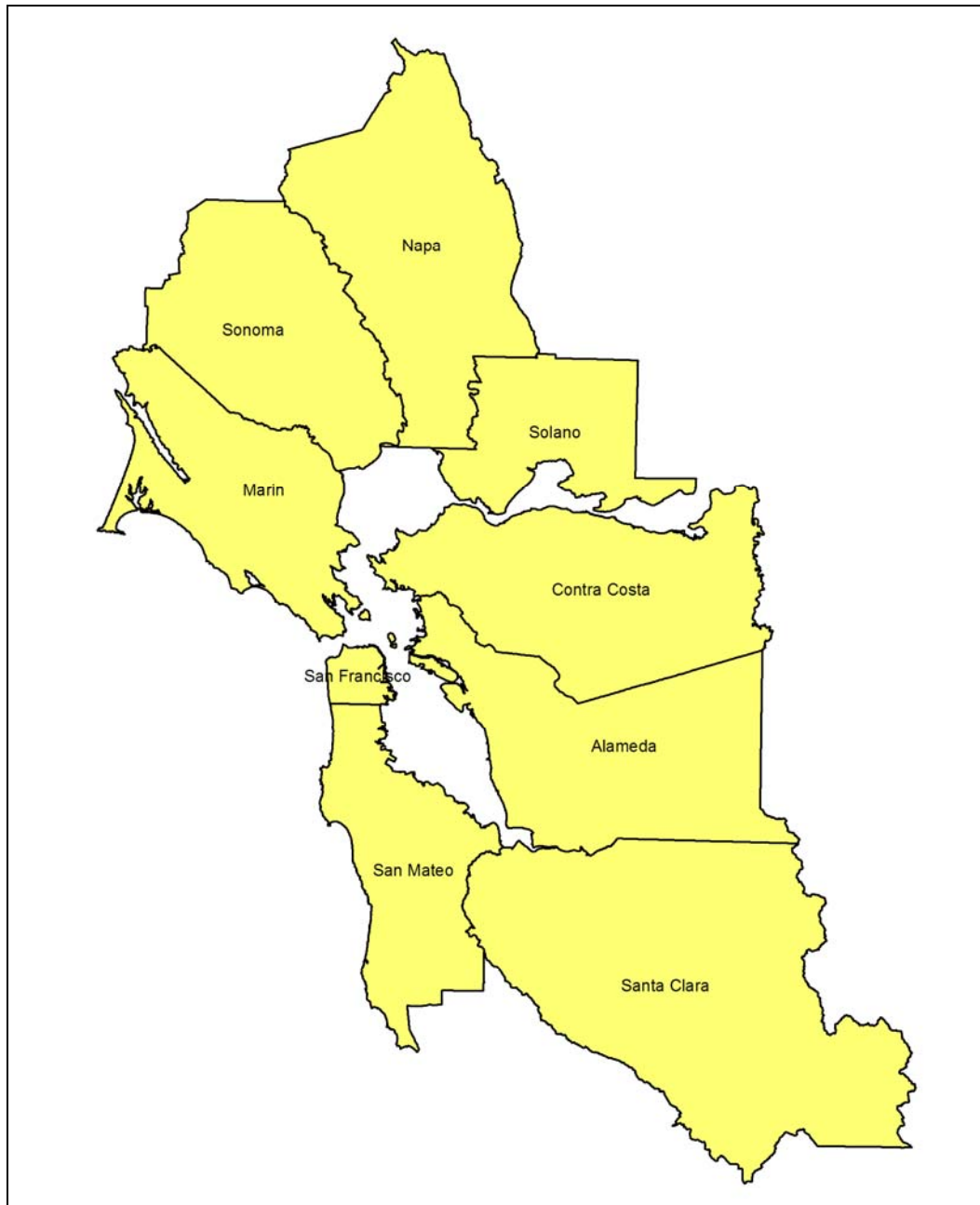


Table of Contents

Definition of Terms.....	3
Overview of Network Operation	4
Network Design	4
Minimum Monitoring Requirements	9
Modifications Made to Network in 2007.....	14
Proposed Modifications to Network in 2008.....	15
Removing a NAAQS Compliance Monitor.....	18
Data Submission Requirement.....	18
Detailed Site Information.....	19
Detailed Site Information – Full Stations	21
Bethel Island	21
Concord.....	23
Fremont.....	26
Livermore.....	29
Napa	32
Oakland.....	34
Pittsburg	36
Redwood City	38
San Francisco	41
San Jose.....	44
San Pablo	47
San Rafael.....	49
Santa Rosa.....	51
Vallejo.....	53
Detailed Site Information – Partial Stations	56
Crockett.....	56
Fairfield.....	58
Gilroy	60
Hayward.....	62
Los Gatos	64
Martinez	66
Point Reyes	68
Point Richmond	70
Richmond 7 th	72
Rodeo	74
San Jose Tully.....	76
San Leandro	78
San Martin.....	80
Sunnyvale.....	82
Detailed Site Information – Non-SLAMS Monitors	84
Benicia	84
Berkeley	87
Oakland PM _{2.5} SPM.....	90
Speciation Trends Network (STN) Site at San Jose	92
National Air Toxics Trends Station (NATTS) at San Jose.....	93

Definition of Terms

ADT	.....	Average Daily Traffic
AQS	.....	Air Quality System; the EPA national air quality database
Air District	.....	Bay Area Air Quality Management District
BAM	.....	Beta Attenuation Monitor, a type of continuous PM _{2.5} monitor
CFR	.....	Code of Federal Regulations
CO	.....	Carbon Monoxide
CH ₄	.....	Methane
Design Value	...	A calculated concentration, using a methodology specific to each pollutant, which is compared with the applicable national standard to determine the attainment status of an area for that pollutant.
EPA	.....	U. S. Environmental Protection Agency
FRM	.....	Federal Reference Method
GIS	.....	Geographic Information System
HC	.....	Hydrocarbons, including CH ₄ and NMOC
HiVol	.....	High Volume
KM	.....	Kilometer (0.62 miles per kilometer)
M	.....	Meters
Maintenance Plan..		A Plan submitted by states to EPA that outlines how the NAAQS will be maintained for a particular region.
MSA	.....	Metropolitan Statistical Area
N/A	.....	Not Applicable
NAAQS	.....	National Ambient Air Quality Standards
NATTS	.....	National Air Toxics Trends Stations
NMOC	.....	Non-methane Organic Carbon
NO ₂	.....	Nitrogen Dioxide
O ₃	.....	Ozone
PM	.....	Particulate Matter
PM _{2.5}	.....	Particulates less than or equal to 2.5 microns in size measured using a filter-based monitor
PM _{2.5cont}	.....	Particulates less than or equal to 2.5 microns in size measured using a continuous monitor
PM ₁₀	.....	Particulates less than or equal to 10 microns in size
RAAS	.....	Reference Ambient Air Sampler
S	.....	Seconds
SIP	.....	State Implementation Plan – A Plan submitted by states to EPA that outlines how the NAAQS will be met for a particular region.
SLAMS	.....	State or Local Air Monitoring Station
SO ₂	.....	Sulfur Dioxide
SPM	.....	Special Purpose Monitor
STN	.....	Speciation Trends Network – Speciated PM _{2.5} monitoring

Overview of Network Operation

Network Design

The Bay Area Air Quality Management District (Air District) is the public agency responsible for air quality management in nine Bay Area counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma. The Air District operates air monitoring stations in each of these nine counties. The Air District began measuring air quality in the San Francisco Bay Area in 1957. In 2007 there were 27 permanent stations in the Air District air monitoring network plus one permanent station operated by the California Air Resources Board.

In addition to the 28 permanent stations in the Bay Area, the Air District has enhanced its air monitoring network by starting a program in 2007 of short term monitoring studies. The Air District has built two re-locatable monitoring trailers to house full mobile air monitoring stations. These trailers are placed at a location for a minimum of one year to characterize the area's air quality. The instruments are operated on the same sampling schedule as the permanent network which allows comparison with other sites. Statistical relationships can be made with nearby permanent sites, thereby allowing estimates of air quality at the temporary sites in future years after the air monitoring trailer has been removed to a new location. Two such relocatable trailers were installed in 2007; one in Benicia adjacent to the Valero Refinery, and a second trailer was located in West Berkeley downwind from Pacific Steel Casting Company and Interstate 80.

The San Francisco Bay Area contains over 100 cities. Although resources do not allow placement of air pollution monitors in every city, it can be demonstrated that air pollution levels, in the absence of significant local sources, are similar within each geographical region of the Bay Area. That is, cities within each of the major valleys of the Bay Area can have similar air quality levels. Consequently, a few sites can characterize an area. Generally, locations for permanent air monitoring sites are initially based on knowledge of population density and local wind patterns, while the final site selection is determined after analyzing preliminary air quality measurements collected from field studies, temporary monitoring studies, and mobile monitoring data.

The purpose of the Air District monitoring network is:

- To provide air pollution data to the general public in a timely manner.
- To support compliance with California and national ambient air quality standards. When sites do not meet the standards, attainment plans are developed to attain the standards.
- To support air pollution research studies.

To meet its monitoring objectives the Air District monitoring network collects ambient air data at locations with a variety of monitoring site types. These site types, as defined in 40 CFR Part 58, Appendix D, Table D-1, are intended to characterize air pollution levels in areas of high pollution, high population, transported air pollution, and air pollution near specific sources.

Ambient air monitoring at Air District stations is intended to meet one or more of the following monitoring objectives:

- A determination of typical concentrations in areas of high population density.
- A determination of the highest concentrations expected to occur in the area covered by the network.
- A determination of impacts from significant sources.
- A determination of general background concentration levels.
- A determination of the extent of regional pollutant transport.

Population Oriented

As the primary purpose of air quality standards is to protect the public health, air monitoring stations have been placed in areas with high population density to determine the air pollution levels to which the majority of the population is exposed. In most cases these are within the largest cities of each county. Because people spend more time at home than at work, air monitoring sites generally have been located in residential areas rather than downtown locations. To be consistent with EPA's list of Site Types in Table D-1 of 40CFR Part 58, the term "population orientated" will be used in place of "typical concentrations in areas of high population density", for clarity in this monitoring objective.

Highest Concentration

EPA regulations require that air quality in areas where the public has access be reduced to levels below the national ambient air standards. Consequently, monitoring must also be done at locations expected to have the highest concentrations, even if populations are sparse in that area. High concentrations may be found close to major sources, or further downwind if pollutants are emitted from tall stacks. High concentrations may also be found at distant downwind locations when the pollutants such as ozone or secondary particulate matter are a result of chemical reactions in the atmosphere.

Source Impact

There are five refineries within the Air District: Chevron, Shell, Tesoro, ConcocoPhillips, and Valero. Because these sources have the potential to emit significant amounts of SO₂ and H₂S, the Air District operates SO₂ and H₂S monitoring stations near these sources. When the monitors downwind of the source show concentrations above the applicable standards or exceed concentrations listed in Air District Regulation 9, Rules 1 and 2, a notice of violation may be issued to the source.

General Background

The Air District operates stations in areas that have no significant emissions from mobile, area, or industrial sources. At these sites, the measured concentrations reflect the transported air quality levels from upwind areas. When designing control strategies to reduce pollution levels, it is important to know if areas outside the boundaries of the Air District are contributing to high pollutant levels within the Air District. Where there are no significant emission sources upwind of a site, then the site is considered to be a general background site.

Regional Transport

The Air District shares a common boundary with six other air districts: Monterey Bay Unified APCD, San Joaquin Valley APCD, Sacramento Metropolitan AQMD, Yolo-Solano AQMD, Lake County AQMD, and Northern Sonoma County APCD. When upwind areas have significant air pollution sources, pollutants transported into the Bay Area Air District result in overall higher air pollution levels in the Bay Area. The Air District operates monitoring stations near the borders of the Air District to measure the air pollution concentrations transported into and out of the Bay Area Air District.

Each monitoring objective is associated with a spatial scale for each site. For example, a regional transport site is meant to represent air quality levels over a large area, while a highest concentration site may represent a spatial scale of no more than a few blocks or so, in size. Spatial scales are defined in 40 CFR, Part 58, Appendix D. They are: micro scale – having dimensions of several meters up to 100 meters; middle scale – having dimensions of 100 meters to 0.5 km; neighborhood scale – having dimensions of 0.5 km to 4.0 km; urban scale – having dimensions of 4 to 50 km; and regional scale – having dimensions of up to hundreds of km. Table 1 lists the appropriate scales for each monitoring objective.

Table 1: SLAMS Monitoring Objectives and Appropriate Spatial Scales.

Monitoring Objective	Appropriate Spatial Scale
1. Highest Concentration	Micro, middle, neighborhood
2. Population Oriented	Neighborhood, urban
3. Source Impact	Micro, middle, neighborhood
4. General Background	Urban, regional
5. Regional Transport	Urban, regional

The desired spatial scale of a monitoring site must conform to established criteria for the distance from roadways, based on traffic volumes. There are different distance requirements for each pollutant, which can be found in 40 CFR, Part 58, Appendix E. Additionally, the spatial scale can also be affected if trees or obstructions are too close to the monitoring probe. The goal in siting monitoring stations is to match the spatial scale with the desired monitoring objective. Table 2 lists the stations, their monitoring objectives, and the pollutants measured at each site.

Table 2. List of Monitoring Sites within the Air District for 2007.

Site	Full Stations	Type ¹	Monitoring Objective	Pollutants Monitored ¹
1	Bethel Island	SLAMS	Regional Transport & Highest Concentration	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀
2	Concord	SLAMS	Population Oriented, Highest Concentration	O ₃ , NO ₂ , SO ₂ , CO, HC, PM ₁₀ , PM _{2.5}
3	Fremont	SLAMS	Population Oriented	O ₃ , NO ₂ , CO, HC, PM ₁₀ , PM _{2.5}
4	Livermore	SLAMS	Population Oriented & Highest Concentration	O ₃ , NO ₂ , CO, HC, PM ₁₀ , PM _{2.5} , PM _{2.5cont}
5	Napa	SLAMS	Population Oriented	O ₃ , NO ₂ , CO, PM ₁₀ , PM _{2.5cont}

Site	Full Stations	Type ¹	Monitoring Objective	Pollutants Monitored ¹
6	Oakland	SLAMS	Population Oriented	O ₃ , NO ₂ , CO
7	Pittsburg	SLAMS	Population Oriented	O ₃ , NO ₂ , SO ₂ , CO
8	Redwood City	SLAMS	Population Oriented	O ₃ , NO ₂ , CO, PM ₁₀ , PM _{2.5} , PM _{2.5cont}
9	San Francisco	SLAMS	Population Oriented	O ₃ , NO ₂ , SO ₂ , CO, HC, PM ₁₀ , PM _{2.5} , PM _{2.5cont}
10	San Jose	SLAMS	Population Oriented & Highest Concentration	O ₃ , NO ₂ , CO, HC, PM ₁₀ , PM _{2.5} , PM _{2.5cont}
11	San Pablo	SLAMS	Population Oriented	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀
12	San Rafael	SLAMS	Population Oriented	O ₃ , NO ₂ , CO, PM ₁₀
13	Santa Rosa	SLAMS	Population Oriented	O ₃ , NO ₂ , CO, PM ₁₀ , PM _{2.5}
14	Vallejo	SLAMS	Population Oriented	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀ , PM _{2.5} , PM _{2.5cont}

Site	Partial Stations	Type	Monitoring Objective	Pollutants Monitored
15	Crockett	SLAMS	Source Impact	SO ₂
16	Fairfield	SLAMS	Population Oriented & Regional Transport	O ₃
17	Gilroy	SLAMS	Population Oriented, Highest Concentration, & Regional Transport	O ₃ , PM _{2.5}
18	Hayward	SLAMS	Population Oriented & Regional Transport	O ₃
19	Los Gatos	SLAMS	Population Oriented & Highest Concentration	O ₃
20	Martinez	SLAMS	Source Impact	SO ₂
21	Pt Reyes ²	SLAMS	General Background	PM _{2.5cont}
22	Pt Richmond	SLAMS	Source Impact	H ₂ S
23	Richmond 7 th	SLAMS	Source Impact	SO ₂ , H ₂ S
24	Rodeo	SLAMS	Source Impact	H ₂ S
25	San Jose Tully	SLAMS	Population Oriented & Highest Concentration	PM ₁₀
26	San Leandro	SLAMS	Population Oriented	O ₃
27	San Martin	SLAMS	Highest Concentration	O ₃
28	Sunnyvale	SLAMS	Population Oriented	O ₃

Site	Non-SLAMS Monitors	Type	Monitoring Objective	Pollutants Monitored
29	Benicia	SPM	Population Oriented & Source Impact	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀ , PM _{2.5cont}
30	Berkeley	SPM	Population Oriented & Source Impact	O ₃ , NO ₂ , SO ₂ , CO, HC, PM ₁₀ , PM _{2.5cont}
31	Oakland	SPM	Population Oriented	PM _{2.5}
32	San Jose	STN	Population Oriented	Speciated PM _{2.5}
33	San Jose	NATTS	Population Oriented	CO, Toxics, Black Carbon

¹ See page 3 for acronym definitions.

