BAY AREA AIR QUALITY MANAGEMENT DISTRICT

METEOROLOGY AND MEASUREMENT DIVISION

2020 AIR MONITORING NETWORK PLAN

July 1, 2021

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AADT	Annual Average Daily Traffic
AGL	Above Ground Level
APCD	Air Pollution Control District
AQMD	Air Quality Management District
AQS	Air Quality System; the EPA national air quality database
ARM	Approved Regional Method
Air District	Bay Area Air Quality Management District
BAM	Beta Attenuation Monitor, a type of continuous $PM_{2.5}$ monitor
BAAQMD	Bay Area Air Quality Management District
BC	Black Carbon
CARB	California Air Resources Board
CBSA	Core Based Statistical Area
CDP	Census Designated Place
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSN	Chemical Speciation Network
DRI	Desert Research Institute
EPA	U.S. Environmental Protection Agency
FE-AADT	Fleet Equivalent Annual Average Daily Traffic
FEM	Federal Equivalent Method
FRM	Federal Reference Method
GC	Gas Chromatograph
GCMS	Gas Chromatograph Mass Spectrometer
GPS	Geographic Positioning System
HAPS……	Hazardous Air Pollutants
HiVol	High Volume
HPLC	High Performance Liquid Chromatograph
H_2S	Hydrogen Sulfide
IMPROVE	Interagency Monitoring of Protected Visual Environments
Maintenance Plan	A Plan submitted by states to EPA that outlines how the NAAQS will be maintained for a particular region.

DEFINITION OF TERMS

MBUAPCD	Monterey Bay Unified Air Pollution Control District
NAAQS	National Ambient Air Quality Standard
NATTS	National Air Toxics Trends Station
NCore	National Core (Monitoring Program)
NEI	National Emissions Inventory
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NO_y	Total Reactive Nitrogen
NSCAPCD	Northern Sonoma County Air Pollution Control District
NSR	New Source Review
O_3	Ozone
PAMS	Photochemical Assessment Monitoring Stations
Pb	Lead
ppb	Parts per billion
PM	Particulate Matter
$PM_{2.5}$	Particulates less than or equal to 2.5 microns in size
$PM_{2.5F}$	$PM_{2.5}$ measured using a filter-based sampler
$PM_{2.5C}$	$PM_{2.5}$ measured using a continuous monitor
PM_{10}	Particulates less than or equal to 10 microns in size
PM_{10C}	PM_{10} measured using a continuous monitor
$PM_{10-2.5}$	PM Coarse – PM less than or equal to 10 microns and greater than 2.5 microns in size
POC	Parameter Occurrence Code
PWEI	Population Weighted Emissions Index
SIP	State Implementation Plan – A Plan submitted by states to EPA that outlines how the NAAQS will be met for an area
SLAMS	State or Local Air Monitoring Station
SO_2	Sulfur Dioxide
SPM	Special Purpose Monitor
STN	Speciation Trends Network
Toxics	Gaseous VOC hazardous air pollutants
TSP	Total Suspended Particulate
UFP	Ultrafine Particulate less than or equal to 0.1 microns
VOC	Volatile Organic Compound

1. INTRODUCTION

This annual network plan for the Bay Area Air Quality Management District summarizes the air monitoring activities between January 1, 2020, and December 31, 2020. Information about the monitors used at each air monitoring site pertains to the status as of December 31, 2020. There are also siting and local area descriptions for monitoring sites that operated in 2020 and for those that opened, or were planned to open, between January 1 and June 30, 2021.

2. OVERVIEW OF NETWORK OPERATION

2.1 Network Design

The Bay Area Air Quality Management District (Air District) is the public agency responsible for air quality management in the 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 sites in each of these nine counties. The Air District began measuring air quality in the San Francisco Bay Area in 1957. In 2020, there were 33 operational air monitoring sites within the Air District.

The Air District performs air monitoring as part of several national programs required by the Environmental Protection Agency (EPA); currently these programs include State and Local Air Monitoring Stations (SLAMS) monitoring, the National Core (NCore) program, the Photochemical Assessment Monitoring Stations (PAMS) program, and the $PM_{2.5}$ Chemical Speciation Network (CSN). The Air District also conducts additional monitoring to meet local needs not met by the national programs, including additional monitoring supporting our understanding of particulate matter (PM), and additional meteorological and air toxics monitoring. Summaries of these programs can be found later in this report.

The population centers throughout the Bay Area represent a variety of conditions within the air basin in terms of population size, the mix of emission sources nearby, and the complex terrain and varied topography in the region. Because resources do not allow for placement of monitoring sites in every city or town, EPA monitoring regulations make general assumptions about area-wide air quality, which allow local agencies to focus monitoring at locations that reasonably represent similar nearby areas. The SLAMS network is specifically designed to meet the basic objectives of the Clean Air Act as defined in the Code of Federal Regulations (CFR). This approach allows for a consistent implementation of monitoring networks throughout the country by measuring air quality in a few places that are representative of many other similar areas. Generally, locations for permanent air monitoring sites are initially based on knowledge of

population density, local wind patterns, topography, and sources of air emissions, while the final site selection is determined after considering logistical constraints and analyzing available air quality data from previous monitoring or modeling studies.

The monitoring objectives of the Air District's air monitoring network are:

- To provide air pollution data to the public in a timely manner.
- To support compliance with the California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS).
- To support air pollution research studies.

A full list of CAAQS and NAAQS and the Air District's attainment status for each pollutant can be found at: http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status. Since the monitoring regulations in 40 CFR part 58 are focused on implementation of the NAAQS, a summary of the standards is provided in Table 2-1 below.

Table 2-1. Summary of Current NAAQS

Pollutant	Averaging Time	Level
Ozone	8-hour	0.070 ppm
$PM_{2.5}$	24-hour	35 µg/m^3
	Annual	12.0 µg/m^3
PM_{10}	24-hour	150 µg/m^3
Carbon Monoxide	1-hour	35 ppm
	8-hour	9 ppm
Sulfur Dioxide	1-hour	75 ppb
Nitrogen Dioxide	1-hour	100 ppb
Lead	24-hour	0.15 µg/m^3

More detailed information about the NAAQS, including past standards, can be found at: https://www.epa.gov/criteria-air-pollutants/naaqs-table.

To meet its monitoring objectives, the Air District collects ambient air data at locations with a variety of monitoring site types and spatial scales. These site types and spatial scales, as defined in 40 CFR part 58 Appendix D, are listed below.

Site Types

Highest concentration or maximum ozone concentration: Sites expected to have the highest concentration, even if populations are sparse in that area. High concentrations may be found close to major sources, or further downwind if pollutants are transported from sources located further away. Higher concentrations of some pollutants such as ozone or secondary particulate matter are expected further downwind from the emissions sources since time is needed for the chemical reactions in the atmosphere that produce these secondary pollutants. Based on EPA interpretation of the regulations, highest and maximum concentrations are determined by a monitoring site's Design Value, which is the metric used for comparing air quality data to the NAAQS.

Population oriented: Sites established to measure typical concentrations in areas of high population density. In most cases, these sites are located within the largest cities in each county.

Source impact or source oriented: Sites established to determine the impact of significant sources or source categories on air quality. Typically, these sites are located downwind of potential major sources of pollutants. Examples of source oriented SO_2 and H_2S monitors include those near the Chevron, Shell, Tesoro, Phillips 66, and Valero refineries. Near-road sites that are located by heavily trafficked major roadways and lead monitoring sites near general aviation airports are also examples of source-impact or source-oriented monitoring due to their proximity to significant sources of PM, NO_2, CO, toxics, or lead.

Upwind background: Sites in areas that have no nearby significant emissions from mobile, area, or industrial sources. At these sites, the measured concentrations reflect the transported air quality levels from upwind areas.

General background: Sites established to determine general background concentration levels in the absence of significant upwind sources.

Regional transport: Sites established to determine the extent of regional pollutant transport among populated areas. 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 higher levels of air pollution, pollutants may be transported into the Bay Area and contribute to higher air pollution levels we experience due to sources within our jurisdiction. The Air District operates monitoring sites near the borders of the Air District to measure the air pollution concentrations transported into and out of Air District jurisdiction.

Welfare-related impacts: Sites located to measure impacts on visibility, vegetative damage, or other welfare-based impacts.

Spatial Scales

Each site type is also associated with a spatial scale. To further clarify the relationship between monitoring objectives, site types, and the physical location of a monitoring site, the concept of spatial scale of representativeness was defined as the physical dimensions surrounding an air monitoring site throughout which the actual pollutant concentrations can be assumed to be reasonably similar.

EPA further explains that the homogeneity of the surrounding area refers to both pollutant concentrations and nearby geography or topography, land use, or mix of sources. For example, a neighborhood scale site would define similar concentrations over a 0.5 – 4 km range with relatively uniform land use and nearby sources. The spatial scale must also conform to established criteria for the distance from roadways and traffic volume. If a monitoring site is located close to a significant source or a collection of sources like a large roadway, the spatial scale would need to be smaller than neighborhood scale because the concentrations over the 0.5 – 4 km range would no longer be similar over those physical dimensions. There are different distance requirements for each pollutant, which can be found in 40 CFR part 58 Appendix E.

Monitoring sites in the Air District network are designed to match the correct spatial scale with the appropriate site type, air pollutant being measured, and the monitoring objective. Descriptions of spatial scales are described below.

Microscale: Defines the concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters.

Middle scale: Defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometer.

Neighborhood scale: Defines concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range. The neighborhood and urban scales listed below have the potential to overlap in

applications that concern secondarily formed or homogeneously distributed air pollutants.

Urban scale: Defines concentrations within an area of city-like dimensions, on the order of 4 to 50 kilometers. Within a city, the geographic placement of sources may result in there being no single site that can be said to represent air quality on an urban scale.

Regional scale: Typically defines a rural area of reasonably homogeneous geography without large sources and extends from tens to hundreds of kilometers.

Table 2-2 lists the appropriate site type and spatial scale combinations that meet EPA requirements for network design.

Table 2-2. SLAMS Site Types and Appropriate Spatial Scales

Site Type	Appropriate Spatial Scale
Highest Concentration	Micro, middle, neighborhood
Population Oriented	Neighborhood, urban
Source Oriented	Micro, middle, neighborhood
General Background	Urban, regional
Regional Transport	Urban, regional

Table 2-3 lists the stations and the pollutants measured at each site and Figure 2-1 is a map of the monitoring sites in 2020.

Table 2-3. List of Monitoring Stations within the Air District in 2020

Site No.	Station Name	Pollutants Monitored[1]
1	Berkeley Aquatic Park (near-road)	O_3, NO_x, CO, $PM_{2.5C,}$ Toxics, BC, UFP
2	Bethel Island	O_3, NO_x, SO_2, CO, PM_{10}[2], Toxics
3	Concord	O_3, NO_x, SO_2, CO, PM_{10}, $PM_{2.5F}$, $PM_{2.5C}$, Toxics
4	Crockett	SO_2, Toxics
5	Fairfield	O_3
6	Forest Knolls	BC
7	Fort Cronkhite	Toxics
8	Gilroy	O_3, $PM_{2.5C}$
9	Hayward	O_3
10	Laney College (near-road)	NO_x, CO, $PM_{2.5C,}$ Toxics, BC, UFP

Site No.	Station Name	Pollutants Monitored[1]
11	Livermore	O_3, NO_x, $PM_{2.5C}$, Speciated $PM_{2.5}$, Toxics, BC, UFP
12	Los Gatos	O_3
13	Martinez	SO_2, Toxics
14	Napa Valley College	O_3, NO_x, CO, PM_{10}, $PM_{2.5C}$, Toxics
15	Oakland East	O_3, NO_x, CO, $PM_{2.5C}$, Toxics
16	Oakland West	O_3, NO_x, SO_2, CO, $PM_{2.5C}$, Speciated $PM_{2.5}$, Toxics, BC
17	Palo Alto Airport	Lead (TSP) [not operational in 2021]
18	Pittsburg	Toxics, BC
19	Pleasanton (near-road)	NO_x, CO, $PM_{2.5C}$, Toxics
20	Point Richmond	H_2S
21	Redwood City	O_3, NO_x, CO, $PM_{2.5C}$, Toxics, UFP
22	Reid-Hillview Airport	Lead (TSP)[3]
23	Richmond - 7th Street	SO_2, H_2S, Toxics
24	Rodeo	H_2S
25	San Carlos Airport II	Lead (TSP) [not operational in 2021]
26	San Francisco	O_3, NO_x, CO, PM_{10}, $PM_{2.5C}$, Toxics
27	San Jose – Jackson	O_3, NO_x, NO_y, SO_2, CO, PM_{10}, $PM_{2.5F}$, $PM_{2.5C}$, Speciated $PM_{2.5}$, Toxics
28	San Jose – Knox (near-road)	NO_x, CO, $PM_{2.5C}$, Toxics, BC, UFP
29	San Martin	O_3
30	San Pablo	O_3, NO_x, SO_2, CO, PM_{10}, $PM_{2.5\ C}$, Toxics, UFP
31	San Rafael	O_3, NO_x, CO, PM_{10}, $PM_{2.5C}$, Toxics
32	San Ramon	O_3, NO_x
33	Sebastopol	O_3, NO_x, CO, $PM_{2.5C}$, Toxics, UFP
34	Vallejo	O_3, NO_x, SO_2, CO, $PM_{2.5C}$, Speciated $PM_{2.5}$, Toxics

[1] See pages 8 and 10 for acronym definitions.

[2] PM_{10} at Bethel Island was discontinued in March 2020.

[3] Lead (TSP) at Reid-Hillview Airport was temporarily shut down in July 2020.