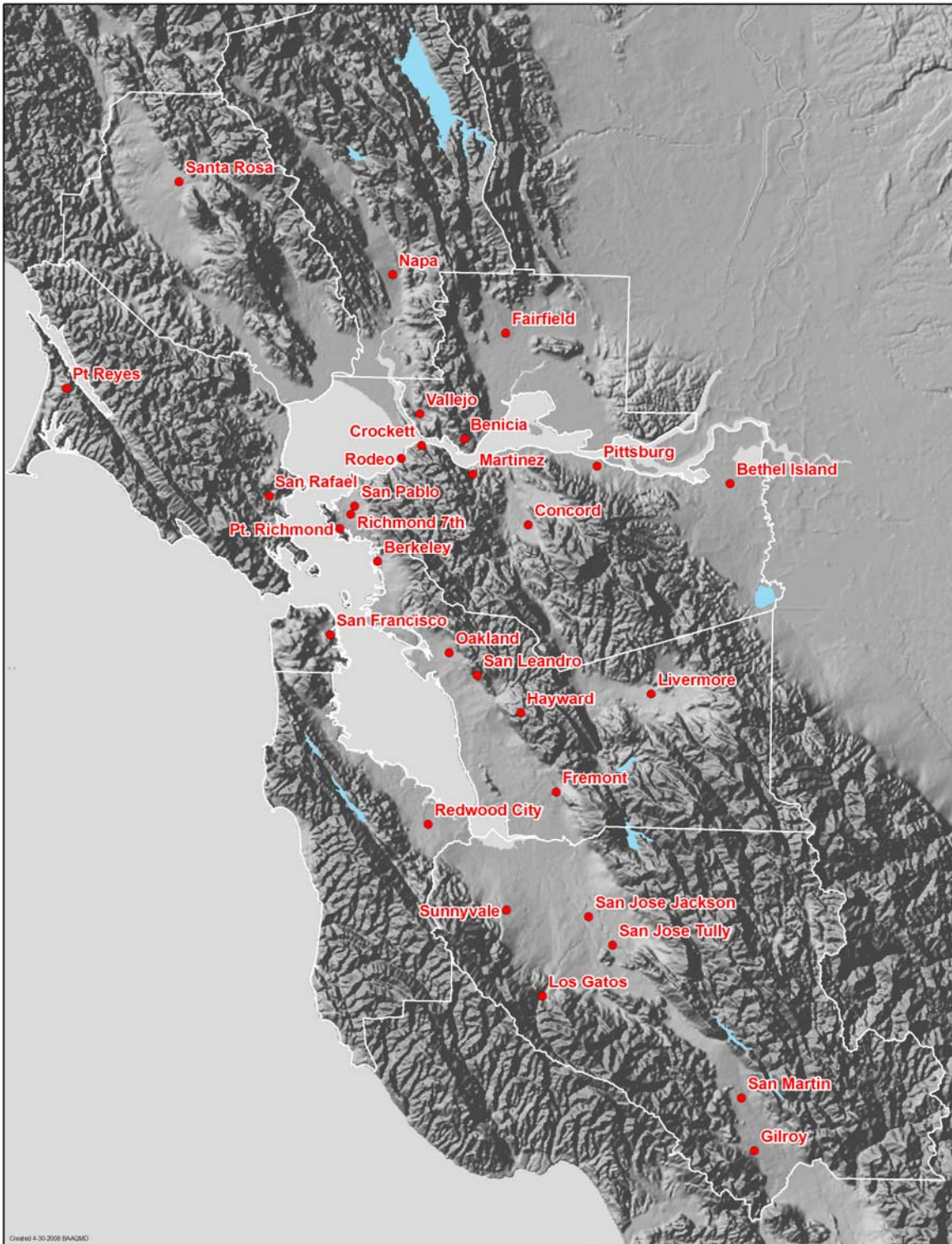
² Operated by the California Air Resources Board

EPA suggests that the appropriate spatial scale for population oriented sites should be neighborhood or urban. Using the current EPA methodology to determine spatial scales, the air monitoring sites in Napa, Oakland, San Pablo and San Rafael would be characterized as middle scale. However, the Air District believes the spatial scale of the site would be better characterized as neighborhood scale. This is because EPA's distance requirements from roads are based on 1979 vehicle emission levels. Current fleet average vehicle emission factors in the Bay Area are 95% lower for HC, 94% lower for CO, 81% lower for NO_x, and 47% lower for PM₁₀ in 2008 compared to 1979.

The following map shows the locations of the Air District monitoring sites. Tables 3, 4 and 5 list the minimum number of monitors required within the network for each pollutant. The section following Table 5 describes recent changes to the monitoring network, and proposed changes to the monitoring network.

The final section provides detailed descriptions of the monitoring objectives for each air monitoring site and a brief explanation for choosing the type of monitor at each site.

Map of Bay Area Air Quality Management District Monitoring Network for 2007



Minimum Monitoring Requirements

The Air District monitoring network meets or exceeds the minimum monitoring requirements for all criteria pollutants.

(See Tables 3, 4, 5).

Table 3. Minimum Monitoring Requirements for Ozone.

MSA	County	Population (2007)	8-hour Design Value ¹ (ppb) 2005-07	Number of Monitors Required	Number of Monitors Active	Additional Monitors Needed
San Francisco-Oakland-Fremont	SF, Marin, Alameda, San Mateo, Contra Costa	4,203,898	77	3	11	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,803,643	75	2	6 ³	0
Santa Rosa-Petaluma	Sonoma ⁴	400,230	47	1 ²	1	0
Vallejo-Fairfield	Solano ⁵	286,424	66	2	2	0
Napa	Napa	132,565	57	0 ²	1	0

Ozone monitors required for SIP or Maintenance Plan: None required.

¹Design values at or below the 0.08 ppm (85 ppb) National Ambient Air Quality 8-hour Ozone Standard meet the standard. It is calculated by taking the 3-year mean of the 4th highest 8-hour values for each site and using the highest value in the MSA.

²Requirements based on design value concentrations <85% of the 0.08 ppm national ozone standard. The revised national 8-hour ozone standard of 0.075 ppm was implemented May 27, 2008.

³One of the monitors is located in Hollister in San Benito County and is operated by the Monterey Bay Unified Air Pollution Control District.

⁴That portion of Sonoma County within the Bay Area Air Quality Management District.

⁵That portion of Solano County within the Bay Area Air Quality Management District.

Table 4. Minimum Monitoring Requirements for PM_{2.5}.

MSA	County	Population (2007)	Annual Design ¹ Value $\mu\text{g}/\text{m}^3$ 2005-07	Daily Design ² Value $\mu\text{g}/\text{m}^3$ 2005-07	Number of Monitors Required	Number of Monitors Active	Additional Monitors Needed
San Francisco-Oakland-Fremont	SF, San Mateo, Alameda, Marin, Contra Costa	4,203,898	9.4	35	3	5 ⁷	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,803,643	11.1	38	3	3 ³	0
Santa Rosa-Petaluma	Sonoma ⁴	400,230	8.1	30	1	1	0
Vallejo-Fairfield	Solano ⁵	286,424	9.8	36	1	1	0
Napa	Napa	132,565	N/A ⁶	N/A ⁶	0	0	0

PM_{2.5} monitors required for SIP or Maintenance Plan: None required. Because the District has never been designated as non-attainment for PM_{2.5}, there have not been any SIP or maintenance plans prepared.

¹Design values at or below the national PM_{2.5} annual standard of 15 $\mu\text{g}/\text{m}^3$ indicate the area meets the standard. It is calculated by taking the 3-year mean of the annual averages for each site and using the highest value in the MSA.

²Design values at or below the national PM_{2.5} 24-hour standard of 35 $\mu\text{g}/\text{m}^3$ indicate the area meets the standard. It is calculated by taking the 3-year mean of the 98th percentiles for each site and using the highest value in the MSA.

³One of the monitors is located in Hollister in San Benito County and is operated by the Monterey Bay Unified Air Pollution Control District.

⁴That portion of Sonoma County within the Bay Area Air Quality Management District.

⁵That portion of Solano County within the Bay Area Air Quality Management District.

⁶There are no EPA FRM or FEM PM_{2.5} monitors in Napa County.

⁷This includes the PM_{2.5} SPM monitor at Oakland.

Table 5. Minimum Monitoring Requirements for PM₁₀.

MSA	County	Population estimate (2007)	Daily Design ¹ Value $\mu\text{g}/\text{m}^3$ 2005-07	Number of Monitors Required	Number of Monitors Active	Additional Monitors Needed
San Francisco-Oakland-Fremont	SF, San Mateo, Alameda, Marin, Contra Costa	4,203,898	0	2	10	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,803,643	0	2	2 ²	0
Santa Rosa-Petaluma	Sonoma ³	400,230	0	0	1	0
Vallejo-Fairfield	Solano ⁴	286,424	0	0	1	0
Napa	Napa	132,565	0	0	1	0

PM₁₀ monitors required for SIP or Maintenance Plan: None required. Because the Air District has never been designated as non-attainment for PM₁₀, there have not been any SIP or maintenance plans prepared.

¹For PM₁₀, the design value is defined as the expected number of exceedances per year, which is calculated by averaging the number of exceedances for the past 3 years. The 24-hour standard (150 $\mu\text{g}/\text{m}^3$) is attained when the design values is less than or equal to one.

²One of the monitors is located in Hollister in San Benito County and is operated by the Monterey Bay Unified Air Pollution Control District.

³That portion of Sonoma County within the Bay Area Air Quality Management District.

⁴That portion of Solano County within the Bay Area Air Quality Management District.

Minimum Monitoring Requirements for NO₂

40 CFR, Part 58, Appendix D, Section 4.3 states that there are no minimum requirements for the number of NO₂ monitoring sites. Monitors required for SIP or Maintenance Plan: None required. Because the Air District has never been designated as non-attainment for NO₂, there have not been any SIP or maintenance plans prepared. The Air District has NO₂ monitors at all full stations because NO₂ and NO are important precursors in ozone formation, and they provide a Q/C function for ozone monitors. NO₂ monitoring may become important in the future because California has revised the 1-hr NO₂ standard and added an annual NO₂ standard, effective March 20, 2008. Also, as particulate control devices are added to heavy duty diesel vehicles, ambient NO₂ concentrations may increase because of increases in the NO₂/NO_x ratio in exhaust. The Air District currently operates 16 NO₂ monitors in its network.

Minimum Monitoring Requirements for SO₂

40 CFR, Part 58, Appendix D, Section 4.4 states that there are no minimum requirements for the number of SO₂ monitoring sites. Monitors required for SIP or Maintenance Plan: None required. Because the Air District has never been designated as non-attainment for SO₂, there have not been any SIP or maintenance plans prepared. The Air District operates 11 SO₂ monitors in its network.

Minimum Monitoring Requirements for CO

40 CFR, Part 58, Appendix D, Section 4.2 states that there are no minimum requirements for the number of CO monitoring sites. Monitors required for SIP or Maintenance Plan: None required. The Air District was re-designated attainment for the 8-hour average CO NAAQS in 1998. The Air District carbon monoxide maintenance plan is contained within the California Air Resource Board document "2004 Revision to the California State Implementation Plan for Carbon Monoxide." The maintenance plan does not specify the number of CO monitors needed. Generally, the Air District operates one CO monitor within each of the nine Bay Area counties plus additional CO monitors in large cities. Also, CO monitors are used to provide a Q/C function at full stations. CO monitoring could take on future importance because EPA is expected to review the current CO NAAQS and may revise the NAAQS to be more stringent. The Air District currently operates 16 CO monitors in its network.

Modifications Made to Network in 2007

Gilroy

The Air District installed a PM_{2.5} monitor at the existing air monitoring site in Gilroy on March 1, 2007. It was placed in Gilroy to measure PM_{2.5} levels in the growing city of Gilroy and to measure particulate levels representative of southern Santa Clara County. The monitor is intended to be operated permanently at Gilroy.

Benicia

The Air District installed a temporary air monitoring station in Benicia on April 1, 2007 that will be operated for a minimum of one year. Monitoring includes O₃, SO₂, NO₂, NO, CO, continuous PM_{2.5}, PM₁₀, toxics, metals, and aldehydes. The purpose of the monitoring study is to determine the air quality levels in Benicia near the Valero Refinery.

Berkeley

The Air District began operation of a temporary air monitoring station in Berkeley on December 13, 2007. The site will be operated for one year. The purpose of the monitoring study is to determine air quality in West Berkeley downwind of Highway 80 and Pacific Steel Casting. Monitoring includes O₃, SO₂, NO₂, NO, CO, Non-Methane Hydrocarbons, Methane, continuous PM_{2.5}, PM₁₀, toxics, metals, and aldehydes.

Napa

The Air District began operating a continuous PM_{2.5} sampler (BAM) on January 5, 2007 at the Napa air monitoring station. The sampler was added because high PM_{2.5} measurements at the nearby Vallejo air monitoring station on days with north winds suggest that Napa Valley might be a source of particulates that are transported to Vallejo.

Oakland

The Air District began operation of an air monitoring station in Oakland on November 1, 2007. It is located 0.9 miles east of Hwy 880, and 7 miles southeast of downtown Oakland. The station measures O₃, NO₂, NO, CO, filter-based PM_{2.5}, and toxics. This station is intended to be a long-term site.

San Jose

On December 31, 2007 the Air District closed the San Jose Tully PM₁₀ monitor. Since PM₁₀ was the only monitor at the site, the site was closed as well. The site no longer met EPA siting criteria for PM₁₀ due to development near the site. No exceedances of the national PM₁₀ standard had been recorded since 1990. The nearby downtown San Jose air monitoring station, 3.8 miles to the northeast, continues to measure PM₁₀.

San Leandro

Toxics monitoring was discontinued on December 17, 2007 when the nearby Oakland monitoring station started up and began collecting toxics samples. In recent years, the toxics monitoring measured low levels at the San Leandro site.

Proposed Modifications to Network in 2008

Concord

A collocated PM_{2.5} monitor at Concord is operated once every 6 days to collect a 24-hour sample which is compared with the sample from the primary PM_{2.5} sampler as a method of checking the precision of the primary monitor. Over the past 10 years, concentrations from the two monitors have shown good agreement. New regulations from EPA currently only require collocated PM_{2.5} measurements every 12th day. The Air District plans to change operation of the collocated PM_{2.5} monitor from a one in six day schedule to a one in twelve day schedule. The primary monitor will continue to be operated everyday during the winter and every 3rd day during the summer.

Contra Costa County

After the Benicia monitoring is completed in 2008, the Air District is considering moving the air monitoring trailer to a location in northeastern Contra Costa County. This is an area of rapid development, and a one-year monitoring study would demonstrate if further monitoring is needed. Monitoring would include O₃, SO₂, NO₂, NO, CO, continuous PM_{2.5}, PM₁₀, and toxics.

Denverton

NO_x measurements will be made at a site near Denverton along Highway 12 in Solano County beginning in 2008. The purpose will be to measure NO_x transport between the Bay Area and the Sacramento Valley. The monitor will be operated for 3 years.

Lead Monitoring

In May 2008 EPA proposed revising the national lead air quality standard from 1.5 µg/m³ to a level within the range of 0.10 to 0.30 µg/m³. If the standard is made more stringent, the Air District may need to resume lead monitoring. The Air District began monitoring for lead in 1978, but with permission from EPA, stopped monitoring in 1998 because data showed that Bay Area lead levels were less than 10% of the national standard.

Livermore

PM_{2.5} monitoring will be changed from every third day to everyday during the October 1st through March 31st winter season. This change will be made because measurements show that the 2005-2007 35 µg/m³ PM_{2.5} design value at Livermore is within 5% of the 24-hour National Ambient Air Quality Standard.

PAMS Monitoring Stations

EPA is considering funding the establishment of three Photochemical Assessment Monitoring Stations (PAMS). Two stations would be new: one near Walnut Creek along the Highway 680 corridor and the other near Altamont Pass. A third PAMS station would be located at the current Livermore air monitoring station. All three stations would measure ozone, NO₂, NO, speciated hydrocarbons, methane and non-methane hydrocarbons. The PAMS sites would be expected to be operated for 3 years.

Pittsburg

The Pittsburg air monitoring station will be closed. New construction in the area and a large increase in the lease cost have made this closure necessary. Pollution levels in Pittsburg have been found to be lower than nearby sites in Concord, Fairfield and Bethel Island. The Air District is considering relocating the station to investigate air quality levels in eastern Contra Costa County where new housing and commercial development is taking place. The national 8-hour ozone and the State 24-hour PM₁₀ standards were exceeded within the most recent 5 years at Pittsburg, but pollutant levels are lower than nearby stations.

Particulate Matter (PM10) Sites

The Air District plans to make substantial changes to its PM₁₀ network over the next 18 months. Many years of monitoring have shown that Bay Area PM₁₀ levels are well below both the national 24-hour and the annual PM₁₀ standards. Consequently, the Air District has decided to reallocate resources by reducing the density of its PM₁₀ network. Six PM₁₀ monitors will be shut down (Pittsburg, Fremont, Redwood City, Santa Rosa, Livermore, and Vallejo). This closure will allow the expansion of the Air District's particulate network to add PM_{2.5} speciation samplers at air monitoring stations in Livermore, Vallejo, and Oakland. These samplers give information about the composition of ambient PM_{2.5} which is needed to determine the sources of PM_{2.5}. This is important because the Bay Area currently does not meet the national 24-hour PM_{2.5} standard. The Air District plans to add low-volume PM₁₀ samplers at some existing air monitoring stations. These monitors will use less power and are more accurate than the current high-volume PM₁₀ technology, and are also needed to meet the PM coarse sampling requirements beginning in 2011.

San Francisco

PM_{2.5} monitoring was changed from everyday to every third day during the October 1st through March 31st winter season. This change was made on January 15, 2008 because recent measurements at the station showed that its 2005-2007 29 µg/m³ PM_{2.5} design value was not within 5% of the standard and consequently, everyday filter monitoring is not needed to demonstrate the attainment status of the 24-hour National Ambient Air Quality Standard. Additional PM_{2.5} measurements are made at the station everyday using a continuous (non-filter) PM_{2.5} monitor, which produces hourly data. Although these data are valuable for forecasting and emissions estimates, data from the monitor can not be used for comparison with the national standards because the existing continuous PM_{2.5} monitor (BAM) is not EPA certified.

SO₂ monitoring will be discontinued because there are no longer any major sources of SO₂ in the vicinity of San Francisco, and data from the most recent five years have not shown any elevated levels of ambient SO₂.

San Jose

As part of the NATTS monitoring project, toxics metals will be analyzed from PM₁₀ samples collected at the San Jose station beginning in 2008. Analyses will be performed by an EPA contract laboratory.

San Leandro

The Air District plans to shut down the ozone monitor at San Leandro in 2008 because the new Oakland station, which opened in 2007, is close enough to San Leandro (the sites are 3 miles apart) to characterize the area. There have been no national exceedances of the ozone standard in the most recent 5 years at San Leandro. No other pollutants are measured at San Leandro, so the San Leandro station will be closed.

South San Jose

The Air District may agree to operate a monitoring station near the Metcalf Energy Center power plant in South San Jose. This site is being established as part of an agreement between the City of San Jose and the Metcalf Energy Center. The station will be located in a residential neighborhood 1 mile northwest of the power plant and will monitor ambient levels of pollutants emitted by the power plant. Those pollutants are PM₁₀, NO_x, and CO. It is intended to be a long-term site. If the Air District takes over operation of the site, ozone levels may also be monitored as part of a special field study for 2 years.