Figure 2-1. Map of Bay Area SLAMS and SPM Sites in 2020

2.2 Minimum Monitoring Requirements

The Air District met or exceeded all minimum monitoring requirements for most criteria pollutants in 2020. The three instances for which the Air District did not meet minimum monitoring requirements were due to circumstances beyond the Agency's control. These cases (near-road NO_2, airport Pb, and PM_{10}), and the Air District's ongoing efforts to resolve them, are discussed in the PM_{10}, NO_2 and Pb portions of this section.

Smoke from wildfires can significantly affect air quality within the Air District, especially in 2018 and 2020. The Air District has not yet requested that EPA exclude data affected by fires in 2018 or 2020 from regulatory determinations; however, the resulting 2018-2020 design values for $PM_{2.5}$ are above the 24-hour $PM_{2.5}$ NAAQS for some CBSAs. The design values listed in the tables of this section have not been adjusted to remove data affected by exceptional events. The Air District may request at a future date that the affected data be excluded from regulatory determinations as exceptional events if those data become significant for regulatory actions as defined by EPA[1].

EPA minimum monitoring requirements are not based on the Air District, city, or county boundaries. Instead, they are based on Core Based Statistical Areas (CBSAs) or Metropolitan Statistical Areas (MSAs). CBSAs are either MSAs if the population is 50,000 or greater, or Micropolitan Statistical Areas (μSAs), if the population is less than 50,000. Since all our CBSAs are MSAs, not μSAs, the names and boundaries of the CBSAs and MSAs are identical. Because some of our CBSAs include areas under the jurisdiction of other Air Districts, some monitors listed in the tables below are counted toward the minimum monitoring requirements even though the monitor is located in another air district. CBSA boundaries for the Bay Area are shown in Figure 2-2.

These minimum monitoring requirements are determined by evaluating certain data for the CBSA as described in 40 CFR 58 Appendix D. For population data, these are required to be based on the latest available census for O_3, $PM_{2.5}$, and NO_2. SO_2 allows for population data to be based on either a census or population estimates, and CO and PM_{10} requirements do not specify the data source. To use consistent populations for the CBSAs/MSAs within the Air District, the minimum monitoring requirements discussed below are based on the 2010 U.S. Census. The Air District does consider population estimates in our longer-term monitoring network planning, which is summarized in our Five-Year Network Assessments. Table 2-4 below lists the 2010 Census populations as well as 2019 estimated populations for each CBSA. While 2010 Census populations are

[1] https://www.epa.gov/air-quality-analysis/treatment-air-quality-data-influenced-exceptional-events-homepage-exceptional

used to determine official requirements, the population estimates are used to evaluate potential future changes to these requirements, which are noted, as applicable.

Many minimum monitoring requirements are also based on the monitored level of pollutant concentrations. The information for the highest site in a CBSA/MSA is given in the tables below and is based on 2018-2020 data. County-level 2018-2020 design values can be found at EPA's Air Data website: https://www.epa.gov/outdoor-air-quality-data/air-quality-statistics-report.

Except where otherwise noted, each monitor meets the requirements of 40 CFR part 58, appendices A, B, C, D, and E, where applicable.

Table 2-4. 2010 Census Population and 2019 Population Estimates for Bay Area CBSAs

Core Based Statistical Area	2010 Census Population (April 1, 2010)	2019 Population Estimate (July 1, 2019)[1]
San Francisco-Oakland-Berkeley	4,335,391	4,731,803
San Jose-Sunnyvale-Santa Clara	1,836,911	1,990,660
Santa Rosa-Petaluma	483,878	494,336
Vallejo	413,344	447,643
Napa	136,484	137,744

[1] Data source: https://www.census.gov/data/datasets/time-series/demo/popest/2010s-total-metro-and-micro-statistical-areas.html. 2020 CBSA population data is not yet publicly available.

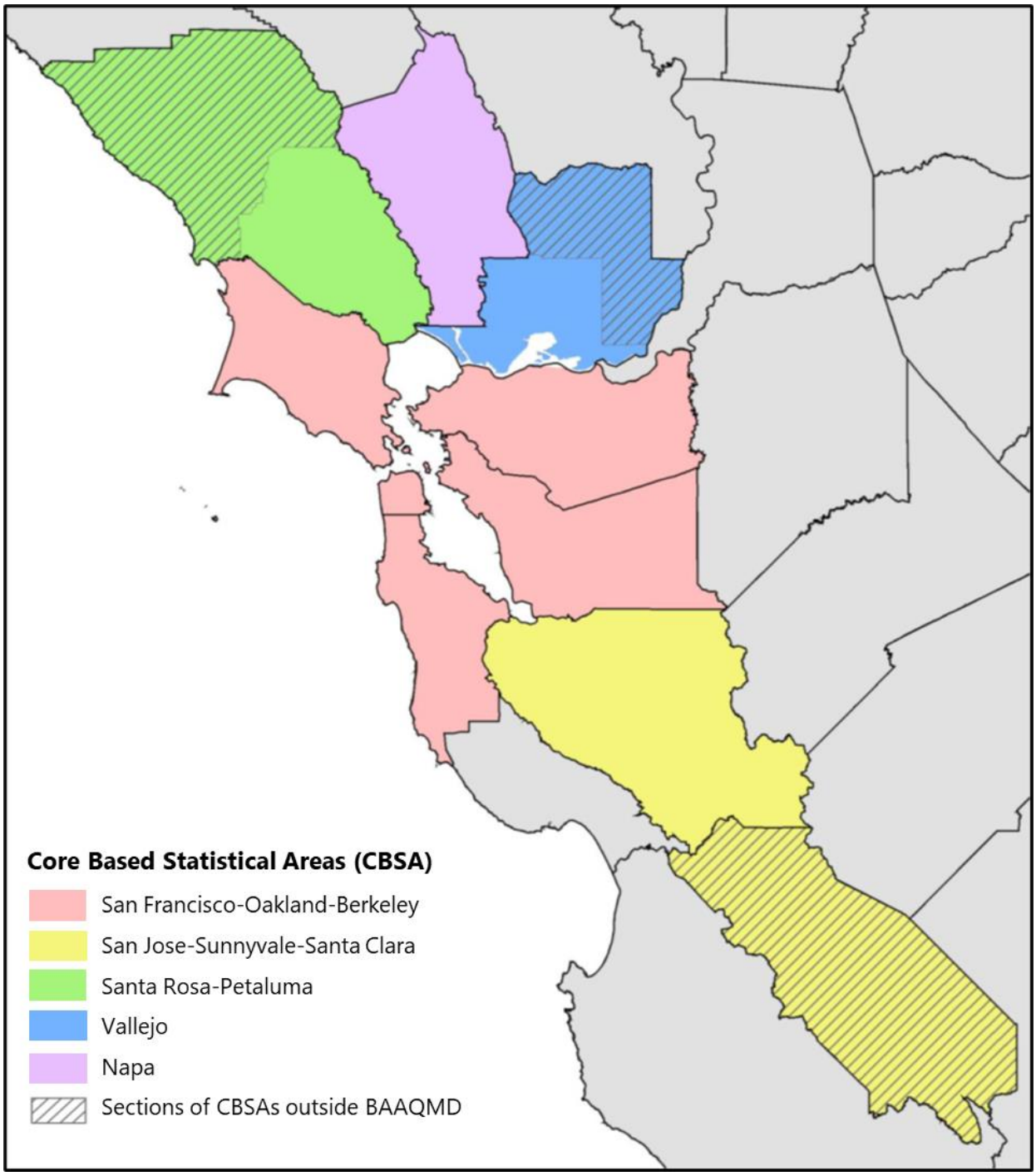


Figure 2-2. Core Based Statistical Areas (CBSA) for the San Francisco Bay Area

Monitoring Agreements with Yolo/Solano AQMD

The Bay Area network met all minimum monitoring requirements for all criteria pollutants in the Vallejo–Fairfield CBSA, therefore, no interagency agreements were needed with Yolo/Solano AQMD. The Air District will continue to assess the minimum monitoring requirements in the Five-Year Network Assessments and work with the other Air Districts to meet them.

Monitoring Agreements with Monterey Bay Unified APCD

The Bay Area and Monterey Air Districts share minimum monitoring requirements for the San Jose–Sunnyvale–Santa Clara CBSA. This CBSA includes Santa Clara County (Bay Area) and San Benito County (Monterey). Shared pollutant monitoring agreements include O_3, $PM_{2.5}$, PM_{10}, and near-road NO_2, CO, and $PM_{2.5}$. Within its own network, the Bay Area Air District meets minimum monitoring requirements for O_3, $PM_{2.5}$, and near-road NO_2, CO, and $PM_{2.5}$. PM_{10} is the only pollutant for which the Bay Area does not meet the minimum requirements on its own, and therefore has a monitoring agreement with Monterey Bay for PM_{10}. Monterey Bay needs agreements for O_3, $PM_{2.5}$, and near-road NO_2, CO, and $PM_{2.5}$ monitoring. Existing agreements are in Appendices A – D.

Monitoring Agreements with Northern Sonoma County APCD

The Bay Area and Northern Sonoma County Air Districts share minimum monitoring requirements for the Santa Rosa - Petaluma MSA. Shared pollutant monitoring agreements only include O_3. On December 29, 2020, the Northern Sonoma County APCD notified the Air District that EPA had approved the shutdown of the Healdsburg Airport O_3 monitoring site. Due to the shutdown, Northern Sonoma County APCD no longer met minimum monitoring requirements for O_3 with their own network. Both Air Districts have entered into an interagency agreement that specifies that the agencies recognize this shared responsibility for O_3 monitoring in the Santa Rosa – Petaluma MSA and will coordinate appropriately to ensure minimum monitoring requirements continue to be met. See Appendix E for the current agreement.

2.2.1 Minimum Monitoring Requirements for Ozone

The number of required O_3 monitors in each MSA is determined by the MSA population and design value, as specified in Table D-2 of 40 CFR part 58 Appendix D. O_3 design values are calculated for each site according to 40 CFR part 50 Appendix U and are compared to the 2015 8-hour O_3 NAAQS to determine the attainment status of an area.

The 2020 Air District monitoring network for O_3 (Figure 2-3) meets or surpasses the O_3 minimum monitoring requirements (Table 2-5). Therefore, no monitoring agreement was needed between the Air District and any other air district to comply with the minimum monitoring requirement for O_3. As described in Appendix E, Northern Sonoma County APCD notified the Air District that the EPA approved the shutdown of the Healdsburg Airport O_3 monitoring site in June 2020 and therefore Northern Sonoma County APCD and the Air District established an agreement to maintain minimum monitoring requirements in the Santa Rosa – Petaluma MSA in December 2020.

Table 2-5. Minimum Monitoring Requirements for Ozone

MSA	County or Counties	Population 2010 Census	2020 8-hour Design Value (ppb)	Design Value Site and AQS ID	Number of SLAMS		
					Required	Active	Additional Needed
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,335,391	69	Livermore 06-001- 0007	3	7	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,836,911	66	San Martin 06-085-2006	2	6[b]	0
Santa Rosa-Petaluma	Sonoma	483,878	51	Sebastopol 06-097-0004	1	2[c]	0
Vallejo	Solano	413,344	63	Vacaville 06-095-3003	2	3[d]	0
Napa	Napa	136,484	58	Napa Valley College 06-055-0004	0[e]	1	0

[a] Design values are calculated at each monitoring site by taking the 3-year average (2018-2020) of the 4th highest daily maximum 8-hour concentration. The design values shown for each MSA in this table are the highest design value of monitors in the MSA. Design values at or below the 0.070 ppm meet the 2015 8-Hour O_3 NAAQS.

[b] Two of the six monitors are not in the BAAQMD. Hollister and Pinnacles National Park sites are in the Monterey Bay Unified APCD. The Pinnacles National Park site is part of the CASTNET program and was designated SLAMS in 2010 by the EPA.

[c] One of the two monitors is not in the BAAQMD. It is in Healdsburg which is in the Northern Sonoma County APCD. BAAQMD was notified that the Healdsburg Airport O_3 monitoring site was shut down in June 2020.

[d] One of the three monitors is not in the BAAQMD. It is in Vacaville, which is in the Yolo-Solano AQMD.

[e] The Napa-Jefferson Street site (06-055-0003) was relocated to the Napa Valley College site (06-055-0004), a neighborhood scale site, on April 1, 2018. The site relocation was approved by EPA, and data from both sites were combined for design value calculations.