Speciated PM_{2.5} Monitoring

The Air District plans to begin speciated PM_{2.5} monitoring at the Livermore, Vallejo, and West Oakland air monitoring stations in 2008. The purpose of the monitoring is to collect data on the chemical makeup of the ambient PM_{2.5} particles in the Bay Area. Samples will be collected on filters and sent to a contract laboratory for analyses. Pollutants to be measured are selected ions, metals, carbon species, and organic compounds in PM_{2.5}.

Sunnyvale

The Air District plans to shut down the ozone monitor at Sunnyvale in 2008 because studies have shown that ozone levels at Sunnyvale are well correlated with ozone levels at the San Jose station and therefore the site is not needed. There were two days with exceedances of the national 8-hour ozone standard in the most recent 5 years at Sunnyvale. The toxics monitor will also be shut down because 7 years of data have shown that toxics levels are low. As no other pollutants are measured at Sunnyvale, the station will be closed.

Vallejo

PM_{2.5} monitoring was changed from every third day to everyday during the October 1st through March 31st winter season. This change was made on January 15, 2008 because measurements at the station showed that its 2005-2007 36 µg/m³ PM_{2.5} design value is within 5% of the 24-hour National Ambient Air Quality Standard.

West Oakland

The Air District plans to locate an air monitoring station in West Oakland in 2008. It will be located downwind of the Port of Oakland and will measure continuous and filter-based PM_{2.5}, speciated PM_{2.5}, and toxics. It is intended to be a long-term site.

Removing a NAAQS Compliance Monitor

When the Air District proposes changes to the air monitoring network, the proposed changes are included in the annual Monitoring Network Plan. The annual Monitoring Network Plan is posted on the Air District web site for 30 days to allow public comment on the proposed changes to the network. After the public comment period, the Air District reviews and considers the comments before making a final decision. The Air District then submits the Plan and any comments received to the EPA Region IX Regional Administrator.

Before shutting down a SLAMS (State or Local Air Monitoring Station) monitor, federal requirements require the Air District to obtain the Regional Administrator's written approval. The Regional Administrator will normally approve the shutdown when any of the following situations apply:

- Monitors that have always attained the national standards and that have not violated the national standards for the most recent 5 years may be closed if the State Implementation Plan (SIP) provides a method of representing the air quality in the applicable county.
- Monitors that were out of attainment of the national standards in the past and have not violated the national standards during the previous 5 years may be shut down if the probability is less than 10% that the monitor will exceed 80% of NAAQS during the next 3 years.
- Monitors may be removed on the basis of redundancy if it can be shown that concentrations are highly correlated ($r^2 > 0.75$) with a nearby monitor that shows consistently higher concentrations during the previous 5 years.
- Monitors which are located upwind of an urban area to characterize transport may be shut down if the monitor has not recorded any violations during the previous 5 years, and the monitor is being replaced by another monitor which characterizes transport.
- Monitors may be removed when EPA determines that measurements are not comparable to the relevant NAAQS because of siting issues.

The closure of a SPM (Special Purpose Monitor) monitor does not require approval from EPA, but a change in the designation of a monitoring site from SLAMS to SPM requires approval of the Regional Administrator.

Data Submission Requirement

- Precision/Accuracy reports are submitted monthly to the EPA AQS database.
- The 2007 annual data certification letter will be submitted to EPA Region 9 in June 2008.

Detailed Site Information

The next section describes each air quality station operated within the Bay Area Air Quality Management District. In 2007 there were 30 stations operating in the Air District; 14 full stations, 14 partial stations, and 2 temporary stations (SPM stations). Full stations have multiple air quality monitors, partial stations have one or two air quality monitors, and temporary stations have either a single or multiple monitors. Full and partial stations are generally operated for decades, while temporary stations are expected to operate for 1 to 2 years.

The station description includes siting information about the station and the individual monitors at the station. Monitors must be operated following EPA requirements found in 40 CFR Part 58. These regulations also specify monitor siting criteria. Table 6 below lists these siting criteria where applicable.

Table 6. Monitor Information and EPA Air Monitoring Siting Criteria.

Pollutant	Pollutants measured at the Air District the air monitoring station.
Monitoring Objective	The purpose for monitoring at that location. Choices include Highest Concentration, Population Oriented, Source Impact, General Background, and Regional Transport.
Spatial scale	The relative distance over which the air pollution measurements are representative. Choices are Micro, Middle, Neighborhood, Urban, and Regional scales.
Sampling method	<i>40 CFR Part 58 Appendix C, 2.0:</i> requires that the monitor used must be from EPA's current List of Designated Reference and Equivalent Methods.
PM filter analysis method	Describes whether the PM filters are analyzed in-house by the local agency or at an outside laboratory.
Start date	The date valid data collection began for that pollutant at that air monitoring station.
Operation schedule	Describes if the monitor is operated continuously or intermittently (as for PM).
Sampling season	Most monitors operate all year, but some monitors may only operate during months when pollution potential is highest, e.g. ozone.
Distance to road from gaseous probe	<i>40 CFR Part 58 Appendix E, 6.0:</i> requires that monitors be located far enough from roadways to minimize local mobile impacts on measurements. Recommended distances are found in Table E-1 for NO _x and ozone, Table E-2 for CO, and Figure E-1 for PM.
Ground cover	<i>40 CFR Part 58 Appendix E, 3.0:</i> states that particulate samplers should not be located in an unpaved area unless there is vegetative ground cover year round, so that the impact of wind blown dusts will be kept to a minimum.
Probe height (AGL)	<i>40 CFR Part 58 Appendix E, 2.0:</i> requires that probe height be 2-15 meters above ground level (AGL).
Probe height above roof	<i>40 CFR Part 58 Appendix E, 2.0:</i> requires the probe be at least 1 meter vertically or horizontally away from any supporting structure.
Distance from obstructions on roof	<i>40 CFR Part 58 Appendix E, 4.0:</i> requires that the distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe or inlet. PM samplers must have a 2 meter separation from walls, parapets and structures. 4.0 (b)

Table 6 cont. Monitor Information and EPA Air Monitoring Siting Criteria.

Distance from obstructions not on roof	<i>40 CFR Part 58 Appendix E, 4.0:</i> requires that the distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe or inlet.
Distance from tree (DL)	<i>40 CFR Part 58 Appendix E, 5.0:</i> requires that probe be at least 10 meters from the nearest tree drip line.
Distance to furnace or incinerator flue	<i>40 CFR Part 58 Appendix E, 3.0:</i> requires that scavenging be minimized by keeping the probe away from furnace or incineration flues or other minor sources of SO ₂ or NO. The separation distance should take into account the heights of the flues, type of waste or fuel burned, and the sulfur content of the fuel.
Distance between collocated monitors	<i>40 CFR Part 58 appendix A, 3.2.5.6:</i> requires that PM monitors be 2-4 meters apart for flow rates >200L/m and have a 1-4 meter separation for flow rates <200 L/m.
Unrestricted airflow	<i>40 CFR Part 58 Appendix E, 4.0:</i> requires the probe or inlet to have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.
Probe material	<i>40 CFR Part 58, Appendix E, 9.0:</i> requires that either Pyrex glass or FEP Teflon be used for intake sampling lines.
Residence time	<i>40 CFR Part 58, Appendix E, 9.0:</i> recommends a residence time of 20 seconds or less for gaseous sampling.
Will there be changes within the next 18 mos?	Describes if any changes are expected to occur to that monitor at that station within the next 18 months.
Is it suitable for comparison against the annual PM _{2.5} ?	<i>40 CFR 58.30:</i> requires that PM _{2.5} data that are representative, not of area-wide, but rather of relatively unique population-oriented micro-scale, localized hot spot, or unique population-oriented middle-scale impact sites are only eligible for comparison to the 24-hour PM _{2.5} NAAQS.
Frequency of flow rate verification for manual PM samplers	<i>40 CFR 58, Appendix A, 3.3.2:</i> requires that a one-point flow rate verification check must be performed at least once every month for low-volume PM samplers and quarterly for hi-volume PM samplers.
Frequency of flow rate verification for automated PM analyzers	<i>40 CFR 58, Appendix A 3.2.3:</i> requires a one-point flow rate verification check must be performed at least once every month.
Frequency of one-point QC check (gaseous)	<i>40 CFR Part 58 Appendix A, 3.2.1:</i> requires that QC checks be performed at least once every 2 weeks.
Last Annual Performance Evaluation (gaseous)	<i>40 CFR Part 58 Appendix A, 3.2.2:</i> requires that SO ₂ , CO, O ₃ , and NO ₂ monitors have annual performance evaluations. Section 3.2.7 requires that performance evaluations of PM monitors must be performed annually through the PEP (Performance Evaluation Program).
Last two semi-annual flow rate audits for PM monitors	<i>40 CFR Part 58 Appendix A, 3.2.4 (automated methods) and 3.3.3 (manual methods):</i> require that PM samplers have flow rate checks every 6 months.

Detailed Site Information – Full Stations

Bethel Island

Bethel Island was chosen for an air monitoring site to measure pollutant transport between the California Central Valley and the San Francisco Bay Area. The site lies in the only sea-level gap between the two regions, in the Sacramento-San Joaquin River Delta, just east of the Carquinez Strait region. The local contribution to air quality is low due to the rural nature of the area and the lack of any industrial sources within 6 miles of the site. The nearest town is Bethel Island, 0.6 miles to the north, with a 2000 population estimate of 2,312. The site is located in a public-storage facility, surrounded by grassy fields. Ozone and NO₂ are measured because the area is in the transport corridor between the San Francisco Bay Area and the California Central Valley, both of which are major sources of ozone, ozone precursors, and particulates. Traffic volume near the site is low, so carbon monoxide measurements tend to be representative of natural background levels, or regional transport. SO₂ is measured because the area is downwind from numerous refineries, which can be large sources of SO₂. PM₁₀ is measured because easterly winds occasionally transport particulates from the Central Valley.

This site recorded one exceedance of the national 8-hour ozone standard, and two exceedances of the California 24-hour PM₁₀ standard in the most recent 3 years. No exceedances of any SO₂ standards were measured in the most recent 3 years.

A tree that had been within 10 meters of the instrument probe was removed on July 21, 2007. The site now meets all EPA siting criteria. Because the tree was outside of the 180 degree arc of unrestricted airflow in the predominant WNW wind direction, air quality data collected previous to the tree removal are considered valid.

Bethel Island Site Information

Site Name	Bethel Island - 2021
AQS ID	06-013-1002
GIS coordinates	38.0063° N, 121.6420° W
Location	Trailer in parking lot
Address	5551 Bethel Island Rd, Bethel Island CA 94511
County	Contra Costa
Distance to road from gaseous probe	Bethel Island Rd: 63 meters Sandmound Blvd: 110 meters
Traffic count	Bethel Island Rd: 6,492 ADT (2006) Sandmound Blvd: 1,537 ADT (2006)
Groundcover	Gravel surrounded by grassy fields
Representative Area	San Francisco-Oakland-Fremont MSA

Bethel Island Monitor Information

Pollutant	O3	CO	NO/NO2	SO2	PM10
Monitoring Objective	Regional Transport & Highest Conc.	General Background	Regional Transport	Regional Transport	Regional Transport
Spatial scale	Regional	Regional	Regional	Regional	Regional
Sampling method	TECO 49C	TECO 48A	TECO 42C	TECO 43C	Andersen GUV-16HBLA
PM filter analysis method	N/A	N/A	N/A	N/A	Weighed by Air District
Start date	02/28/81	03/01/81	NO2: 03/01/81 NO: 01/01/94	03/01/81	11/05/86
Operation schedule	Continuous	Continuous	Continuous	Continuous	1 in 6
Sampling season	All year	All year	All year	All year	All year
Probe height (AGL)	6.7 m	6.7 m	6.7 m	6.7 m	5.2 m
Probe height above roof	3.0 m	3.0 m	3.0 m	3.0 m	1.5 m
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof	None	None	None	None	None
Distance from tree (DL)	13.3 m	13.3 m	13.3 m	13.3 m	14.4 m
Distance to furnace or incinerator flue	None	None	None	None	None
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow	270°	270°	270°	270°	270°
Probe material	Teflon	Teflon	Teflon	Teflon	N/A
Residence time	14 s	15 s	14 s	14 s	N/A
Will there be changes within the next 18 mos?	No	No	No	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A	Weekly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily	N/A
Last Annual Performance Evaluation (gaseous)	10/31/07	10/31/07	10/31/07	10/31/07	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A	10/30/07 08/14/07

Concord

Concord was chosen for an air monitoring site because it is the largest city in Contra Costa County, with a 2007 population estimate of 123,776; and because of the high pollution potential due to locally emitted and transported pollutants into the area. Since Concord is located in a valley, the Diablo Valley, locally emitted pollutants can become trapped when winds are light. Large emission sources in the valley include two major freeways, Interstate 680 and California Highway 4; and two refineries at the north end of the valley. The air monitoring site is located in a shopping center, near the intersection of two major streets, and surrounded by residential neighborhoods. There is no industry in the immediate vicinity. NMOC/CH₄ and NO₂ are measured because of local mobile emissions. Ozone is measured at the site because hot, inland summertime temperatures combined with precursor pollutants stagnating in the surrounding valley often produces high ozone levels. Carbon Monoxide is measured because the site is near two major roads, Treat Blvd and Oak Grove Road. SO₂ is measured because the site is 6 miles downwind from the Tesoro and the Shell Refineries, both potential major sources of SO₂. PM₁₀ and PM_{2.5} are measured because light winds combined with surface-based inversions during the winter months can cause elevated particulate levels in the valley.

Four exceedances of the national 8-hour ozone standard, and five exceedances of the California 24-hour PM₁₀ standard during the last 3 years were recorded at this site. The revised national 24-hour PM_{2.5} standard of 35 µg/m³ was exceeded on 17 days. No exceedances of any SO₂ standards were measured in the most recent 3 years.

Concord Site Information

Site Name	Concord - 2036
AQS ID	06-013-0002
GIS coordinates	37.9360° N, 122.0262° W
Location	One story commercial building
Address	2956-A Treat Blvd, Concord CA 94518
County	Contra Costa
Distance to road from gaseous probe	Treat Blvd: 179 meters Oak Grove Rd: 241 meters
Traffic count	Treat Blvd: 41,218 ADT (2005) Oak Grove Rd: 26,742 ADT (2005)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Concord Monitor Information

Pollutant	O3	CO	NO/NO2	SO2	CH4/NMOC
Monitoring Objective	Population oriented & Highest Conc.	Population oriented	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Urban	Neighborhood
Sampling method	TECO 49i	TECO 48A	TECO 42C	TECO 43C	TECO 55C
PM filter analysis method	N/A	N/A	N/A	N/A	N/A
Start date	04/08/80	02/21/80	NO2: 02/01/80 NO: 01/01/87	02/01/80	CH4:12/31/99 NMOC: 05/10/06
Operation schedule	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year	All year	All year
Probe height (AGL)	9.2 m	9.2 m	9.2 m	9.2 m	9.2 m
Probe height above roof	3.1 m	3.1 m	3.1 m	3.1 m	3.1 m
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof	None	None	None	None	None
Distance from tree (DL)	24 m	24 m	24 m	24 m	24 m
Distance to furnace or incinerator flue	None	None	None	None	None
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon	Teflon
Residence time	12 s	14 s	13 s	14 s	13 s
Will there be changes within the next 18 mos?	No	No	No	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	08/02/07	08/02/07	08/02/07	08/02/07	08/02/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A	N/A

Concord Monitor Information

Pollutant	PM10	FRM PM2.5
Monitoring Objective	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood
Sampling method	Andersen HiVol 1200	Andersen RAAS 300
PM filter analysis method	Weighed by Air District	Weighed by Air District
Start date	11/04/86	03/19/99
Operation schedule	1 in 6	Apr-Sep: 1 in 6 Oct-Mar: daily
Sampling season	All year	All year
Probe height (AGL)	5.8 m	5.9 m
Probe height above roof	1.5 m	2 m
Distance from obstructions on roof	None	None
Distance from obstructions not on roof	None	None
Distance from tree (DL)	15 m	11 m
Distance to furnace or incinerator flue	None	None
Distance between collocated monitors	N/A	3.4 m
Distance between PM10 and PM2.5 monitors	N/A	Primary: 4.3 m Col: 7.7 m
Unrestricted airflow	360°	360°
Probe material	N/A	N/A
Residence time	N/A	N/A
Will there be changes within the next 18 mos?	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	Yes
Frequency of flow rate verification for manual PM samplers	Weekly	Monthly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A
Frequency of one-point QC check (gaseous)	N/A	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	10/17/07 08/02/07	10/17/07 08/02/07

Fremont

Fremont was chosen for an air monitoring site because it is the second largest city in Alameda County, with a 2007 population estimate of 213,512, and because it is downwind of large sources of ozone and ozone precursors. Studies have shown that on high ozone days, ozone is transported southward along the East Bay Hills into Fremont, with concentrations that may exceed the ozone standards. Fremont also has potential for high levels of particulate in the winter due to local emissions. The monitoring site is centrally located in Fremont, in a residential and commercial area. Ozone and its precursors, NMOC/CH₄ and NO₂, are measured because the area is downwind of populated and industrial portions of the San Francisco Bay Area, which can be large sources of ozone precursor emissions. Carbon monoxide is measured because of the high volume of traffic in the city, which includes two major freeways. PM₁₀ and PM_{2.5} are collected because light winds combined with surface based-based inversions during the winter months can cause elevated particulate levels.

During the most recent 3 years, this site recorded four exceedances of the California 8-hour ozone standard, five exceedances of the California one-hour ozone standard, and three exceedances of the California 24-hour PM₁₀ standard. The revised national 24-hour PM_{2.5} standard of 35 µg/m³ was exceeded on four days in the last 3 years.