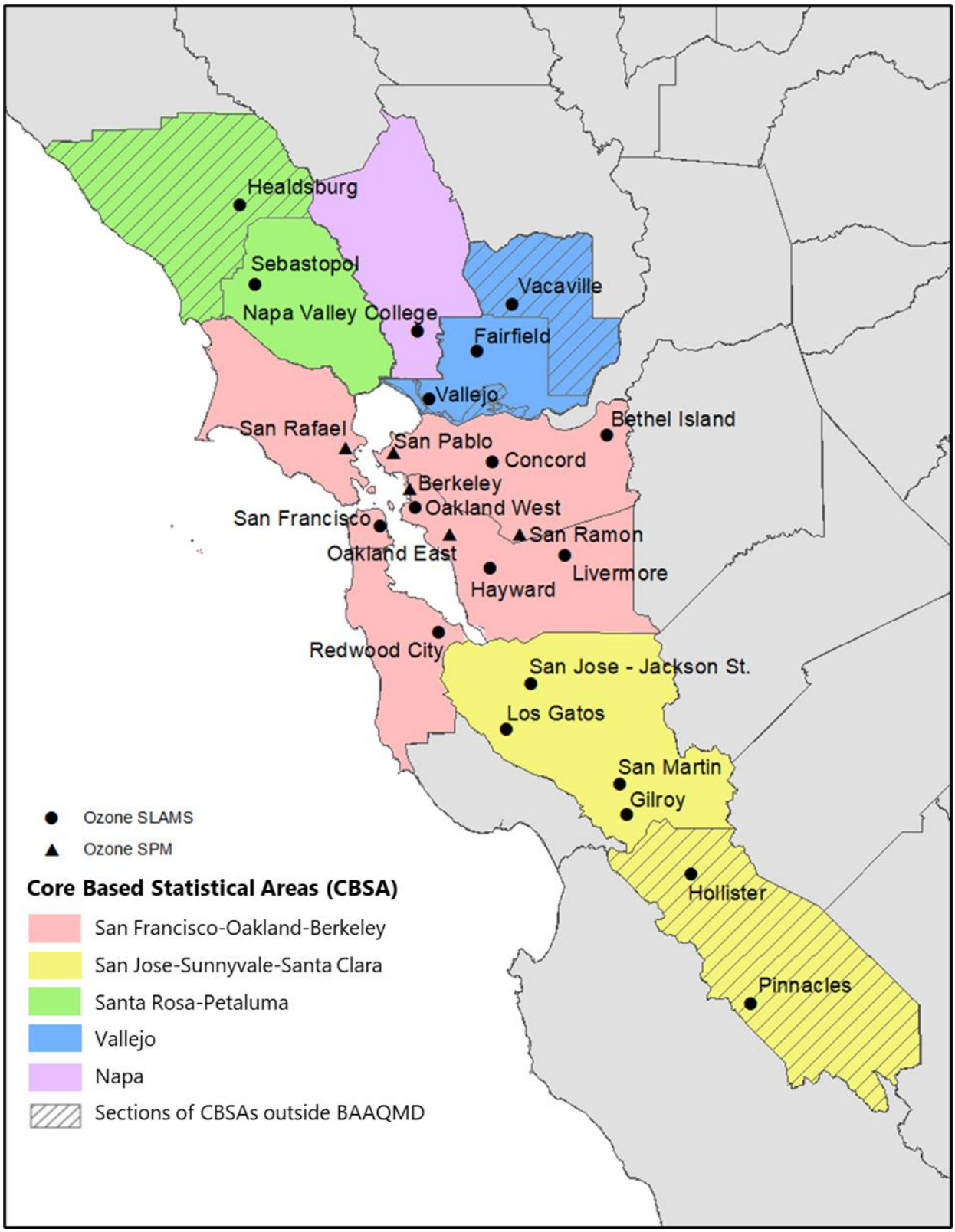


Figure 2-3. Ozone Monitoring in the San Francisco Bay Area in 2020

Ozone Special Purpose Monitors

There are four O_3 monitors (San Rafael, San Pablo, Berkeley-Aquatic Park, and Oakland East) that are too close to a roadway to meet the siting requirements of 40 CFR part 58 Appendix E. The proximity of these sites to the roadway may bias the O_3 concentrations lower than if they were located further away from the roadway. Therefore, these monitors are designated as special purpose monitors (SPMs) and as such are not counted towards minimum monitoring requirements. However, these monitors continue to be representative of population exposure in the near-road environment, and meet the requirements of 40 CFR 58 Appendix A and are considered NAAQS comparable since they could show a valid violation of the NAAQS.

EPA noted in their 2018 TSA that the Hayward O_3 monitor also does not meet 40 CFR part 58 Appendix E siting requirements and noted that it should, therefore be classified as an SPM. As part of the 2019 annual network plan, the Air District requested that EPA approve the change in monitoring type of this monitor from a SLAMS to an SPM. EPA subsequently approved the request and the Air District has classified the Hayward O_3 monitor as a SPM and will not be counted towards minimum monitoring requirements. The San Francisco-Oakland-Berkeley CBSA continues to meet minimum monitoring requirements. See Appendix G for the Air District's request and EPA's approval.

2.2.2 Minimum Monitoring Requirements for $PM_{2.5}$

The number of required $PM_{2.5}$ monitors in each MSA is determined by the MSA population and design value, as specified in Table D-5 of 40 CFR part 58 Appendix D. The Air District's network of $PM_{2.5}$ SLAMS and SPMs is shown in Figure 2-4. Table 2-5 shows that the $PM_{2.5}$ minimum requirements for SLAMS monitoring were met in 2020.

In 2020, every $PM_{2.5}$ monitor in the network was a Federal Reference Method (FRM) or Federal Equivalent Method (FEM), and the primary monitor at every site was a continuous FEM. While the near-road sites at Oakland-Laney College, Berkeley Aquatic Park, Pleasanton, and San Jose-Knox are considered micro-scale because of their distance to roadways, they are considered area-wide sites since they represent many similar locations throughout their MSAs (see 40 CFR part 58 Appendix D, §4.7.1(b)). The Pleasanton site is designated as an SPM, meets the requirements of 40 CFR part 58 Appendices A, B, C, D, and E, but does not count towards minimum monitoring requirements.

In addition to the requirement for a minimum number of $PM_{2.5}$ SLAMS, EPA requires that a certain number of sites operate continuous $PM_{2.5}$ monitors (40 CFR part 58 Appendix D, §4.7.2). Currently, all the primary $PM_{2.5}$ monitors in the Air District network are continuous

FEMs. Therefore, the requirement to operate continuous $PM_{2.5}$ monitors equal to at least one-half (rounding up) the number of $PM_{2.5}$ SLAMS monitors is met.

The $PM_{2.5}$ network design requirements and the minimum number of near-road $PM_{2.5}$ monitors in the PQAO (40 CFR part 58 Appendix D, §4.7.1(b)(2)) and the QA requirements for the collocation of $PM_{2.5}$ monitors (40 CFR part 58 Appendix A, §3.2.5) are discussed below.

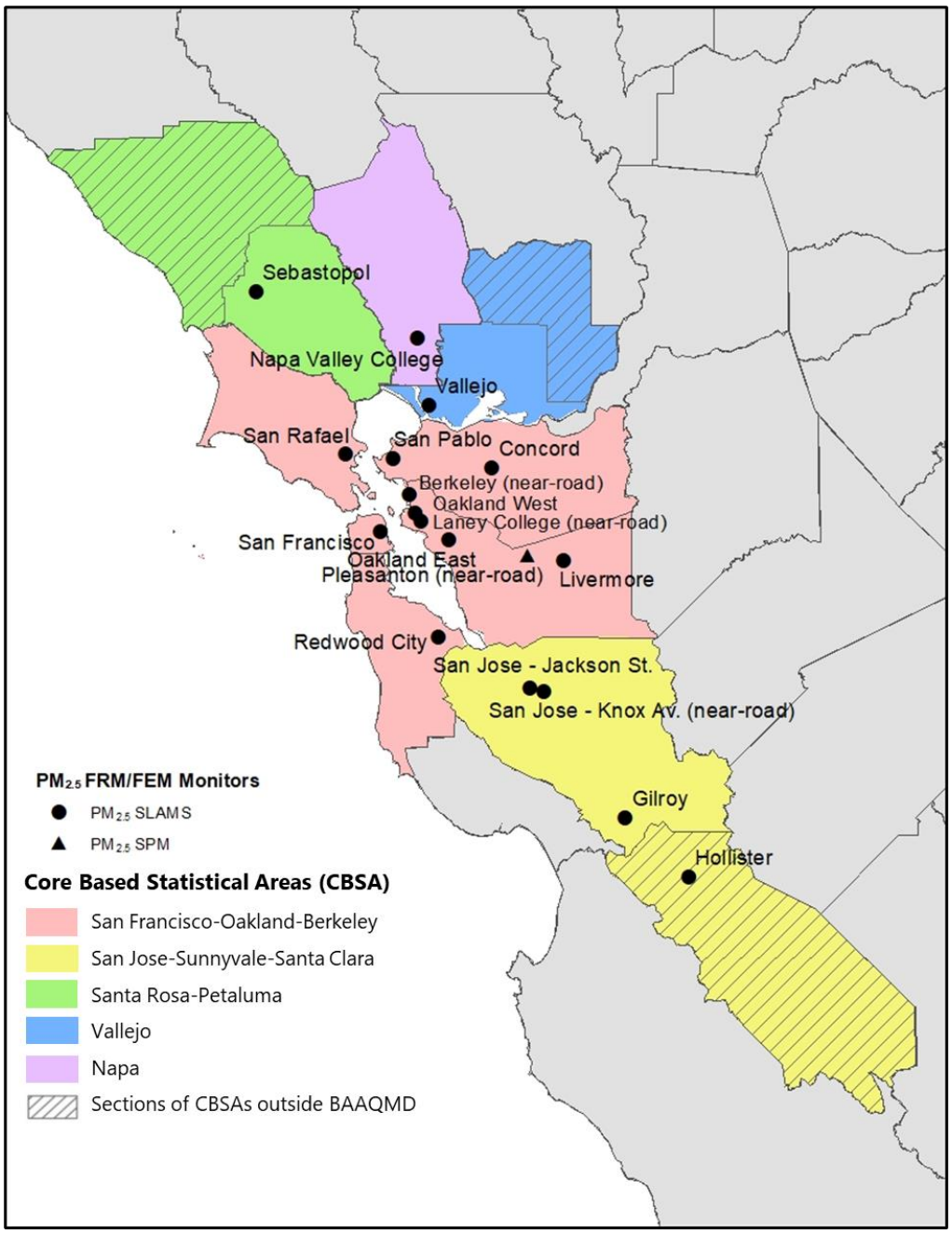


Figure 2-4. $PM_{2.5}$ Monitoring in the San Francisco Bay Area in 2020

Table 2-6. Minimum Monitoring Requirements for FRM/FEM $PM_{2.5}$ SLAMS

MSA	County or Counties	Population 2010 Census	2020 Annual Design Value[b] (µg/m3) Design Value Site (AQS ID) 2020 Daily Design Value[c] (µg/m3) Design Value Site (AQS ID)	Number of SLAMS		
				Required[a]	Active	Additional Needed
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,335,391	11.0 Berkeley Aquatic Park (06-001-0013) 55 Pleasanton (06-001-0015)	3	10[e]	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,836,911	11.1 San Jose-Jackson (08-085-0005) 50 San Jose-Jackson (06-085-0005)	3	4[f]	0
Santa Rosa-Petaluma	Sonoma	483,878	7.4 Sebastopol (06-097-0004) 37 Sebastopol (06-097-0004)	1	1	0
Vallejo	Solano	413,344	11.3 Vallejo (06-095-0004) 51 Vallejo (06-095-0004)	1	1	0
Napa	Napa	136,484	9.3 Napa Valley College (06-005-0003 and 06-055-0004) 46 Napa Valley College (06-005-0003 and 06-055-0004)	1	1	0

[a] Per 40 CFR part 58 Appendix D, Table D-5 footnote 2, minimum monitoring requirements for $PM_{2.5}$ are based on MSA populations from the latest available census figures.

[b] Annual design values are calculated at each monitoring site by taking the 3-year average (2018-2020) of the annual means for each site. The design values in this table are the highest design value of monitors in the MSA. Design values at or below 12.0 µg/m^3 indicate the area meets the 2012 Annual $PM_{2.5}$ NAAQS.

[c] Daily design values are calculated by taking the 3-year average (2018-2020) of the 98th percentiles for each site. The design values in this table are the highest design value of monitors in the MSA. Design values at or below 35 µg/m^3 indicate the area meets the 2006 24-hour $PM_{2.5}$ NAAQS.

[d] Napa-Jefferson Street (06-055-0003) was relocated to Napa Valley College (06-055-0004) on April 1, 2018 and was approved by EPA. Therefore, data from both sites were combined for design value calculations.

[e] Two monitors, Laney College and Berkeley Aquatic Park, are near-road and classified as micro-scale sites but are considered area-wide sites and can be counted toward meeting the area-wise monitoring requirement.

[f] One monitor, San Jose-Knox, is near-road and classified as a micro-scale site but is considered an area-wide site and can be counted toward meeting the area-wide requirement. Additionally, one monitor is not in the BAAQMD. The Hollister monitoring site is in the Monterey Bay Unified APCD.

Near-Road $PM_{2.5}$ Sites

Along with the 2012 $PM_{2.5}$ NAAQS revision, EPA revised the $PM_{2.5}$ network design criteria to require at least one $PM_{2.5}$ monitor at near-road sites in CBSAs with populations of 1 million or greater (40 CFR 58, Appendix D §3.7.1 (b)(2)). The minimum monitoring requirements are met and shown in Table 2-7.

Table 2-7. Near-Road Monitoring for $PM_{2.5}$

Metropolitan Statistical Area	County or Counties	Population 2010 Census	Number of Near-road $PM_{2.5}$ SLAMS	
			Required	Active
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,335,391	1	2[a]
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,836,911	1	1
Santa Rosa-Petaluma	Sonoma	483,878	0	0
Vallejo	Solano	413,344	0	0
Napa	Napa	136,484	0	0

[a] The Pleasanton monitoring site meets siting for a near-road monitoring objective. However, the $PM_{2.5}$ monitor at that site that is an SPM, and as such, is not counted toward fulfilling this requirement.

Area of Expected Maximum Concentration

Network design requirements for $PM_{2.5}$ require sites in each MSA located in areas of expected maximum concentrations (40 CFR part 58 Appendix D). The Air District siting for $PM_{2.5}$ considers the potential effect on air quality from many $PM_{2.5}$ source types, including stationary and area sources, roadways, residential wood burning, and agriculture. The primary objective of these maximum concentration SLAMS is to determine compliance with the $PM_{2.5}$ NAAQS. Because the NAAQS are based on annual means or the 98^{th} percentile daily average $PM_{2.5}$ concentrations, these sites should be located where the annual mean or 98th percentile concentration are expected to be highest, even though other locations may experience higher concentrations on a specific day.