Fremont Site Information

Site Name	Fremont – 1014
AQS ID	06-001-1001
GIS coordinates	37.53584° N, 121.96185° W
Location	One story commercial building
Address	40733 Chapel Way, Fremont CA 94538
County	Alameda
Distance to road from gaseous probe	Fremont Boulevard: 120.0 meters Chapel Way: 31.0 meters
Traffic count	Fremont Boulevard: 30,800 ADT (2005) Chapel Way: 500 ADT (estimate)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Fremont Monitor Information

Pollutant	O3	CO	NO/NO2	CH4/NMOC
Monitoring Objective	Population oriented	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling method	TECO 49i	TECO 48A	TECO 42C	TECO 55C
PM filter analysis method	N/A	N/A	N/A	N/A
Start date	07/29/76	01/01/71	NO: 07/01/76 NO2: 04/12/74	CH4: 01/01/94 NMOC: 05/25/06
Operation schedule	Continuous	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year	All year
Probe height (AGL)	8.4 m	8.4 m	8.4 m	8.4 m
Probe height above roof	4.3 m	4.3 m	4.3 m	4.3 m
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof	None	None	None	None
Distance from tree (DL)	25.9 m	25.9 m	25.9 m	25.9 m
Distance to furnace or incinerator flue	3.7 m	3.7 m	3.7 m	3.7 m
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon
Residence time	15 s	15 s	15 s	15 s
Will there be changes within the next 18 mos?	No	No	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	12/18/07	12/18/07	12/18/07	12/18/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A

Fremont Monitor Information

Pollutant	PM10	FRM PM2.5
Monitoring Objective	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood
Sampling method	Andersen HiVol 1200	Andersen RAAS 300
PM filter analysis method	Weighed by Air District	Weighed by Air District
Start date	03/23/89	01/03/99
Operation schedule	1 in 6	Apr-Sep: 1 in 6 Oct-Mar: 1 in 3
Sampling season	All year	All year
Probe height (AGL)	6.2 m	6.2 m
Probe height above roof	2.2 m	2.2 m
Distance from obstructions on roof	None	None
Distance from obstructions not on roof	None	None
Distance from tree (DL)	28.8 m	26.8 m
Distance to furnace or incinerator flue	7.0 m	4.9 m
Distance between collocated monitors	N/A	N/A
Distance between PM10 and PM2.5 monitors	4.6 m	4.6 m
Unrestricted airflow	360°	360°
Probe material	N/A	N/A
Residence time	N/A	N/A
Will there be changes within the next 18 mos?	Yes	No
Is it suitable for comparison against the annual PM2.5?	N/A	Yes
Frequency of flow rate verification for manual PM samplers	Weekly	Monthly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A
Frequency of one-point QC check (gaseous)	N/A	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	12/12/07 09/10/07	12/12/07 09/10/07

Livermore

Livermore was chosen for an air monitoring site because it is the largest city in eastern Alameda County, with a 2007 population estimate of 83,604, and because measurements have shown this area often has the highest ozone levels in the Bay Area. Livermore is located within the Livermore Valley, an east-west oriented inland valley between the San Francisco Bay and the Central Valley. Air flow analyses on high ozone days have shown ozone precursors to move into this valley from the region surrounding the San Francisco Bay through the Hayward and Niles Canyon Gaps to the west, and from the San Ramon Valley to the north. The air monitoring site is situated west of the city center, in a residential neighborhood. The station is located in a small one-story shopping center, with a little-used parking lot in front of the station and a city park behind it. There are no industrial sources in the immediate vicinity. Ozone and its precursors, CH₄/NMOC and NO/NO₂, are measured because the area is downwind of large sources of ozone precursors. Although traffic levels near the station are low, carbon monoxide is measured because the city has significant traffic, and Interstate 580 is only 0.87 miles to the north of the site. PM₁₀ and PM_{2.5} are measured because light winds combined with surface based-based inversions within the valley during the winter months cause elevated particulate levels.

During the most recent 3 years, this site recorded seven exceedances of the national 8-hour ozone standard, and five exceedances of the California 24-hour PM₁₀ standard. The revised national 24-hour PM_{2.5} standard of 35 µg/m³ was exceeded on 17 days. No exceedances of any SO₂ standards were measured in the most recent 3 years.

Livermore Site Information

Site Name	Livermore – 1023
AQS ID	06-001-0007
GIS coordinates	37.6875° N, 121.7842° W
Location	One story commercial building
Address	793 Rincon Avenue, Livermore CA 94551
County	Alameda
Distance to road from gaseous probe	Rincon Ave: 64 meters Pine St: 97 meters Interstate 580: 1,400 meters
Traffic count	Rincon Ave: 2,400 ADT (2005) Pine St: 4,800 ADT (2005) Interstate 580: 183,000 ADT (2005)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Livermore Monitor Information

Pollutant	O3	CO	NO/NO2	CH4/NMOC
Monitoring Objective	Population oriented & Highest Conc.	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling method	TECO 49i	TECO 48A	TECO 42C	TECO 55C
PM filter analysis method	N/A	N/A	N/A	N/A
Start date	01/01/00	12/31/99	NO2:12/31/99 NO: 01/01/00	CH4: 12/31/99 NMOC: 04/20/05
Operation schedule	Continuous	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year	All year
Probe height (AGL)	6.1 m	6.1 m	6.1 m	6.1 m
Probe height above roof	3.3 m	3.3 m	3.3 m	3.3 m
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof	None	None	None	None
Distance from tree (DL)	51 m	51 m	51 m	51 m
Distance to furnace or incinerator flue	17.7 m	17.7 m	17.7 m	17.7 m
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon
Residence time	10 s	10 s	11 s	10 s
Will there be changes within the next 18 months?	No	No	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	09/13/07	09/13/07	09/13/07	09/13/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A

Livermore Monitor Information

Pollutant	PM10	FRM PM2.5	Continuous PM2.5 (BAM)
Monitoring Objective	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	Andersen HiVol 1200	Andersen RAAS 300	Met One BAM 1020
PM filter analysis method	Weighed by Air District	Weighed by Air District	N/A
Start date	12/08/99	12/02/99	01/01/04
Operation schedule	1 in 6	Apr-Sep: 1 in 6 Oct-Mar: daily	Continuous
Sampling season	All year	All year	All year
Probe height (AGL)	4.7 m	5.1 m	5.1 m
Probe height above roof	1.5 m	2 m	2 m
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof	None	None	None
Distance from tree (DL)	53 m	55 m	52 m
Distance to furnace or incinerator flue	15 m	15 m	18 m
Distance between collocated monitors	N/A	N/A	N/A
Distance between PM10 and PM2.5 monitors	PM ₁₀ to PM _{2.5} : 5 m PM ₁₀ to BAM: 6.25 m	PM _{2.5} to PM ₁₀ : 5 m PM _{2.5} to BAM: 5.9 m	BAM to PM ₁₀ : 6.25 m BAM to PM _{2.5} : 5.9 m
Unrestricted airflow	360°	360°	360°
Probe material	N/A	N/A	N/A
Residence time	N/A	N/A	N/A
Will there be changes within the next 18 mos?	No	Yes	No
Is it suitable for comparison against the annual PM2.5?	N/A	Yes	No – not reference or equivalent method
Frequency of flow rate verification for manual PM samplers	Weekly	Monthly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	Bi-Weekly
Frequency of one-point QC check (gaseous)	N/A	N/A	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	10/31/07 08/29/07	10/31/07 08/29/07	10/31/07 08/29/07

Napa

Napa was chosen for an air monitoring location because it is the largest city in Napa County with a 2007 population estimate of 77,106. The city is located in the Napa Valley where local agricultural burning and fireplace usage during the fall and winter can result in high particulate levels. In summer months, Napa can have elevated ozone levels when central Bay Area ozone precursors are transported into the valley. The air monitoring site is situated about a mile north of downtown Napa in a mixed residential and commercial neighborhood. There are no industrial sources in the immediate vicinity. Ozone, NO, and NO₂ are measured because south winds carry ozone and its precursors into Napa. Carbon Monoxide is measured because the Napa Valley is a major tourist attraction with resulting high traffic volumes through the city. PM₁₀ and continuous PM_{2.5} are measured because of agricultural and home wood burning.

During the most recent 3 years, this site recorded two exceedances of the state 8-hour ozone standard, one exceedance of the California 1-hour ozone standard, and one exceedance of the California 24-hour PM₁₀ standard. The continuous PM_{2.5} (BAM) monitor at Napa has recorded measurements above the national 24-hour PM_{2.5} standard on eight days since it began operating in January 2007. However, this monitor is not a recognized FRM or FEM method, and the data can not be used to determine violations of the national PM_{2.5} standards, or its attainment status. Only filter-based PM_{2.5} measurements may be used for comparison with the national PM_{2.5} standards.

Napa Site Information

Site Name	Napa – 4001
AQS ID	06-055-0003
GIS coordinates	38.3110° N, 122.2962° W
Location	One story commercial building
Address	2552 Jefferson St, Napa CA 94558
County	Napa
Distance to road from gaseous probe	Jefferson St: 15 meters
Traffic count	Jefferson St: 22,220 ADT (estimate)
Groundcover	Paved
Representative Area	Napa MSA

Napa Monitor Information

Pollutant	O3	CO	NO/NO2	PM ₁₀	Continuous PM _{2.5} (BAM)
Monitoring Objective	Population oriented	Population oriented	Population oriented	Population oriented	Population oriented
Spatial scale	Middle	Middle	Middle	Middle	Middle
Sampling method	TECO 49C	TECO 48A	TECO 42C	Andersen HiVol 1200	Met One BAM 1020
PM filter analysis method	N/A	N/A	N/A	Weighed by Air District	N/A
Start date	07/01/76	07/01/73	07/01/73	11/04/86	01/04/07
Operation schedule	Continuous	Continuous	Continuous	1 in 6	Continuous
Sampling season	All year	All year	All year	All year	All year
Probe height (AGL)	8.9 m	8.9 m	8.9 m	5.5 m	5.5 m
Probe height above roof	5.2 m	5.2 m	5.2 m	1.5 m	1.5 m
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof	None	None	None	None	None
Distance from tree (DL)	25 m	25 m	25 m	21 m	26 m
Distance to furnace or incinerator flue	5.7 m	5.7 m	5.7 m	Primary: 5 m Col: 3.4 m	8.8 m
Distance between collocated monitors	N/A	N/A	N/A	3.4 m	N/A
Distance between PM ₁₀ and PM _{2.5} monitors					BAM to PM ₁₀ : 6.1 m
Unrestricted airflow	360°	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	N/A	N/A
Residence time	8 s	7 s	8 s	N/A	N/A
Will there be changes within the next 18 mos?	No	No	No	Yes	No
Is it suitable for comparison against the annual PM _{2.5} ?	N/A	N/A	N/A	N/A	No – not reference or equivalent method
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	Weekly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	Bi-Weekly
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	N/A	N/A
Last Annual Performance Evaluation (gaseous)	08/21/07	08/21/07	08/21/07	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	11/02/07 09/11/07	10/23/07 08/21/07

Oakland

The Air District opened a new air monitoring station in Oakland in November 2007, replacing a partial station in downtown Oakland that had been operating for 25 years. The partial station measured ozone and carbon monoxide, the only pollutants for which the Bay Area was not meeting the national standards during most of that period. After EPA created a standard for PM_{2.5}, and the Air District expanded its toxics monitoring program, it was decided that a larger station was needed to allow additional monitoring.

Oakland is an important area for air pollution monitoring because it is the largest city in Alameda County, with a 2007 population estimate of 420,183. It has large emission sources within its boundaries, such as a major maritime port, an international airport, extensive areas of industry, and a number of major freeways. These sources have the potential to emit significant amounts of particulates and organic toxic compounds.

The new monitoring site is located 7 miles southeast of downtown Oakland, on a commercial strip in a residential area. Ozone and NO₂ are measured to monitor population exposure to these pollutants. Carbon monoxide is measured because of the high volume of traffic in the city, which includes several major freeways. PM_{2.5} is measured due to the large emission sources in the area; see the section under Oakland PM_{2.5} SPM for further details.

No exceedances of either the national ozone or the national carbon monoxide standards were measured during the 25 years of operation at the old Oakland station. At the new station, no exceedances of any air quality standards were measured during the two months of operation in 2007.

Oakland Site Information

Site Name	Oakland - 1025
AQS ID	06-001-0009
GIS coordinates	37.743060 ° N, 122.169910° W
Location	Two-story commercial building
Address	9925 International Blvd, Oakland CA 94603
County	Alameda
Distance to road from PM _{2.5} inlet	International Blvd: 18 meters 99 th St: 23 meters 98 th St: 43 meters
Traffic count	International Blvd: 26,912 ADT (2006) 99 th St: 100 ADT (Estimate) 98 th St: 31,340 ADT (2002)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Oakland Monitor Information*

Pollutant	O3	CO	NO/NO2
Monitoring Objective	Population oriented	Population oriented	Population oriented
Spatial scale	Middle	Middle	Middle
Sampling method	TECO 49i	TECO 42C	API 300E
Analysis method	N/A	N/A	N/A
Start date	11/01/07	11/01/07	11/01/07
Operation schedule	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year
Probe height (AGL)	10 m	10 m	10 m
Probe height above roof	4 m	4 m	4 m
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof	None	None	None
Distance from tree (DL)	21 m	21 m	21 m
Distance to furnace or incinerator flue	8.2 m	8.2 m	8.2 m
Distance between collocated monitors	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°
Probe material	Teflon	Teflon	Teflon
Residence time	11 s	12 s	13 s
Will there be changes within the next 18 mos?	No	No	No
Is it suitable for comparison against the annual PM _{2.5} ?	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	11/16/07	11/16/07	11/16/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A

* The Oakland PM_{2.5} monitor is detailed later in the SPM section of this report.

Pittsburg

Pittsburg was chosen for an air monitoring site because the city and adjacent area have a large population, and it is downwind of three refineries and three power plants. It was originally selected in 1968 to be representative of air quality levels in the northeast corner of the Air District. More recently, air monitoring sites in Bethel Island and Fairfield fill that role. The city of Pittsburg has a 2005 population estimate of 63,652 and the adjacent city of Antioch to the east has a population of 100,361. Pittsburg-Antioch is located in the Carquinez Strait Region, the only sea-level gap between San Francisco Bay and the Central Valley of California. During the warmer months of the year, the sea breeze often moves through this gap, carrying ozone and its precursors into the Central Valley. A reverse flow can also occur carrying ozone in the summer and particulates in the winter from the Central Valley into the San Francisco Bay Area. The air monitoring site is located northwest of the city center, about a mile south of the Suisun Bay, in what was formerly an industrial area. Currently, the area has become residential on the south side of Tenth Street, while remaining industrial on the north side. Ozone and NO₂ are measured because the area is downwind of both the central San Francisco Bay Area and the Central Valley, which are large sources of ozone precursors. Additionally, local power plants can be large sources of NO, which is converted to NO₂ in the atmosphere. Carbon monoxide is measured because the Pittsburg-Antioch area has a high traffic volume and the site is near Highway 4. SO₂ is measured because there can be significant sources of SO₂ from two refineries and ships upwind of Pittsburg. PM₁₀ is measured because the power plants were a significant source of particulates when they burned oil. Now that the power plants are fuel by natural gas, particulate emissions are low, but the PM₁₀ monitor continues to record exceedances of the California 24-hour PM₁₀ standard.

This site recorded one exceedance of the national 8-hour ozone standard, and seven exceedances of the California PM₁₀ 24-hour standard in the most recent 3 years. No exceedances of any SO₂ standards were measured in the most recent 3 years.

Pittsburg Site Information

Site Name	Pittsburg – 2010
AQS ID	06-013-3001
GIS coordinates	38.0293° N, 121.8969° W
Location	One story building
Address	583 West Tenth Street, Pittsburg CA 94565
County	Contra Costa
Distance to road from gaseous probe	West Tenth Street: 10.6 meters Highway 4: 1,075 meters
Traffic count	West Tenth Street: 9,600 ADT (2006) Highway 4: 135,717 ADT (2006) Railroad Avenue: 5,790 ADT (2006)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Pittsburg Monitor Information

Pollutant	O3	CO	NO/NO2	SO2	PM10
Monitoring Objective	Population oriented	Population oriented	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Urban	Middle
Sampling method	TECO 49C	TECO 48A	TECO 42C	TECO 43C	Andersen GUV-16HBLA
PM filter analysis method	N/A	N/A	N/A	N/A	Weighed by Air District
Start date	06/01/76	12/03/68	12/03/68	01/18/72	08/04/99
Operation schedule	Continuous	Continuous	Continuous	Continuous	1 in 6
Sampling season	All year	All year	All year	All year	All year
Probe height (AGL)	8.8 m	8.8 m	8.8 m	8.8 m	5.6 m
Probe height above roof	4.9 m	4.9 m	4.9 m	4.9 m	1.6 m
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof	None	None	None	None	None
Distance from tree (DL)	>50 m	>50 m	>50 m	>50 m	>50 m
Distance to furnace or incinerator flue	5 m	5 m	5 m	5 m	5.7 m
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon	N/A
Residence time	7 s	7 s	8 s	7 s	N/A
Will there be changes within the next 18 mos?	Yes	Yes	Yes	Yes	Yes
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A	Weekly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily	N/A
Last Annual Performance Evaluation (gaseous)	08/15/07	08/15/07	08/15/07	08/15/07	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A	10/30/07 08/14/07

Redwood City

Redwood City was chosen for an air monitoring site because it is one of the largest cities in San Mateo County, with a 2007 population estimate of 77,269. Being approximately midway between San Francisco and San Jose it is well positioned to monitor the progression of ozone precursors and ozone moving southward down the peninsula as they are channeled by the Santa Cruz Mountains. Generally, Redwood City characterizes an area between South San Francisco and Palo Alto, which has a low air pollution potential due to the frequent presence of the sea breeze. Although the sea breeze typically keeps pollution levels low, occasionally light wind conditions cause high levels of ozone precursors, ozone, or particulate to occur due to the large number of sources in the area. The air monitoring site is located in a commercial/industrial zone bordered by US Highway 101 on one side and residential areas on the other three sides. Ozone and NO₂ are collected because the area is a large source of ozone and ozone precursor emissions. Carbon monoxide is monitored because of the high volume of traffic in the area, and US Highway 101 is only 0.3 miles north of the site. PM₁₀ and PM_{2.5} are collected because light winds combined with surface-based inversions during the winter months can cause particulate levels to become elevated.

During the most recent 3 years, this site recorded no exceedances of any ozone standards, and five exceedances of the California 24-hour PM₁₀ standard. The revised national 24-hour PM_{2.5} standard of 35 µg/m³ was exceeded on two days.

Redwood City Site Information

Site Name	Redwood City - 6004
AQS ID	06-081-1001
GIS coordinates	37.4830° N 122.2036° W
Location	One-story commercial building
Address	897 Barron Ave, Redwood City CA 94063
County	San Mateo
Distance to road from gaseous probe	Barron Ave: 13 meters Bay Road: 24 meters US Highway 101: 462 meters
Traffic count	Barron Ave: 1,000 ADT (2007) Bay Road: 12,500 ADT (2007) US Highway 101: 199,000 ADT (2005)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Redwood City Monitor Information

Pollutant	O3	CO	NO/NO2
Monitoring Objective	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	TECO 49i	TECO 48A	TECO 42C
PM filter analysis method	N/A	N/A	N/A
Start date	01/01//76	01/01/67	01/01/67
Operation schedule	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year
Probe height (AGL)	6.8 m	6.8 m	6.8 m
Probe height above roof	3.6 m	3.6 m	3.6 m
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof	None	None	None
Distance from tree (DL)	46 m	46 m	46 m
Distance to furnace or incinerator flue	12.7 m	12.7 m	12.7 m
Distance between collocated monitors	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°
Probe material	Teflon	Teflon	Teflon
Residence time	11 s	12 s	13 s
Will there be changes within the next 18 mos?	No	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	11/07/07	11/07/07	11/07/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A

Redwood City Monitor Information

Pollutant	PM10	FRM PM2.5	Continuous PM2.5 (BAM)
Monitoring Objective	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	Andersen HiVol 1200	Andersen RAAS 300	Met One Model 1020
PM filter analysis method	Weighed by Air District	Weighed by Air District	N/A
Start date	01/01/86	01/01/99	01/01/04
Operation schedule	1 in 6	Apr-Sep: 1in 6 Oct-Mar: 1in 3	Continuous
Sampling season	All year	all year	All year
Probe height (AGL)	5.4 m	5.2 m	5.5 m
Probe height above roof	1.9 m	2.1 m	2.2 m
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof	None	None	None
Distance from tree (DL)	44 m	45 m	47 m
Distance to furnace or incinerator flue	13.6 m	11.0 m	13.6 m
Distance between collocated monitors	4.7 m	N/A	N/A
Distance between PM ₁₀ and PM _{2.5} samplers	PM ₁₀ to PM _{2.5} : 3.0 m PM ₁₀ to BAM: 2.9 m	PM _{2.5} to PM ₁₀ : 3.0 m PM _{2.5} to BAM: 2.8 m	BAM to PM ₁₀ : 2.9 m BAM to PM _{2.5} : 2.8 m
Unrestricted airflow	360°	360°	360°
Probe material	N/A	N/A	N/A
Residence time	N/A	N/A	N/A
Will there be changes within the next 18 mos?	Yes	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	Yes	No – not reference or equivalent method
Frequency of flow rate verification for manual PM samplers	Weekly	Monthly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	Bi-Weekly
Frequency of one-point QC check (gaseous)	N/A	N/A	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	12/4/07 8/01/07	11/6/07 8/01/07	11/6/07 8/01/07

San Francisco

San Francisco was chosen for an air monitoring site because it is the second largest city in the San Francisco Bay Area, with a 2007 population estimate of 824,525. Although the sea breeze typically keeps pollution levels low, light wind conditions can result in high levels of ozone precursors or particulates due to the large number of sources in the city. The east side of the city was selected for a monitoring site because it is more densely populated (including a large number of daytime visitors and commuters), has some industry, and as a transportation hub, has generally higher traffic volume. The site is located near the fringe of the central business district, in an area of light industry that is close to a residential area and two major freeways. Ozone is measured because of the very high population density of the city. NO/NO₂ and NMOC/CH₄ are measured because this is a source area for these ozone precursors. Carbon monoxide is measured because of the high traffic volume. Originally, SO₂ was measured because of potential emissions from nearby power plants, sewage treatment plants, and nearby ships. However, there are no longer any major sources of SO₂ within San Francisco. PM₁₀ and PM_{2.5} are measured because stagnant days combined with surface based-based inversions can cause elevated particulate levels, and because of the contribution of heavy vehicular traffic to PM levels.

During the most recent 3 years, this site recorded five exceedances of the California 24-hour PM₁₀ standard. The revised national 24-hour PM_{2.5} standard of 35 µg/m³ was exceeded on 14 days. No exceedances of any ozone or SO₂ standards were measured in the most recent 3 years.

San Francisco Site Information

Site Name	San Francisco – 5011
AQS ID	06-075-0005
GIS coordinates	37.7660° N, 122.3992° W
Location	One-story commercial building
Address	10 Arkansas St, Suite N, San Francisco CA 94107
County	San Francisco
Distance to road from gaseous probe	16 th St: 32.0 meters Arkansas St: 17.0 meters Interstate 280: 300 meters U.S. Highway 101: 504 meters
Traffic count	16 th St: 12,278 ADT (2006) Arkansas St: 500 ADT (estimate) Interstate 280: 97,000 ADT (2006) U.S. Highway 101: 233,000 (2006)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

San Francisco Monitor Information

Pollutant	O3	CO	NO/NO2	SO2	CH4/NMOC
Monitoring Objective	Population oriented	Population oriented	Population oriented	Source impact	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling method	TECO 49C	TECO 48	TECO 42i	TECO 43C	TECO 55C
PM Filter Analysis method	N/A	N/A	N/A	N/A	N/A
Start date	01/01/86	01/01/86	NO: 01/01/87 NO2: 01/01/86	01/01/86	CH4: 01/01/94 NMOC: 07/12/06
Operation schedule	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year	All year	All year
Probe height (AGL)	10.5 m	10.5 m	10.5 m	10.5 m	10.5 m
Probe height above roof	4.4 m	4.4 m	4.4 m	4.4 m	4.4 m
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof	None	None	None	None	None
Distance from tree (DL)	15.3 m	15.3 m	15.3 m	15.3 m	15.3 m
Distance to furnace or incinerator flue	5.2 m	5.2 m	5.2 m	5.2 m	5.2 m
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon	Teflon
Residence time	11 s	11 s	12 s	12 s	11 s
Will there be changes within the next 18 mos?	No	No	No	Yes	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	11/28/07	11/28/07	11/28/07	11/28/07	11/28/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A	N/A

San Francisco Monitor Information

Pollutant	PM10	FRM PM2.5	Continuous PM2.5 (BAM)
Monitoring Objective	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	Andersen HiVol 1200	Andersen RAAS 300	Met One BAM 1020
PM Filter Analysis method	Weighed by Air District	Weighed by Air District	N/A
Start date	11/16/86	01/01/1999	01/01/2004
Operation schedule	1 in 6	Apr-Sep: 1 in 6 Oct-Mar: daily	Continuous
Sampling season	All year	All year	All year
Probe height (AGL)	7.6 m	8.0 m	8.3 m
Probe height above roof	1.5 m	2.0 m	2.2 m
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof	None	None	None
Distance from tree (DL)	17.5 m	16.5 m	13.8 m
Distance to furnace or incinerator flue	7.0 m	7.3 m	3.4 m
Distance between collocated monitors	N/A	N/A	N/A
Distance between PM10 and PM2.5 samplers	PM ₁₀ to PM _{2.5} : 2.3 m PM ₁₀ to BAM: 3.8 m	PM _{2.5} to PM ₁₀ : 2.3 m PM _{2.5} to BAM: 3.9 m	BAM to PM ₁₀ : 3.8 m BAM to PM _{2.5} : 3.9 m
Unrestricted airflow	360°	360°	360°
Probe material	N/A	N/A	N/A
Residence time	N/A	N/A	N/A
Will there be changes within the next 18 mos?	Yes	Yes	No
Is it suitable for comparison against the annual PM2.5?	N/A	Yes	No – not reference or equivalent method
Frequency of flow rate verification for manual PM samplers	Weekly	Monthly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	Bi-Weekly
Frequency of one-point QC check (gaseous)	N/A	N/A	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	11/27/07 09/05/07	12/20/07 09/05/07	11/27/07 09/05/07

San Jose

San Jose was chosen for an air monitoring site because it is the largest city in Santa Clara County as well as being the largest city in the Bay Area, with a 2007 population of 989,496. Ozone precursors emitted within the central San Francisco Bay Area are often carried into the San Jose area by the prevailing northwesterly winds. The northern half of the Santa Clara Valley is densely populated and the associated activities of the residents also add significant pollutant emissions into the air. The air monitoring site is located in the center of northern Santa Clara Valley, in a commercial and residential part of downtown San Jose. This area is completely encircled by major freeways, and has a large airport just to the northwest. The air quality in this location is representative of a large part of the valley due to the diurnal up valley and down valley air flow, which mixes the pollutants throughout the valley. NO/NO₂, NMOC, CH₄ and ozone are monitored because of the large amount of ozone precursor emissions near the area as well as from upwind areas. Carbon monoxide is measured because of the significant traffic volume in the area. PM₁₀ and PM_{2.5} are monitored because light winds combined with surface based inversions within the valley during winter months can cause elevated particulate levels.

In the most recent 3 years, this site recorded one exceedance of the national 8-hour ozone standard, 32 exceedances of the revised national 24-hour PM_{2.5} standard of 35 µg/m³, and seven exceedances of the California 24-hour PM₁₀ standard.

San Jose Site Information

Site Name	San Jose – 7032
AQS ID	06-085-0005
GIS coordinates	37.3484° N, 121.8949° W
Location	Top floor of two-story commercial building
Address	158 E. Jackson St, San Jose CA 95112
County	Santa Clara
Distance to road from gaseous probe	Jackson St: 16 meters 4 th St: 40 meters
Traffic count	Jackson St: 3,991 ADT (2007) 4 th St: 6,400 ADT (2005)
Groundcover	Paved
Representative Area	San Jose-Sunnyvale-Santa Clara MSA

San Jose Monitor Information

Pollutant	O3	CO	NO/NO2	CH4/NMOC
Monitoring Objective	Population oriented	Population oriented & Highest concentration	Population oriented & Highest concentration	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling method	TECO 49i	TECO 48i TLE	TECO 42C	TECO 55C
PM filter analysis method	N/A	N/A	N/A	N/A
Start date	11/01/02	11/01/02	11/01/02	CH4: 11/22/02 NMOC: 07/06/06
Operation schedule	Continuous	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year	All year
Probe height (AGL)	11.9 m	11.9 m	11.9 m	11.9 m
Probe height above roof	4.4 m	4.4 m	4.4 m	4.4 m
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof	None	None	None	None
Distance from tree (DL)	14.3	14.3	14.3	14.3
Distance to furnace or incinerator flue	4.6	4.6	4.6	4.6
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon
Residence time	12 s	13 s	12 s	11 s
Will there be changes within the next 18 mos?	No	No	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	10/24/07	10/24/07	10/24/07	10/24/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A

San Jose Monitor Information

Pollutant	PM10	FRM PM2.5	Continuous PM2.5 (BAM)
Monitoring Objective	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	Andersen HiVol 1200	Andersen RAAS 300	Met One Model 1020
PM filter analysis method	Weighed by Air District	Weighed by Air District	N/A
Start date	10/05/02	10/05/02	01/01/04
Operation schedule	1 in 6	Apr-Sep: 1 in 6 Oct-Mar: daily	Continuous
Sampling season	All year	All year	All year
Probe height	8.3 m	8.7 m	9.8m
Probe height above roof	1.5 m	2.0 m	2.0 m
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof	None	None	None
Distance from tree (DL)	11.0 m	14.9 m	13.1 m
Distance to furnace or incinerator flue	1.5	3.0	3.4
Distance between collocated monitors	N/A	N/A	N/A
Distance between PM ₁₀ and PM _{2.5} samplers	PM ₁₀ to PM _{2.5} : 3.1 m PM ₁₀ to BAM: 3.5 m	PM _{2.5} to PM ₁₀ : 3.1 m PM _{2.5} to BAM: 3.9 m	BAM to PM ₁₀ : 3.5 m BAM to PM _{2.5} : 3.9 m
Unrestricted airflow	360°	360°	360°
Probe material	N/A	N/A	N/A
Residence time	N/A	N/A	N/A
Will there be changes within the next 18 mos?	Yes	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	Yes	No – not reference or equivalent method
Frequency of flow rate verification for manual PM samplers	Weekly	Monthly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	Bi-Weekly
Frequency of one-point QC check (gaseous)	N/A	N/A	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	10/23/07 08/08/07	10/23/07 08/08/07	11/13/07 08/08/07

San Pablo

San Pablo was chosen for an air monitoring site because the area is the most populated portion of western Contra Costa County. San Pablo, with a 2007 population estimate of 31,190, is almost completely surrounded by the city of Richmond, with a 2007 population estimate of 103,577. This area has heavy industry, high traffic volume, including two major freeways, and it is very close to the Chevron Refinery. Ozone and NO₂ are measured because the area is downwind of the central San Francisco Bay Area, which is a large source of ozone precursor emissions. Carbon monoxide is measured because the high traffic volume in the area. SO₂ is measured because the site is 1.2 miles downwind of the Chevron refinery, which can be a significant source of SO₂ emissions. PM₁₀ is measured because stagnant days in the fall and winter can result in elevated particulate levels.

This site recorded four exceedances of the California 24-hour PM₁₀ standard in the most recent 3 years. No exceedances of any ozone or SO₂ standards were measured in the most recent 3 years.

San Pablo Site Information

Site Name	San Pablo - 2035
AQS ID	06-013-1004
GIS coordinates	37.96041° N, 122.35685° W
Location	One story commercial building
Address	1865-D Rumrill Blvd, San Pablo CA 94806
County	Contra Costa
Distance to road from gaseous probe	Rumrill Blvd: 15.8 meters
Traffic count	Rumrill Blvd: 25,106 ADT (2006)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

San Pablo Monitor Information

Pollutant	O3	CO	NO/NO2	SO2	PM10
Monitoring Objective	Population oriented	Population oriented	Population oriented	Source Impact	Population oriented
Spatial scale	Middle	Middle	Middle	Neighborhood	Middle
Sampling method	TECO 49i	API 300E	TECO 42i	TECO 43i	Tisch Env. HiVol TE-6000
PM filter analysis method	N/A	N/A	N/A	N/A	Weighed by Air District
Start date	09/13/02	09/13/02	09/13/02	09/13/02	09/23/02
Operation schedule	Continuous	Continuous	Continuous	Continuous	1 in 6
Sampling season	All year	All year	All year	All year	All year
Probe height (AGL)	9.0 m	9.0 m	9.0 m	9.0 m	6.4 m
Probe height above roof	5.6 m	5.6 m	5.6 m	5.6 m	2.2 m
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof	None	None	None	None	None
Distance from tree (DL)	>50 m	>50 m	>50 m	>50 m	>50 m
Distance to furnace or incinerator flue	None	None	None	None	None
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon	N/A
Residence time	12 s	12 s	12 s	12 s	N/A
Will there be changes within the next 18 mos?	No	No	No	No	Yes
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A	Weekly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily	N/A
Last Annual Performance Evaluation (gaseous)	09/11/07	09/11/07	09/11/07	09/11/07	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A	11/19/07 09/10/07

San Rafael

San Rafael was chosen for an air monitoring site because it is the largest city in Marin County with a 2007 population estimate of 58,235. The city's climate and air quality is representative of that found throughout the populous northeastern side of the county. Afternoon sea breezes typically keep pollution levels low. However, when the sea breeze is absent, local sources can cause elevated pollution levels. The monitoring site is located in commercial building about a block east of the US Highway 101 and near major highway access ramps. It is one half mile east of the downtown San Rafael business district. There is no industrial activity in the immediate area. Ozone and NO₂ are measured to monitor general population exposure to these pollutants. Carbon Monoxide and PM₁₀ are measured because the site is close to a major transportation corridor. PM₁₀ is also collected because light winds combined with wood burning and surface based-inversions during the winter months can cause elevated particulate concentrations.

During the most recent 3 years, this site recorded two exceedances of the California 24-hour PM₁₀ standard.

San Rafael Site Information

Site Name	San Rafael - 3005
AQS ID	06-041-0001
GIS coordinates	37.9724° N, 122.5200° W
Location	Second floor of two-story commercial building
Address	534 4th Street, San Rafael CA 94901
County	Marin
Distance to road from gaseous probe	4 th St: 18 meters Irwin St: 48 meters US Highway 101: 112 meters
Traffic count	4 th St: 8,000 ADT (estimate) Irwin St: 18,360 ADT (2003) US Highway 101: 131,000 ADT (2006)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

San Rafael Monitor Information

Pollutant	O3	CO	NO/NO2	PM10
Monitoring Objective	Population oriented	Population oriented	Population oriented	Population oriented
Spatial scale	Middle	Middle	Middle	Middle
Sampling method	TECO 49i	TECO 48A	TECO 42C	Andersen HiVol 1200
Analysis method	N/A	N/A	N/A	Weighed by Air District
Start date	07/01/76	10/01/67	NO: 01/01/68 NO2:10/01/67	11/04/86
Operation schedule	Continuous	Continuous	Continuous	1 in 6
Sampling season	All year	All year	All year	All year
Probe height (AGL)	11.9 m	11.9 m	11.9 m	7.0 m
Probe height above roof	5.2 m	5.2 m	5.2 m	1.9 m
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof	21 m	21 m	21 m	20 m
Distance from tree (DL)	15 m	15 m	15 m	14 m
Distance to furnace or incinerator flue	3.5 m	3.5 m	3.5 m	2.3 m
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	N/A
Residence time	10 s	11 s	12 s	N/A
Will there be changes within the next 18 mos?	No	No	No	Yes
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	Weekly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	N/A
Last Annual Performance Evaluation (gaseous)	12/04/07	12/04/07	12/04/07	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	12/03/07 09/06/07

Santa Rosa

Santa Rosa was chosen for an air monitoring site because it is the largest city in Sonoma County with a 2007 population estimate of 151,973. The city's climate is strongly influenced by the Pacific Ocean and the marine air flow typically keeps pollution levels low. However, during light winds or overnight temperature inversions, local sources can cause elevated pollution levels. The monitoring site is located just east of the downtown urban core and 0.5 miles east of Highway 101. There are no industrial sources in the immediate area. Ozone and NO₂ are measured to monitor general population exposure to these pollutants. Carbon monoxide is measured because of the local urban traffic volume and proximity to the Highway 101 transportation artery. PM₁₀ and FRM PM_{2.5} are measured because light winds combined with wood burning, vehicular traffic, and surface based-based inversions during the winter months can cause elevated particulate concentrations.

During the most recent 3 years, this site recorded two exceedances of the California 24-hour PM₁₀ standard, and one exceedance of the revised national 24-hour PM_{2.5} standard of 35 µg/m³.