EPA has determined that the current $PM_{2.5}$ monitoring network in the Bay Area meets this requirement. Air District regularly evaluates the amount and distribution of $PM_{2.5}$ (direct and precursor) source emissions through emissions inventory and modeling work for other programs and uses this work to assess the effectiveness of the ambient monitoring network for each 5-Year Network Assessment.

Regional Background and Transport Sites

Every state is required to operate at least one regional transport site and one regional background site (40 CFR part 58 Appendix D, §4.7.3). While some of sites like Vallejo, Livermore, and others at times measure transport between the Bay Area and the Central Valley, or relatively clean air off the ocean, they are not considered regional background or transport sites for the purpose of this requirement. Since these are state-wide requirements, this requirement is met by CARB's network. More information about transport and background sites in California can be found CARB's Annual Monitoring Network Report, found at https://ww2.arb.ca.gov/our-work/programs/ambient-air-monitoring-regulatory/annual-monitoring-network-report.

$PM_{2.5}$ Filter Analysis for Other Air Districts and PQAO Responsibility

$PM_{2.5}$ filter samples collected by the North Coast AQMD and Monterey Bay Unified APCD are weighed by staff at the Air District's laboratory. The Air District, however, is not the Primary Quality Assurance Organization (PQAO) for these samples. Therefore, the $PM_{2.5}$ concentration data are sent back to the collecting agencies for their review, data validation, and certification. The Air District is the certifying agency for samples collected within the Air District jurisdiction only.

Minimum Monitoring Requirements for Collocated $PM_{2.5}$

In 2020, the Air District operated 17 primary $PM_{2.5}$ monitors (SLAMS and SPMs); these primary monitors were all MetOne BAM continuous FEMs (method 170). EPA requires collocation at 15% of the sites (round up) which equates to three collocated monitors, the first and third collocated monitors must be an FRM and the second must be the same FEM method as the primary monitor (see 40 CFR part 58 Appendix A, §3.2.3). In 2020, the Bay Area had three sites with collocated $PM_{2.5}$ monitors, San Jose-Jackson and Concord with FEM-primary and FRM-collocated, and Vallejo with a FEM/FEM primary/collocated pair, as shown in Table 2-8 below.

Table 2-8. Collocated $PM_{2.5}$ Monitors for the FEM Network

Method Code	# Primary Monitors	# Required Collocated Monitors	# Active Collocated FRM Monitors	# Active Collocated FEM Monitors (same method as primary)
170	17	3	2 San Jose-Jackson and Concord	1 Vallejo

Historically, the San Jose-Jackson, Concord and Vallejo sites have had some of the highest $PM_{2.5}$ design values in the Bay Area, which is why these sites were selected for collocated monitoring. The Air District installed an FRM at Concord on February 8, 2019 to meet this requirement.

2.2.3 Minimum Monitoring Requirements for PM_{10}

The number of required PM_{10} monitors in each MSA is determined by MSA population and 24-hour maximum concentrations, as specified in Table D-4 of 40 CFR part 58 Appendix D. To meet the requirements, a monitoring agreement is needed between the Air District and the Monterey Bay Unified APCD for the San Jose – Sunnyvale – Santa Clara MSA. The Bay Area operates one monitor in Santa Clara County and Monterey Bay operates one monitor in San Benito County. See Appendix B. There are no monitoring agreements with either the Northern Sonoma APCD or the Yolo-Solano AQMD because neither the Santa Rosa MSA nor the Vallejo MSA are required to have any PM_{10} monitors.

Recent wildfire events in 2020 caused elevated PM_{10} concentrations throughout the region, which have triggered additional minimum monitoring requirements in four of the five MSAs in the Bay Area. Table 2-9 shows the highest PM_{10} concentrations in 2020. Generally, a historic number of wildfires throughout northern California were ignited by lightning strikes on August 16, 2020. Many of these fires continued to burn until October and November 2020.

Per 40 CFR part 58 Appendix D, §4.6, the appropriate number of PM_{10} monitors in an MSA is dependent on population and the level of PM_{10} concentrations compared to specific concentration ranges:

- Low ($<124\ \mu g/m^3$)
- Medium, and ($>124\ \mu g/m^3$ and $<\ 186\ \mu g/m^3$)
- High concentration ranges ($>186\ \mu g/m^3$)

As shown in Table 2-9, the highlighted values represent the concentrations that are above the medium or high concentration ranges and that were also affected by the 2020 wildfire events and the date (m/dd). All remaining concentrations measured at these sites are below $124\ \mu g/m^3$ and are in the low concentration range for purposes of minimum monitoring requirements.

Table 2-9 2020 PM_{10} Concentrations Above 124 µg/m^3 in Each MSA

Concord (µg/m^3)	**San Jose Jackson (µg/m^3)**	**Hollister (µg/m^3)**	**Guerneville (µg/m^3)**	**Healdsburg (µg/m^3)**	**Vacaville (µg/m^3)**	**Napa (µg/m^3)**
San Francisco-Oakland-Berkeley	San Jose-Sunnyvale-Santa Clara		Santa Rosa -Petaluma		Vallejo	Napa
165 (9/12)	134 (9/12)	159 (8/19)	140 (9/11)	125 (9/11)	326 (8/19)	122
43	91	116	134 (9/10)	125 (10/1)	170 (9/12)	81
33	58	111	97	111	97	44
25	58	109	87	106	72	43
25	56	106	82	105	67	42
21	56	103	78	101	55	38
20	56	89	58	95	43	35
20	55	89	48	79	43	32
17	55	89	48	55	30	31
15	53	83	47	54	27	22

Figure 2-5 shows the relationship between the 2020 wildfire events and elevated PM_{10} and $PM_{2.5}$ concentrations at the highest monitoring site in the MSA. Satellite imagery, additional measurements, news reports, and other corroborating information suggest a clear causal relationship between these concentrations and nearby emissions from lightning caused wildfires. The current PM_{10}, $PM_{2.5}$, and BC networks are very robust and existing monitoring meets the needs of the local air districts and captures the relevant information for these types of events. It is unlikely that additional PM_{10} monitoring would measure concentrations at these levels under normal, non-wildfire, conditions.