Santa Rosa Site Information

Site Name	Santa Rosa - 9004
AQS ID	06-097-0003
GIS coordinates	38.4435° N, 122.7102° W
Location	Second floor of two-story commercial building
Address	837 5 th St, Santa Rosa CA 95404
County	Sonoma
Distance to road from gaseous probe	5 th St: 24 meters E St: 79 meters College Ave: 210 meters Brookwood Ave: 228 meters US Highway 101: 918 meters
Traffic count	5 th St: 2,608 ADT (2004-2006) E St: 7,804 ADT (2004-2006) College Ave: 19,062 ADT (2004-2006) Brookwood Ave: 21,297 ADT (2004-2006) US Highway 101: 120,000 ADT (2006)
Groundcover	Paved
Representative Area	Santa Rosa-Petaluma MSA

Santa Rosa Monitor Information

Pollutant	O3	CO	NO/NO2	PM10	FRM PM2.5
Monitoring Objective	Population oriented	Population oriented	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling method	TECO 49i	TECO 48A	TECO 42C	Andersen HiVol 1200	Andersen RAAS 300
Analysis method	N/A	N/A	N/A	Weighed by Air District	Weighed by Air District
Start date	04/17/81	04/17/81	NO: 01/01/87 NO2:01/17/81	07/13/94	01/24/99
Operation schedule	Continuous	Continuous	Continuous	1 in 6	Apr-Sep: 1in 6 Oct-Mar: 1in 3
Sampling season	All year	All year	All year	All year	All year
Probe height (AGL)	10.7 m	10.7 m	10.7 m	8.1 m	7.5 m
Probe height above roof	5.2 m	5.2 m	5.2 m	2.6 m	2.0 m
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof	21 m	21 m	21 m	21 m	21 m
Distance from tree (DL)	13.7 m	13.7 m	13.7 m	14.6 m	12.5 m
Distance to furnace or incinerator flue	4.7 m	4.7 m	4.7 m	5.7 m	4.9 m
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Distance between PM10 and PM2.5 monitors	N/A	N/A	N/A	3.0 m	3.0 m
Unrestricted airflow	360°	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	N/A	N/A
Residence time	11 s	12 s	13 s	N/A	N/A
Will there be changes within the next 18 mos?	No	No	No	Yes	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A	Yes
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	Weekly	Monthly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	N/A	N/A
Last Annual Performance Evaluation (gaseous)	09/05/07	09/05/07	09/05/07	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	12/03/07 09/04/07	09/05/07 03/06/07

Vallejo

Vallejo was chosen for an air monitoring site because it is the largest city in Solano County with a 2007 population estimate of 121,097. Vallejo's climate is influenced by marine air flow through the Carquinez Strait that typically keeps pollution levels low. However, Vallejo has the potential to be impacted by pollution from three directions: daytime southwest winds bringing ozone and ozone precursors from the San Francisco Bay Area, nighttime north winds bringing particulates from the Napa Valley, and east winds bringing ozone and particulates from the Central Valley.

The monitoring site is located in a mixed commercial and residential neighborhood one mile east of downtown and 0.5 miles west of Interstate 80. Ozone, NO, and NO₂ are measured because south winds can transport ozone and its precursors into Napa from the heavily populated central Bay Area. Ozone also can be transported from the Central Valley through the Carquinez Strait during easterly winds. PM₁₀ and PM_{2.5} are measured because high concentrations typically occur during the winter when nighttime valley drainage winds, wood burning, and shallow temperature inversions trap pollutants from local sources and Napa Valley to the north. East winds can also transport particulate into Vallejo through the Carquinez Strait from the Central Valley. Carbon monoxide is measured because Interstate 80 passes through the middle of the urban area east of the monitoring site. SO₂ is measured at Vallejo to monitor general population exposure and because refineries located to the south and east can be significant sources of SO₂.

During the most recent 3 years, this site recorded three exceedances of the California 24-hour PM₁₀ standard. The revised national 24-hour PM_{2.5} standard of 35 µg/m³ was exceeded on 9 days. No other exceedances of California or national ambient air quality standards were measured.

Vallejo Site Information

Site Name	Vallejo - 8004
AQS ID	06-095-0004
GIS coordinates	38.1025° N, 122.2380° W
Location	One story commercial building
Address	304 Tuolumne St, Vallejo CA 94590
County	Solano
Dist. to road from probe	Tuolumne St: 20 meters Capitol St: 31 meters Solano Ave: 36 meters Interstate 80: 700 meters
Traffic count	Tuolumne St: 9,350 ADT (estimate) Capitol St: 500 ADT (estimate) Solano Ave: 7,880 ADT (estimate) Interstate 80: 142,000 ADT (2006)
Groundcover	Paved
Representative Area	Vallejo-Fairfield MSA

Vallejo Monitor Information

Pollutant	O3	CO	NO/NO2	SO2
Monitoring Objective	Population oriented	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling method	TECO 49i	TECO 48A	TECO 42C	TECO 43C
PM Filter Analysis method	N/A	N/A	N/A	N/A
Start date	07/01/76	07/01/76	07/01/76	07/01/76
Operation schedule	Continuous	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year	All year
Probe height (AGL)	9.6 m	9.6 m	9.6 m	9.6 m
Probe height above roof	4.3 m	4.3 m	4.3 m	4.3 m
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof	None	None	None	None
Distance from tree (DL)	32 m	32 m	32 m	32 m
Distance to furnace or incinerator flue	3.7 m	3.7 m	3.7 m	3.7 m
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon
Residence time	11 s	12 s	13 s	13 s
Will there be changes within the next 18 mos?	No	No	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	10/18/07	10/18/07	10/18/07	10/18/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A

Vallejo Monitor Information

Pollutant	PM10	FRM PM2.5	Continuous PM2.5 (BAM)
Monitoring Objective	Population oriented	Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	Andersen GUV-16HBLA	Andersen RAAS 300	Met One BAM 1020
PM Filter Analysis method	Weighed by Air District	Weighed by Air District	N/A
Start date	11/04/94	03/10/99	01/01/04
Operation schedule	1 in 6	Apr-Sep: 1 in 6 Oct-Mar: 1 in 3	Continuous
Sampling season	All year	All year	All year
Probe height AGL	5.7 m	6.1 m	5.9 m
Probe height above roof	1.7 m	2.1 m	1.9 m
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof	None	None	None
Distance from tree (DL)	35 m	32 m	33 m
Distance to furnace or incinerator flue	4.7 m	5.0 m	3.0 m
Distance between collocated monitors	N/A	N/A	N/A
Distance between PM10 and PM2.5 samplers	PM ₁₀ to PM _{2.5} : 4.7 m PM ₁₀ to BAM: 3.5 m	PM _{2.5} to PM ₁₀ : 4.7 m PM _{2.5} to BAM: 3.0 m	BAM to PM ₁₀ : 3.5 m BAM to PM _{2.5} : 3.0 m
Unrestricted airflow	360°	360°	360°
Probe material	N/A	N/A	N/A
Residence time	N/A	N/A	N/A
Will there be changes within the next 18 mos?	Yes	Yes	No
Is it suitable for comparison against the annual PM2.5?	N/A	Yes	No – not reference or equivalent method
Frequency of flow rate verification for manual PM samplers	Weekly	Monthly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	Bi-weekly
Frequency of one-point QC check (gaseous)	N/A	N/A	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	10/17/07 08/07/07	10/17/07 08/07/07	10/17/07 08/07/07

Detailed Site Information – Partial Stations

Crockett

Crockett was chosen for SO₂ source impact monitoring because it is downwind of the ConocoPhillips Refinery. Prevailing winds in the area are from the west, which transport SO₂ emissions from the refinery over the town of Crockett, a predominately residential community with a 2000 estimated population of 3,194. The monitoring site is located on the west side of Crockett 0.9 miles northeast of the refinery boundary. The only other industry in the area is C&H Sugar in Crockett, which is usually downwind from the monitoring site; but this facility is not a significant source of SO₂ emissions.

No exceedances of any SO₂ standards were measured in the most recent 3 years.

EPA siting criteria specifies that the probe be located at least 10 meters from the drip line of all trees. The closest tree drip line to the probe is 1.2 meters away, but since the tree is located outside of the required 180 degree arc of unrestricted airflow for source impact monitoring as determined by the predominant wind direction and the direction of the refinery, the close proximity of the tree is irrelevant. The closest tree drip line within the 180 degree arc is 4.9 meters from the probe, which does not meet siting criteria. The Air District is currently negotiating with the local homeowner's association for the removal of this tree.

Crockett Site Information

Site Name	Crockett - 2017
AQS ID	06-013-1001
GIS Coordinates	38.0549° N, 122.23328° W
Location	Pump house
Address	End of Kendall Avenue, Crockett CA 94525
County	Contra Costa
Distance to road from gaseous probe	San Pablo Ave: 68.4 meters
Traffic count	San Pablo Ave: 8,763 ADT (2007)
Groundcover	Vegetative
Representative Area	San Francisco-Oakland-Fremont MSA

Crockett Monitor Information

Pollutant	SO2
Monitor Objective	Source impact
Spatial scale	Neighborhood
Sampling method	TECO 43C
PM filter analysis method	N/A
Start date	01/01/79
Operation schedule	Continuous
Sampling season	All year
Probe height (AGL)	6.2 m
Probe height above roof	2.4 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	4.9 m*
Distance to furnace or incinerator flue (m)	N/A
Distance between collocated monitors	N/A
Unrestricted airflow	270°
Probe material	Teflon
Residence time	10 s
Will there be changes within the next 18 mos?	No
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A
Frequency of one-point QC check (gaseous)	Weekly
Last Annual Performance Evaluation (gaseous)	11/29/07
Last two semi-annual flow rate audits for PM monitors	N/A

* Closest tree within the 180 degree arc of unrestricted air flow for source impact monitoring.

Fairfield

Fairfield was chosen for monitoring ozone transport between the San Francisco Bay Area and the Sacramento Valley. Fairfield lies in the northeast part of the District in the Carquinez Strait Region, the only sea level gap between the Bay Area and the Central Valley. Prevailing westerly winds carry ozone and its precursors into the Sacramento Valley from the Bay Area. Occasionally, easterly winds transport elevated ozone levels into this region from the Sacramento Valley. Over the past decade the Fairfield/Suisun City urban area has grown considerably, now having a combined 2007 population of 134,946, the largest urban area in Solano County. As a result, Fairfield is also a population oriented ozone monitoring site. The monitoring site is located in a rural area normally upwind (southwest) of the urban area.

During the most recent 3 years, this site recorded one exceedance of the national 8-hour ozone standard.

Fairfield Site Information

Site Name	Fairfield - 8007
AQS ID	06-095-0005
GIS coordinates	38.2271° N, 122.0756° W
Location	Small trailer in open field
Address	1010 Chadborne Rd, Fairfield CA 94534
County	Solano
Distance to road from gaseous probe	Cordelia Rd: 194 meters
Traffic count	Cordelia Rd: 3,751 ADT (2007 estimate)
Groundcover	Vegetative
Representative Area	Vallejo-Fairfield MSA

Fairfield Monitor Information

Pollutant	O3
Monitoring Objective	Regional transport & Population oriented
Spatial scale	Regional
Sampling method	TECO 49C
Analysis method	N/A
Start date	05/29/02
Operation schedule	Continuous
Sampling season	Apr 1-Nov 30
Probe height (AGL)	3.7 m
Probe height above roof	1.0 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	>50 m
Distance to furnace or incinerator flue	None
Unrestricted airflow	360°
Probe material	Teflon
Residence time	5 s
Will there be changes within the next 18 mos?	No
Is it suitable for comparison against the annual PM _{2.5} ?	N/A
Frequency of flow rate verification for manual PM samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	Daily
Last Annual Performance Evaluation (gaseous)	10/04/07
Last two semi-annual flow rate audits for PM monitors	N/A

Gilroy

Gilroy was originally chosen as an air monitoring site to measure ozone transport out of the southern part of the Air District. Prevailing northwesterly afternoon winds carry ozone and ozone precursors from the San Jose area southward down the Santa Clara Valley. When temperatures are hot, and solar radiation is strong, these precursors react and can form high concentrations of ozone many miles downwind of the urban core. The area near Gilroy is steatite at the right distance downwind to experience these high concentrations.

The monitoring site is located in a residential area of Gilroy on the west side of the Santa Clara Valley. Air quality studies have shown that the west side of the valley has higher ozone levels than the east side. This is due to elevated terrain on the west side that shelters the western part of Gilroy from the strong winds in the afternoon produced by the Monterey Bay sea breeze. Residents have preferred the sheltered area and built most of the town on the west side of the Valley.

In 2007, because of interest by local residents, a PM_{2.5} monitor was added at the site. The monitor is intended to be a permanent addition. When the Gilroy site began in 1980, the population was small, and the monitoring objective was regional transport of ozone. As Gilroy's population has grown considerably, now having a 2007 population of 51,173, the site is now considered to be a population oriented monitoring site for both ozone and PM_{2.5} as well.

In the most recent 3 years, this site recorded two exceedances of the national 8-hour ozone standard. PM_{2.5} monitoring began on March 1, 2007 and during the 10 months of measurement, this site has not recorded any exceedances of the national 24-hour PM_{2.5} standard.

Gilroy Site Information

Site Name	Gilroy - 7015
AQS ID	06-085-0002
GIS coordinates	36.9993° N 121.5749° W
Location	Air monitoring shelter next to water pump station
Address	9 th and Princevalle St, Gilroy CA 95020
County	Santa Clara
Distance to road from gaseous probe	Princevalle St: 14.3 meters 9 th St: 13.7 meters
Traffic count	Princevalle St: 5,300 ADT (2007) 9 th St: 1,600 ADT (estimate)
Groundcover	paved
Representative Area	San Jose-Sunnyvale-Santa Clara MSA

Gilroy Monitor Information

Pollutant	O3	FRM PM2.5
Monitoring Objective	Regional Transport, Highest Concentration, Population oriented	Population oriented
Spatial scale	Neighborhood	Neighborhood
Sampling method	TECO 49C	Andersen RAAS 300
PM filter analysis method	N/A	Weighed by Air District
Start date	07/01/80	03/01/07
Operation schedule	Continuous	Apr-Sep: 1 in 3 Oct-Mar: 1 in 3
Sampling season	Apr 1 – Nov 30	all year
Probe height (AGL)	4.7 m	2.7 m
Probe height above roof	2.6 m	N/A
Distance from obstructions on roof	None	N/A
Distance from obstructions not on roof	None	1.9 m
Distance from tree (DL)	26 m	26 m
Distance to furnace or incinerator flue	14.3 m	14.3 m
Distance between collocated monitors	N/A	N/A
Unrestricted airflow	360°	360°
Probe material	Teflon	N/A
Residence time	13 s	N/A
Will there be changes within the next 18 mos?	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	Yes
Frequency of flow rate verification for manual PM samplers	N/A	Monthly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	N/A
Last Annual Performance Evaluation (gaseous)	10/10/07	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	11/19/07 6/15/07

Hayward

The Hayward air monitoring site was chosen to measure ozone at a higher elevation. Located on the east side of Hayward at an elevation of 951 feet, it is the highest air monitoring site in the Air District. Studies had shown that on high ozone days, a cloud of ozone and precursors moves southward from Oakland on the west side of the East Bay Hills. Because ozone monitoring sites were already in place in the low-lying areas of the East Bay, i.e. in San Leandro and Fremont, this site was chosen between them, but at a higher elevation. Thus, the site gives an indication of ozone levels aloft. The Hayward site is also important because it provides air quality forecasting information concerning residual ozone from the previous day. Although there is a large water tank onsite in the upwind direction, the instrument probe is high enough to avoid the tank being an obstacle. The scale of this site is considered to be regional because it is representative of ozone levels aloft.

This site recorded one exceedance of the California 8-hour ozone standard and two exceedances of the California 1-hour ozone standard in the most recent 3 years.

Hayward Site Information

Site Name	Hayward - 1015
AQS ID	06-001-2001
GIS coordinates	37.6544° N, 122.0317° W
Location	Pump house near water tank
Address	3466 La Mesa Drive, Hayward CA 94542
County	Alameda
Distance to road from gaseous probe	Hayward Drive: 26.2 meters La Mesa Dr: 38 meters
Traffic count	Hayward Drive: 4,400 ADT (2007) La Mesa Dr: 500 ADT (estimate)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Hayward Monitor Information

Pollutant	O3
Monitoring Objective	Population oriented
Spatial scale	Regional
Sampling method	TECO 49C
PM filter analysis method	N/A
Start date	05/31/77
Operation schedule	Continuous
Sampling season	April 1- November 30
Probe height (AGL)	6.7 m
Probe height above roof	3.2 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	11.4 m
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow	360°
Probe material	Teflon
Residence time	13 s
Will there be changes within the next 18 months?	No
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for manual PM samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	Daily
Last Annual Performance Evaluation (gaseous)	10/09/07
Last two semi-annual flow rate audits for PM monitors	N/A

Los Gatos

Los Gatos was chosen for an ozone monitoring site because prevailing northerly winds transport ozone and ozone precursors from the densely populated area around the South Bay down the west side of the Santa Clara Valley. Mobile sampling studies as well as long-term monitoring in the Saratoga and Los Gatos areas showed Los Gatos to have the highest ozone levels in the area. These high ozone levels are in part due to Los Gatos being situated at the base of the Santa Cruz Mountains, which act as a barrier to the movement of polluted air. The monitoring site is located near the downtown area at a fire station surrounded by residential neighborhoods. The city of Los Gatos has an estimated 2007 population of 30,296.

In the most recent 3 years, this site recorded five exceedances of the national 8-hour ozone standard.

Los Gatos Site Information

Site Name	Los Gatos - 7006
AQS ID	06-085-1001
GIS coordinates	37.2267° N 121.9796° W
Location	Top of fire station's hose drying tower
Address	306 University Ave, Los Gatos CA 95030
County	Santa Clara
Distance to road From gaseous probe	University Ave: 37.2 meters Bentley Ave: 26.5 meters State Route 17: 291 meters
Traffic count	University Ave: 13,600 ADT (2005) Bentley Ave: 400 ADT (estimate) State Route 17: 67,000 ADT (2006)
Groundcover	Paved
Representative Area	San Jose- Sunnyvale- Redwood City MSA

Los Gatos Monitor Information

Pollutant	O3
Monitoring Objective	Population oriented & Highest concentration
Spatial scale	Neighborhood
Sampling method	TECO 49i
PM filter analysis method	N/A
Start date	04/01/72
Operation schedule	Continuous
Sampling season	All year
Probe height (AGL)	11.0 m
Probe height above roof	3.2 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	15.5 m
Distance to furnace or incinerator flue	4.3 m
Distance between collocated monitors	N/A
Unrestricted airflow	360°
Probe material	Teflon
Residence time	11 s
Will there be changes within the next 18 mos?	No
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for manual PM samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	Daily
Last Annual Performance Evaluation (gaseous)	10/11/07
Last two semi-annual flow rate audits for PM monitors	N/A

Martinez

Martinez was chosen for SO₂ source impact monitoring because the Shell Oil Refinery is on the eastern border of this city. A second refinery, the Tosoro Refinery, lies 2.5 miles to the east. Although the prevailing winds in the area are from the west, east winds can transport SO₂ emissions from the refineries over populated areas within the city. The monitoring site is located near downtown Martinez and 0.5 miles west of the Shell Refinery property. The town of Martinez has a 2007 population of 36,144. Except for the refineries, there are no industrial activities or SO₂ sources in the area. During the most recent 3 years, no exceedances of any SO₂ standards were recorded.

EPA siting criteria specifies that the probe be located at least 10 meters from the drip line of all trees. In early 2007 it was noted that the distance from the Martinez probe to the nearest tree drip line was slightly less than 10 meters, so the probe was moved further away from the tree and now meets siting requirements.

Martinez Site Information

Site Name	Martinez - 2014
AQS ID	06-013-2001
GIS coordinates	38.0128° N, 122.1346° W
Location	Small sampling shelter next to fire station
Address	521 Jones St, Martinez CA 94553
County	Contra Costa
Distance to road from gaseous probe	Jones St: 22 meters Alhambra Ave: 19 meters
Traffic count	Jones St: 300 ADT (estimate) Alhambra Ave: 8,200 ADT (estimate)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Martinez Monitor Information

Pollutant	SO2
Monitoring Objective	Source Impact
Spatial scale	Neighborhood
Sampling method	TECO 43C
Analysis method	N/A
Start date	07/02/73
Operation schedule	Continuous
Sampling season	All year
Probe height (AGL)	7.2 m
Probe height above roof	2.7 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	11.2 m
Distance to furnace or incinerator flue	None
Unrestricted airflow	360°
Probe material	Teflon
Residence time	13 s
Will there be changes within the next 18 mos?	No
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for manual PM samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	Weekly
Last Annual Performance Evaluation (gaseous)	08/30/07
Last two semi-annual flow rate audits for PM monitors	N/A

Point Reyes

Point Reyes was chosen for an air monitoring site because it is representative of background PM_{2.5} levels. Air pollution levels at this site are usually low due to the rural nature of the area, and because the upwind air flow is generally from the Pacific Ocean 2.5 miles to the west. The site is located within the Point Reyes National Seashore. Within the park are scattered dairy farms. There are no industrial sources within 20 miles of the park. Between the ocean and the air monitoring site the land is relatively flat with low vegetation. The air monitoring site is located behind a ranger residence at the north end of the park. The closest towns are Marshall, 3 miles to the northeast with a population of a few hundred; and Inverness 3.5 miles to the southeast with a 2005 population estimate of 1,500.

This site has had only one recorded exceedance of the national 24-hour PM_{2.5} standard in the most recent 3 years. However, a continuous, beta attenuation monitor (BAM) is used to measure PM_{2.5}, and only filter-based PM_{2.5} measurements may be used for comparison with the national PM_{2.5} standards. BAM PM_{2.5} data can not be used to determine violations of the national PM_{2.5} standards, or its attainment status. This site is operated by the California Air Resources Board.

Pt Reyes Site Information

Site Name	Pt Reyes
AQS ID	06-041-0003
Monitor Classification	SLAMS
GIS coordinates	38.1269° N, 122.9138° W
Location	At ground level behind a ranger residence
Address	170 Pierce Point Rd, Pt Reyes CA 94956
County	Marin
Distance to road from probe	Pierce Point Rd: 75 meters
Traffic count	Pierce Point Rd: 223 ADT (2006)
Groundcover	Grass
Representative Area	San Francisco-Oakland-Fremont MSA

Point Reyes Monitor Information

Pollutant	Continuous PM2.5 (BAM)
Monitoring Objective	General Background
Spatial scale	Regional
Sampling method	Met One BAM 1020
PM filter analysis method	N/A
Start date	12/01/00
Operation schedule	Continuous
Sampling season	All year
Probe height (AGL)	3.0 m
Probe height above ground	3.0 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	35 m
Distance to furnace or incinerator flue	>50 m
Distance between collocated monitors	N/A
Unrestricted airflow	360°
Probe material	N/A
Residence time	N/A
Will there be changes within the next 18 mos?	No
Is it suitable for comparison against the annual PM2.5?	No – not reference or equivalent method
Frequency of flow rate verification for manual PM samplers	N/A
Frequency of flow rate verification for automated PM analyzers	2 times per month
Frequency of one-point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM monitors	09/17/07 09/14/06

Point Richmond

Point Richmond was chosen for H₂S source impact monitoring because the Chevron Refinery is on the northern boundary of this part of Richmond. Although prevailing winds in the area are from the south-southwest, occasional northerly winds will transport H₂S emissions from the refinery over the town. The town of Point Richmond, which is actually a neighborhood of the city of Richmond, has an estimated population of 1,300 as of the 2000 Census. The monitoring site is located in downtown Point Richmond, 0.2 miles south of the Chevron Refinery boundary. The site recorded 1 exceedance of the California 1-hour H₂S standard in the most recent 3 years.

Point Richmond Site Information

Site Name	Point Richmond - 2013
AQS ID	06-013-0005
GIS coordinates	37.9262° N, 122.3856° W
Location	Air monitoring shelter next to fire station
Address	140 W. Richmond Ave, Richmond CA 94801
County	Contra Costa
Distance to road From gaseous probe	W. Richmond Ave: 10.2 meters Interstate 580: 266 meters
Traffic count	W. Richmond Ave: 1,340 ADT (2003) Interstate 580: 78,000 ADT (2005)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont (MSA)

Point Richmond Monitor Information

Pollutant	H2S
Monitoring Objective	Source impact
Spatial scale	Neighborhood
Sampling method	TECO 45C
PM filter analysis method	N/A
Start date	01/01/99
Operation schedule	Continuous
Sampling season	All year
Probe height (AGL)	3.4 m
Probe height above roof	0.9 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	17 m
Distance to furnace or incinerator flue	7.3 m
Distance between collocated monitors	N/A
Unrestricted airflow	360°
Probe material	Teflon
Residence time	5 s
Will there be changes within the next 18 mos?	No
Is it suitable for comparison against the annual PM _{2.5} ?	N/A
Frequency of flow rate verification for manual PM samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	Weekly
Last Annual Performance Evaluation (gaseous)	10/02/07
Last two semi-annual flow rate audits for PM monitors	N/A

Richmond 7th

Richmond 7th was chosen for H₂S and SO₂ source impact monitoring because it is near the eastern boundary of the Chevron Refinery. Normally, monitoring is done downwind of the prevailing wind direction. However, the prevailing winds are from the south, and carry emissions over San Pablo Bay. Since it is impractical to monitor over San Pablo Bay, a monitoring site was chosen downwind of the secondary wind direction, on the east side of the refinery. The site is located 0.5 miles east of the refinery boundary, where the monitor is expected to measure the highest concentrations in an area where the public has access.

This site recorded one exceedance of the California 1-hour H₂S standard, and no exceedances of any SO₂ standard in the most recent 3 years.

Richmond 7th Site Information

Site Name	Richmond 7 th - 2019
AQS ID	06-013-0006
GIS coordinates	37.94812° N, 122.36479° W
Location	Fire station
Address	1065 7th Street, Richmond CA 94801
County	Contra Costa
Distance to road from gaseous probe	7 th St: 21.5 meters Hensley St: 29.9 meters Richmond Parkway: 200 meters
Traffic count	7 th St: 3,125 ADT (2007) Hensley St: 2,125 ADT (2007) Richmond Parkway: 35,650 (2007)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Richmond 7th Monitor Information

Pollutant	SO2	H2S
Monitoring Objective	Source impact	Source impact
Spatial scale	Neighborhood	Neighborhood
Sampling method	TECO 43C	TECO 45C
PM filter analysis method	N/A	N/A
Start date	07/01/80	10/01/99
Operation schedule	Continuous	Continuous
Sampling season	All year	All year
Probe height (AGL)	8.4 m	8.4 m
Probe height above roof	2.8 m	2.8 m
Distance from obstructions on roof	None	None
Distance from obstructions not on roof	None	None
Distance from tree (DL)	10 m	10 m
Distance to furnace or incinerator flue	12.2 m	12.2 m
Distance between collocated monitors	N/A	N/A
Unrestricted airflow	360°	360°
Probe material	Teflon	Teflon
Residence time	9 s	10 s
Will there be changes within the next 18 mos?	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A
Frequency of one-point QC check (gaseous)	Weekly	Weekly
Last Annual Performance Evaluation (gaseous)	10/04/07	10/04/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A

Rodeo

Rodeo was chosen for H₂S source impact monitoring because the ConocoPhillips Refinery is on the eastern boundary of the town of Rodeo. Although the prevailing winds in the area are from the southwest, northeast winds can transport H₂S emissions from the refinery over the populated area of the town. The rapidly growing community of Rodeo had a population of 8,717 in 2000. The monitoring site is located in a residential area 0.6 miles southwest of the ConocoPhillips Refinery boundary.

No exceedances of the California H₂S standard were measured in the most recent 3 years.

Rodeo Site Information

Site Name	Rodeo - 2034
AQS ID	06-013-0007
GIS coordinates	38.03431° N, 122.27039° W
Location	Single story storage area at fire station
Address	326 Third Street, Rodeo CA 94572
County	Contra Costa
Distance to road from gaseous probe	Third St: 13.3 meters Parker St: 249.0 meters
Traffic count	Third St: 500 ADT (estimate) Parker St: 7,316 ADT (2007)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont (MSA)

Rodeo Monitor Information

Pollutant	H2S
Monitoring Objective	Source impact
Spatial scale	Neighborhood
Sampling method	TECO 45C
PM filter analysis method	N/A
Start date	04/01/02
Operation schedule	Continuous
Sampling season	All year
Probe height (AGL)	6.7 m
Probe height above roof	2.0 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	>50 m
Distance to furnace or incinerator flue	10.9 m
Distance between collocated monitors	N/A
Unrestricted airflow	360°
Probe material	Teflon
Residence time	17 s
Will there be changes within the next 18 mos?	No
Is it suitable for comparison against the annual PM _{2.5} ?	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	Weekly
Last Annual Performance Evaluation (gaseous)	08/30/07
Last two semi-annual flow rate audits for PM monitors	N/A

San Jose Tully

San Jose Tully was chosen to monitor PM₁₀ to satisfy an EPA requirement to have more than one PM₁₀ monitoring site in the San Jose MSA. The site was chosen to be outside of the downtown area, in a neighborhood where particulate levels were expected to be representative of a high concentration area. San Jose Tully is 3.8 miles southeast of the Air District's downtown site, in an area with high traffic volumes, surrounded by light industrial and residential areas and next to the Santa Clara County Fairgrounds. In the most recent 3 years this site recorded 20 exceedances of the California 24-hour PM₁₀ standard.

The Air District closed the PM₁₀ monitor at San Jose Tully on December 31st 2007 because the site no longer meets EPA siting criteria for PM₁₀ due to development near the site. Also, the current dirt groundcover at the site does not meet EPA groundcover requirements. No exceedances of the national PM₁₀ standard have been recorded since 1990. Since PM₁₀ was the only monitor at the site, the site was closed as well. The nearby downtown San Jose air monitoring station continues to sample for PM₁₀.

San Jose Tully Site Information

Site Name	San Jose Tully- 7019
AQS ID	06-085-2003
GIS coordinates	37.3061° N 121.8489° W
Location	One-story garage
Address	528 Tully Road, San Jose CA 95111
County	Santa Clara
Distance to road from closest PM sampler	Tully Road: 56 meters Senter Road: 176 meters
Traffic count	Tully Road: 31,000 ADT (2005) Senter Road: 35,000 ADT (2005)
Groundcover	Dirt
Representative Area	San Jose-Sunnyvale-Santa Clara MSA

San Jose Tully Monitor Information

Pollutant	PM10
Monitoring Objective	Population oriented, Highest concentration
Spatial scale	Neighborhood
Sampling method	Andersen GUV-16HBLA
PM filter analysis method	Weighed by Air District
Start date	01/05/90
Operation schedule	1 in 6
Sampling season	All year
Probe height (AGL)	6.1 m
Probe height above roof	1.5 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	13.2 m
Distance to furnace or incinerator flue	15.8 m
Distance between collocated monitors	N/A
Distance between PM ₁₀ and PM _{2.5} samplers	N/A
Unrestricted airflow	360°
Probe material	N/A
Residence time	N/A
Will there be changes within the next 18mos	Yes
Is it suitable for comparison against the annual PM _{2.5} ?	N/A
Frequency of flow rate verification for manual PM samplers	Weekly
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM monitors	11/19/07 09/07/07

San Leandro

San Leandro was chosen for an ozone air monitoring site because it is centered in the densely populated western part of Alameda County, and because it is downwind of a large source of ozone and ozone precursors from the central Bay Area. Studies have shown that ozone can be transported southward along the East Bay Hills to San Leandro, at concentrations that may exceed ozone standards. San Leandro has an estimated 2007 population of 81,851. The site is located in southeast San Leandro, close to the base of the East Bay Hills on the grounds of the Fairmont Hospital surrounded by a residential area. There are no significant industrial emissions in the immediate area, although the site is 0.28 miles from Interstate 580.

This site recorded one exceedance of the California 1-hour ozone standard in the most recent 3 years. The Air District plans to shut down the ozone monitor at San Leandro in 2008 because the new Oakland station, which opened in 2007, is close enough to San Leandro (3 miles apart) to characterize the area.

San Leandro Site Information

Site Name	San Leandro - 1022
AQS ID	06-001-0006
GIS coordinates	37.7102° N, 122.1169° W
Location	Trailer
Address	15400 Foothill Boulevard, San Leandro CA 94578
County	Alameda
Distance to road from gaseous probe	Foothill Blvd: 402 meters Fairmont Dr: 353 meters Interstate 580: 453 meters
Traffic count	Foothill Blvd: 4,720 ADT (2004) Fairmont Dr: 9,170 ADT (2006) Interstate 580: 151,000 ADT (2006)
Groundcover	Gravel
Representative Area	San Francisco-Oakland-Fremont MSA

San Leandro Monitor Information

Pollutant	O3
Monitoring Objective	Population oriented
Spatial scale	Neighborhood
Sampling method	TECO 49C
PM filter analysis method	N/A
Start date	08/01/90
Operation schedule	Continuous
Sampling season	April 1- November 30
Probe height (AGL)	4.8 m
Probe height above roof	1.9 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	13.2 m
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow	360°
Probe material	Teflon
Residence time	13 s
Will there be changes within the next 18 mos?	Yes
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for manual PM samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	Daily
Last Annual Performance Evaluation (gaseous)	10/09/07
Last two semi-annual flow rate audits for PM monitors	N/A

San Martin

San Martin was chosen for an ozone air monitoring site because earlier field measurements showed this area to have the highest ozone concentrations in the Santa Clara Valley. Prevailing winds transport ozone and ozone precursors down the valley from the densely populated San Jose area as well as the surrounding San Francisco Bay. San Martin is located in an agricultural area at the south end of the Santa Clara Valley approximately 24 miles southeast of downtown San Jose. The town has a small population of 4,230 (2000 Census) and no industrial sources. The air monitoring site is located at the South County Airport, in the center of the valley and about 0.3 miles west of US Highway 101.

In the most recent 3 years, this site recorded five exceedances of the national 8-hour ozone standard.

San Martin Site Information

Site Name	San Martin - 7022
AQS ID	06-085-2006
GIS coordinates	37.0792° N 121.5999° W
Location	Air monitoring shelter next to maintenance shed
Address	13030 Murphy Ave, San Martin CA 95046
County	Santa Clara
Distance to road from gaseous probe	Murphy Ave: 57.0 meters US Highway 101: 455 meters
Traffic count	Murphy Ave: 500 ADT (estimate) US Highway 101: 112,000 ADT (2006)
Groundcover	Vegetative
Representative Area	San Jose- Sunnyvale- Santa Clara MSA

San Martin Monitor Information

Pollutant	O3
Monitoring Objective	Highest concentration
Spatial scale	Neighborhood
Sampling method	TECO 49C
PM filter analysis method	N/A
Start date	04/30/94
Operation schedule	Continuous
Sampling season	Apr 1 – Nov 30
Probe height (AGL)	4.8 m
Probe height above roof	2.8 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	23 m
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow	360°
Probe material	Teflon
Residence time	14 s
Will there be changes within the next 18 mos?	No
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for manual PM samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	Daily
Last Annual Performance Evaluation (gaseous)	10/10/07
Last two semi-annual flow rate audits for PM monitors	N/A

Sunnyvale

Sunnyvale was chosen for an ozone monitoring site because it is located within the densely populated South Bay Area and is midway between monitoring sites at Redwood City and downtown San Jose. Sunnyvale has an estimated 2007 population of 137,558. Ozone measurements were made in the past at nearby Mountain View to determine if ozone was moving down the west side of the Santa Clara Valley, similar to what had been observed on the east side of the Santa Clara Valley. The Mountain View site had to be closed due to demolition of the structure containing the site, and it was desirable to continue measuring ozone in the area because ozone exceedances had been recorded at Mountain View. A suitable monitoring site was found close by in Sunnyvale, which was expected to record similar ozone levels. The site, which opened in 2001, is located south of downtown Sunnyvale in a residential area. Sunnyvale does not have any major industrial sources.

During the most recent 3 years, this site recorded two exceedances of the California 8-hour ozone standard and four exceedances of the California 1-hour standard. The Air District plans to shut down the ozone monitor at Sunnyvale in 2008 because studies have shown that ozone levels at Sunnyvale are well correlated with ozone levels at the San Jose station and are therefore the site is not required.

Sunnyvale Site Information

Site Name	Sunnyvale - 7030
AQS ID	06-085-2007
GIS coordinates	37.3555° N 122.0509° W
Location	Shelter alongside fire station wall
Address	910 Ticonderoga Drive, Sunnyvale CA 94087
County	Santa Clara
Distance to road from gaseous probe	Mary Ave: 20.7 meters Ticonderoga Drive: 28.3 meters
Traffic count	Mary Ave: 13,000 ADT (2001) Ticonderoga Drive: 1000 ADT (2008)
Groundcover	Paved
Representative Area	San Jose-Sunnyvale-Redwood City MSA

Sunnyvale Monitor Information

Pollutant	O3
Monitoring Objective	Population oriented
Spatial scale	Neighborhood
Sampling method	TECO 49C
PM filter analysis method	N/A
Start date	04/01/01
Operation schedule	Continuous
Sampling season	Apr 1 – Nov 30
Probe height (AGL)	5.7 m
Probe height above fire station roof	1.2 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	11.3 m
Distance to furnace or incinerator flue	5.3 m
Distance between collocated monitors	N/A
Unrestricted airflow	360°
Probe material	Teflon
Residence time	11 s
Will there be changes within the next 18 mos?	Yes
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for manual PM samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	Daily
Last Annual Performance Evaluation (gaseous)	10/11/07
Last two semi-annual flow rate audits for PM monitors	N/A

Detailed Site Information – Non-SLAMS Monitors

Benicia

The Air District is conducting a short-term ambient air monitoring study to determine the impact to local residents from the Valero Refinery in eastern Benicia. The City of Benicia is located along the north side of the Carquinez Strait with a 2007 population of 29,978 where predominant westerly winds carry refinery pollutants away from populated areas. However, residents of newer housing constructed in areas west of the refinery are concerned about possible exposure to refinery emissions during periods of easterly wind.

The Air District has placed a mobile air monitoring station on vacant land adjacent to the Valero Refinery. The trailer is located 0.6 miles west of the main refinery facilities, and 0.1 miles northeast of the nearest residential area. The only other significant pollution source in the area is Interstate 780, located 0.3 miles southwest. The site became operational in April 2007, and is expected to operate for one year. The objective of this study is source-oriented monitoring for primary pollutants emitted by the refinery, specifically particulates (both PM_{2.5} and PM₁₀), toxic organic compounds, heavy metals, sulfur dioxide, and nitrogen oxides. Carbon monoxide (and particulate) monitoring are of interest because of significant vehicular traffic on Interstate 780. Because Benicia does not have a permanent air monitoring station, the Air District is also monitoring population exposure to ozone.

One exceedance of the California 8-hour ozone standard was recorded in 2007. No other pollutant standards were exceeded. Hourly gaseous concentrations are available real-time on the Air District web site. Pollutant summaries for all pollutants from this study will be made available to local community groups and the City of Benicia after the one year monitoring period is completed.

Benicia Site Information

Site Name	Benicia - 8008
AQS ID	06-095-0006
GIS coordinates	38.0656° N, 122.1507° W
Location	E Second Street and Tennys Dr.
Address	E Second Street and Tennys Dr., Benicia CA 94510
County	Solano
Distance to road from gaseous probe	E Second Street: 435 meters Tennys Dr: 155 meters Interstate 780: 508 meters
Traffic count	E Second Street: 7900 ADT (2005) Tennys Dr: 300 ADT (2008) State Route 780 at 2 nd Street: 60,000 (2006)
Groundcover	Vegetative (year round)
Representative Area	Vallejo-Fairfield MSA

Benicia Monitor Information

Pollutant	O3	CO	NO/NO2	SO2
Monitoring Objective	Population Oriented & Source Impact	Population Oriented & Source Impact	Population Oriented & Source Impact	Population Oriented & Source Impact
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling method	TECO 49C	TECO 48A	TECO 42C	TECO 43C
PM filter analysis method	N/A	N/A	N/A	N/A
Start date	04/01/07	04/01/07	04/01/07	04/01/07
Operation schedule	Continuous	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year	All year
Probe height (AGL)	5.4 m	5.4 m	5.4 m	5.4 m
Probe height above roof	2.5 m	2.5 m	2.5 m	2.5 m
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof	None	None	None	None
Distance from tree (DL)	>50 m	>50 m	>50 m	>50 m
Distance to furnace or incinerator flue	3.0 m	3.0 m	3.0 m	3.0 m
Distance between collocated monitors	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon
Residence time	11 s	12 s	12 s	14 s
Will there be changes within the next 18 mos?	Yes	Yes	Yes	Yes
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	09/17/07	09/17/07	09/17/07	09/17/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A

Benicia Monitor Information

Pollutant	PM10	Continuous PM2.5 (BAM)
Monitoring Objective	Population Oriented & Source Impact	Population Oriented & Source Impact
Spatial scale	Neighborhood	Neighborhood
Sampling method	Tisch Env. HiVol TE-6000	Met One BAM 1020
PM Filter Analysis method	Weighed by Air District	N/A
Start date	04/06/07	04/01/07
Operation schedule	1 in 6	Continuous
Sampling season	All year	All year
Probe height AGL	5.7 m	5.9 m
Probe height above roof	1.7 m	1.9 m
Distance from obstructions on roof	None	None
Distance from obstructions not on roof	None	None
Distance from tree (DL)	>50 m	>50 m
Distance to furnace or incinerator flue	4.7 m	3.0 m
Distance between collocated monitors	N/A	N/A
Distance between PM10 and PM2.5 samplers	PM ₁₀ to BAM: 2 m	BAM to PM ₁₀ : 2 m
Unrestricted airflow	360°	360°
Probe material	N/A	N/A
Residence time	N/A	N/A
Will there be changes within the next 18 mos?	Yes	Yes
Is it suitable for comparison against the annual PM2.5?	N/A	No – not reference or equivalent method
Frequency of flow rate verification for manual PM samplers	Weekly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	Bi-weekly
Frequency of one-point QC check (gaseous)	N/A	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	11/19/07 09/17/07	11/19/07 09/17/07

Berkeley

The Air District is conducting a short-term ambient air monitoring study in Berkeley to determine the impact to local residents from vehicular traffic in West Berkeley along Highway 80 and the industry along the highway. The City of Berkeley has a population of 106,697, but the area on the west side of Berkeley has the highest pollutant emission density within the city. Traffic levels are extremely high along Highway 80, with frequent traffic slowdowns during morning and evening commute times, which can produce significant amounts of hydrocarbons and particulates. Industrial sources along the highway, particularly Pacific Steel Casting (PSC), have made local residents concerned about possible exposure to particulates and toxic compounds. These sources, located on the west side of Berkeley, commonly transport pollutants downwind into Berkeley as a result of the prevailing westerly winds.

The mobile air monitoring station is sited in West Berkeley because this area is expected to have the highest impacts due to close proximity to the sources. The trailer is located 0.30 miles west of Highway 80 and 0.25 miles downwind from PSC in a residential neighborhood. The site became operational in December 2007, and is expected to operate for one year. The objective of this study is source-oriented monitoring for pollutants from vehicles and large industrial sources, specifically particulates (both PM_{2.5} and PM₁₀), toxic organic compounds, and heavy metals. Because Berkeley does not have a permanent air monitoring station, the Air District is also monitoring population exposure to criteria pollutants including ozone, nitrogen dioxide, sulfur dioxide, and carbon monoxide.

Hourly gaseous concentrations are available real-time on the Air District web site. Pollutant summaries for all measurements from this study will be made available to local community groups and the City of Berkeley.

Berkeley Site Information

Site Name	Berkeley - 1026
AQS ID	06-001-2004
GIS coordinates	38.8778° N, 122.3013° W
Location	Camelia Street and 6 th St.
Address	1398 6 th St., Berkeley CA 94710
County	Alameda
Distance to road from gaseous probe	Camelia Street: 27 meters 6 th Street: 36 meters Gilman Street: 164 meters Interstate 80: 482 meters
Traffic count	Camelia Street: 480 ADT est. (2008) 6 th Street: 1,440 ADT est. (2008) Gilman Street: 16,500 (1999) Interstate 80: 272,000 (2006)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Berkeley Monitor Information

Pollutant	O3	CO	NO/NO2	SO2	CH4/NMOC
Monitoring Objective	Population Oriented & Source Impact	Population Oriented & Source Impact	Population Oriented & Source Impact	Population Oriented & Source Impact	Population Oriented & Source Impact
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling method	TECO 49C	API 300E	TECO 42C	TECO 43C	TECO 55C
PM filter analysis method	N/A	N/A	N/A	N/A	N/A
Start date	12/13/07	12/13/07	12/13/07	12/13/07	CH4: 12/13/07 NMOC: 12/13/07
Operation schedule	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year	All year	All year
Probe height (AGL)	5.7 m	5.7 m	5.7 m	5.7 m	5.7 m
Probe height above roof	3.0 m	3.0 m	3.0 m	3.0 m	3.0 m
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof	None	None	None	None	None
Distance from tree (DL)	16 m	16 m	16 m	16 m	16 m
Distance to furnace or incinerator flue	17 m	17 m	17 m	17 m	17 m
Distance between collocated monitors	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°	360°	360°
Probe material	Teflon	Teflon	Teflon	Teflon	Teflon
Residence time	18 s	19 s	19 s	19 s	18 s
Will there be changes within the next 18 mos?	Yes	Yes	Yes	Yes	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	Daily	Daily
Last Annual Performance Evaluation (gaseous)	12/13/07	12/13/07	12/13/07	12/13/07	12/13/07
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A	N/A

Berkeley Monitor Information

Pollutant	PM10	Continuous PM2.5 (BAM)
Monitoring Objective	Population Oriented & Source Impact	Population Oriented & Source Impact
Spatial scale	Neighborhood	Neighborhood
Sampling method	Tisch Env. HiVol TE-6000	Met One BAM 1020
PM Filter Analysis method	Weighed by Air District	N/A
Start date	12/14/07	12/18/07
Operation schedule	1 in 6	Continuous
Sampling season	All year	All year
Probe height AGL	4.4 m	4.8 m
Probe height above roof	1.5 m	2.2 m
Distance from obstructions on roof	None	None
Distance from obstructions not on roof	None	None
Distance from tree (DL)	20 m	17 m
Distance to furnace or incinerator flue	17 m	17 m
Distance between collocated monitors	N/A	N/A
Distance between PM10 and PM2.5 samplers	PM ₁₀ to BAM: 2.7 m	BAM to PM ₁₀ : 2.7 m
Unrestricted airflow	360°	360°
Probe material	N/A	N/A
Residence time	N/A	N/A
Will there be changes within the next 18 mos?	Yes	Yes
Is it suitable for comparison against the annual PM2.5?	N/A	No – not reference or equivalent method
Frequency of flow rate verification for manual PM samplers	Weekly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	Bi-Weekly
Frequency of one-point QC check (gaseous)	N/A	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	12/13/07	12/13/07

Oakland PM_{2.5} SPM

The Air District moved the Oakland air monitoring station in 2007. A PM_{2.5} monitor was added at the new site because EPA had recently implemented a more stringent 24-hour PM_{2.5} standard in 2006. The revised standard made it more likely that exceedances could occur in the Oakland area. Oakland has large potential sources of particulate emissions within its boundaries, such as a major maritime port, an international airport, extensive areas of industry, and a number of major freeways. Additionally, light winds combined with surface based-based inversions during the winter months can cause elevated particulate levels.

The purpose of monitoring PM_{2.5} in Oakland is to determine if PM_{2.5} levels approach the State or national standards. Because the Air District is already operating more than the required number of PM_{2.5} monitors for the San Francisco-Oakland-Fremont MSA, the Oakland PM_{2.5} monitor has been designated as a Special Purpose Monitor (SPM). If monitoring shows that PM_{2.5} levels are significant, then the monitoring may become permanent.

No exceedances of the revised national 24-hour PM_{2.5} standard of 35 µg/m³ were measured during the two months of operation in 2007, and preliminary PM_{2.5} data for the first 3 months of 2008 also shows no exceedances.

Oakland Site Information

Site Name	Oakland - 1025
AQS ID	06-001-0009
GIS coordinates	37.743060 ° N, 122.169910° W
Location	Two-story commercial building
Address	9925 International Blvd, Oakland CA 94603
County	Alameda
Distance to road from PM _{2.5} inlet	International Blvd: 18 meters 99 th St: 23 meters 98 th St: 43 meters
Traffic count	International Blvd: 26,912 ADT (2006) 99 th St: 100 ADT (Estimate) 98 th St: 31,340 ADT (2002)
Groundcover	Paved
Representative Area	San Francisco-Oakland-Fremont MSA

Oakland PM2.5 SPM Information

Pollutant	FRM PM2.5
Monitoring Objective	Population oriented
Spatial scale	Middle
Sampling method	Andersen RAAS 300
Analysis method	Weighed by Air District
Start date	11/01/07
Operation schedule	Apr-Sep: 1 in 6 Oct-Mar: 1 in 3
Sampling season	All year
Probe height (AGL)	7.8 m
Probe height above roof	2.2 m
Distance from obstructions on roof	None
Distance from obstructions not on roof	None
Distance from tree (DL)	20 m
Distance to furnace or incinerator flue	7.2 m
Distance between collocated monitors	N/A
Unrestricted airflow	360°
Probe material	N/A
Residence time	N/A
Will there be changes within the next 18 mos?	No
Is it suitable for comparison against the annual PM2.5?	Yes
Frequency of flow rate verification for manual PM samplers	Monthly
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check (gaseous)	N/A
Last Annual Performance Evaluation (gaseous)	N/A
Last two semi-annual flow rate audits for PM monitors	11/15/07*

*Monitor start date is 11/01/07

Speciation Trends Network (STN) Site at San Jose

EPA finalized new regulations in 1997 that established national 24-hour and annual standards for fine particles less than or equal to 2.5 microns in diameter, known as PM_{2.5}, and required each state and local agency to begin ambient monitoring using FRM samplers for these particulates. Included in the regulations was a plan for a Speciation Trends Network (STN), a national monitoring network that would gather data on the chemical makeup of these particles. Information gathered by the STN will be used to develop plans to reduce the sources of PM_{2.5} and to measure the effectiveness of PM_{2.5} control strategies.

Between 1999 and 2001, fifty-four STN sites were developed nationwide. San Jose was included in the STN network because it has an extensive PM sampling history and is the largest city in Northern California with a 2007 population of 989,496. In 2001, STN monitoring began at the Air District's San Jose air monitoring station. Samples for speciation analysis are collected using a Met One Spiral Ambient Speciation Sampler (SASS). Collocated with the SASS is a PM_{2.5} FRM sampler which is used to measure the total weight of PM_{2.5}. Both samplers are operated on the same schedule, allowing a comparison of particulate chemical composition on high particulate days with low particulate days. Additionally, EPA expects that the nationwide network will be used to determine, over a period of several years, trends in concentration levels of selected ions, metals, carbon species, and organic compounds in PM_{2.5}.

The SASS and FRM samplers collect 24-hr integrated samples. Both samplers operate from midnight to midnight, with SASS sampling every 6 days, and FRM sampling every 3 days, on a predetermined schedule. Air is drawn into the sampler, passed through a size-selective nozzle to separate out the particles 2.5 microns and below. SASS samples are collected on quartz, Teflon, and nylon filters for later analysis by an EPA contract laboratory in North Carolina. FRM samples are collected on Teflon filters for later weighing in the Air District laboratory. All filters are shipped to the laboratories in coolers to keep the filters at or under 4°C so that volatile particulates are not lost. After analyses, the data are submitted to the EPA Air Quality System (AQS) database.

National Air Toxics Trends Station (NATTS) at San Jose

EPA established the National Air Toxics Trends Stations (NATTS) network in 2003. The NATTS network was created by the EPA to expand and improve national toxics monitoring with the major goal of identifying toxics trends in urban and rural settings throughout the United States. The San Jose air monitoring station was included in the NATTS network because toxics have been monitored at the sites since 1985, and San Jose is the largest city in Northern California with a 2007 population of 989,496.

The NATTS monitoring program focuses on fifteen airborne toxics compounds; formaldehyde, acetaldehyde, benzene, 1,3 butadiene, acrolein, perchloroethylene, carbon tetrachloride, chloroform, trichloroethylene, arsenic compounds, nickel compounds, cadmium compounds, manganese compounds, antimony and hexavalent chromium. EPA has chosen these toxics because of their toxicity and potential threat to human health and because these toxics can be measured with current technology (with the exception of hexavalent chromium). In addition, carbon monoxide is measured because it is correlated to benzene and 1,3 butadiene, and black carbon is measured because it is correlated to diesel emissions, the latter identified by EPA as a mobile source air toxic.

Formaldehyde and acetaldehyde are formed during combustion processes. Formaldehyde is also created during the manufacture of some building materials and household products, and continues to off gas after manufacturing. Benzene and 1,3 butadiene are emitted by mobile sources (cars and trucks). Acrolein is generated by diesel and jet engines. Perchloroethylene, carbon tetrachloride and trichloroethylene are used for cleaning, but in the Bay Area Air District regulations have significantly reduced their use. Chloroform is produced in the chlorination of water. Arsenic compounds originate from soil and the smelting of metals. Nickel and Cadmium compounds are naturally found in some soils and can be emitted from fossil fuel combustion, cement manufacturing and electroplating. Also, Cadmium comes from tire wear. Manganese compounds naturally occur in some soils and can be emitted from steel plants, power plants and coke ovens. Antimony comes from the soil. Hexavalent chromium is emitted during chrome plating operations.

Formaldehyde and acetaldehyde are collected on cartridges and then analyzed in the Air District laboratory using high performance liquid chromatography with UV detection. Benzene, 1-3 butadiene, acrolein, perchloroethylene, carbon tetrachloride, chloroform, and trichloroethylene are collected in canisters and analyzed using a Gas Chromatograph in the Air District laboratory. All samples are collected on a 1 in 6 day schedule.

Beginning in 2008, the Air District will send PM₁₀ filters to an EPA contract laboratory to analyze for toxic metals compounds. These compounds include arsenic, nickel, cadmium, manganese, and antimony. Hexavalent chromium will not be analyzed because the current sampling methodology allows significant deterioration of the compound before the analysis can be performed.

All NATTS data are submitted to the EPA AQS database. These data may also be found in the Air District's Toxic Air Contaminant Control Program Annual Report found on the Air District's web site.