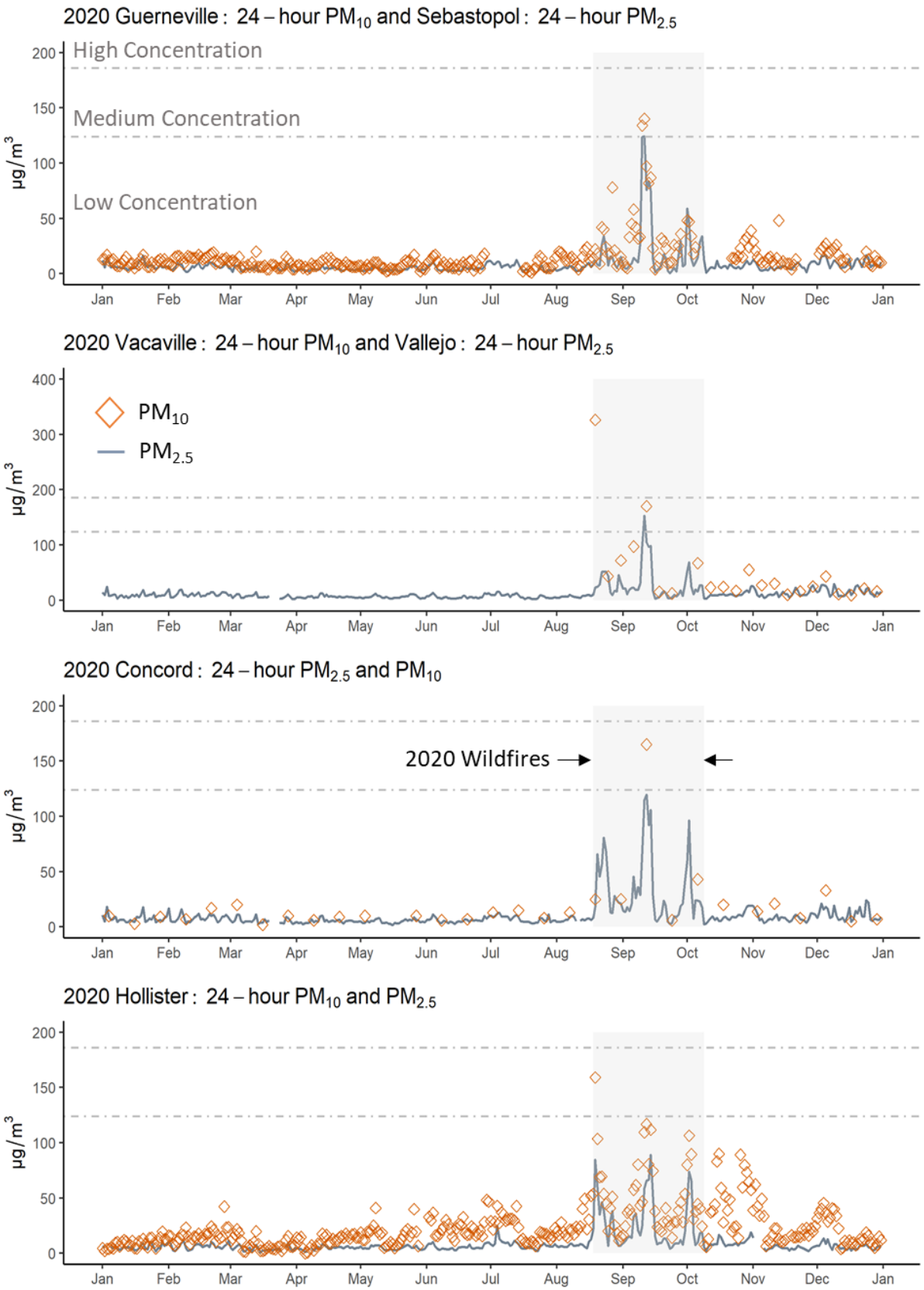


Figure 2-5 2020 PM_{10} and $PM_{2.5}$ Concentrations: Wildfire Events

Also, the maximum concentration in 2019 at the Hollister site in the San Jose – Sunnyvale – Santa Clara MSA was affected by a rare high-pressure event that brought air into the basin from the San Joaquin Valley. This unusual event caused the highest day for PM_{10} at that site in at least eight years. The next highest values from 2013-2019 at that site are as follows: 96 $\mu g/m^3$ in 2019, 85 $\mu g/m^3$ in 2013, 80 $\mu g/m^3$ in 2018, and 79 $\mu g/m^3$ in 2017. During 2014-2016, the site did not have any days above 50 µg/m3. Additionally, this late October 2019 event did not have as significant an effect on Santa Clara County, where the maximum concentration during this time was 75 $\mu g/m^3$. Santa Clara is the more populous part of the San Jose-Sunnyvale-Santa Clara MSA by far, and existing monitoring meets the needs of the local air districts and the communities since the Hollister site already captures the relevant information for this type of event.

The Air District will continue to work with Monterey Bay Unified APCD to assess the adequacy of the PM_{10} network in the San Jose-Sunnyvale-Santa Clara CBSA as well as address the PM_{10} network the San Francisco-Oakland-Berkeley, Santa Rosa-Petaluma, and Vallejo MSA in each 5-Year Network Assessment, evaluating the need for additional monitoring taking available resources for the construction and operation of new sites into consideration. The Air District is committed to working with EPA, CARB, and other local air districts to ensure that monitoring levels continue to protect public health and safety.

PM_{10} Special Purpose Monitors

Special purpose PM_{10} monitoring at Bethel Island, Concord, and San Francisco is conducted at a sampling frequency of 1:12. These SPM monitors meet 40 CFR Appendices E and A and are considered NAAQS comparable since they could show a valid violation of the NAAQS but are not counted toward meeting the minimum monitoring requirements. The Bethel Island PM_{10} SPM was discontinued on March 16, 2020. See Section 2.3

Table 2-10 and Figure 2-6 show the required PM_{10} monitors, the active SLAMS counted toward those requirements, and the locations of all the PM_{10} SLAMS and SPMs in the network.

Table 2-10. Minimum Monitoring Requirements for SLAMS PM_{10}

MSA	County or Counties	Population 2010 Census	Highest 24-Hour Conc. (ug/m^3) (2020)	Highest 24-Hour Conc. Site AQS ID	Number of SLAMS		
					Required [a]	Active	Additional Needed
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,335,391	165[b]	Concord (06-013-0002)	4-8 [b]	2	2
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,836,911	159[b]	Hollister (06-069-0002)	4-8[b]	2[c]	2
Santa Rosa-Petaluma	Sonoma	483,878	140[b]	Guerneville (06-097-3002)	1-2 [b]	3[d]	0
Vallejo	Solano	413,344	326[b]	Vacaville (06-095-3001)	3-4[b]	1[e]	2
Napa	Napa	136,484	122	Napa Valley College (06-055-0004)	0	0	0

[a] The number of PM_{10} monitors required depends on the population of the MSA and the highest 24-hour PM_{10} concentration as described in Table D-4 of 40 CFR part 58 Appendix D.

[b] Existing monitoring meets the needs of the local air districts and the communities, and the Air District will continue to assess the adequacy of the PM_{10} networks in each 5-Year Network Assessment to determine if events like this become more common and drive the need for additional monitoring. The Air District is committed to working with EPA, CARB, and other local air districts to ensure that monitoring levels continue to protect public health and safety.

[c] One of the two monitors is not in the BAAQMD. The Hollister monitoring site is in the Monterey Bay Unified APCD.

[d] These monitors are not in the BAAQMD. The Healdsburg, Guerneville, and Cloverdale monitoring sites are in the Northern Sonoma APCD.

[e] This monitor is not in the BAAQMD. The Vacaville monitoring site is in the Yolo-Solano AQMD.

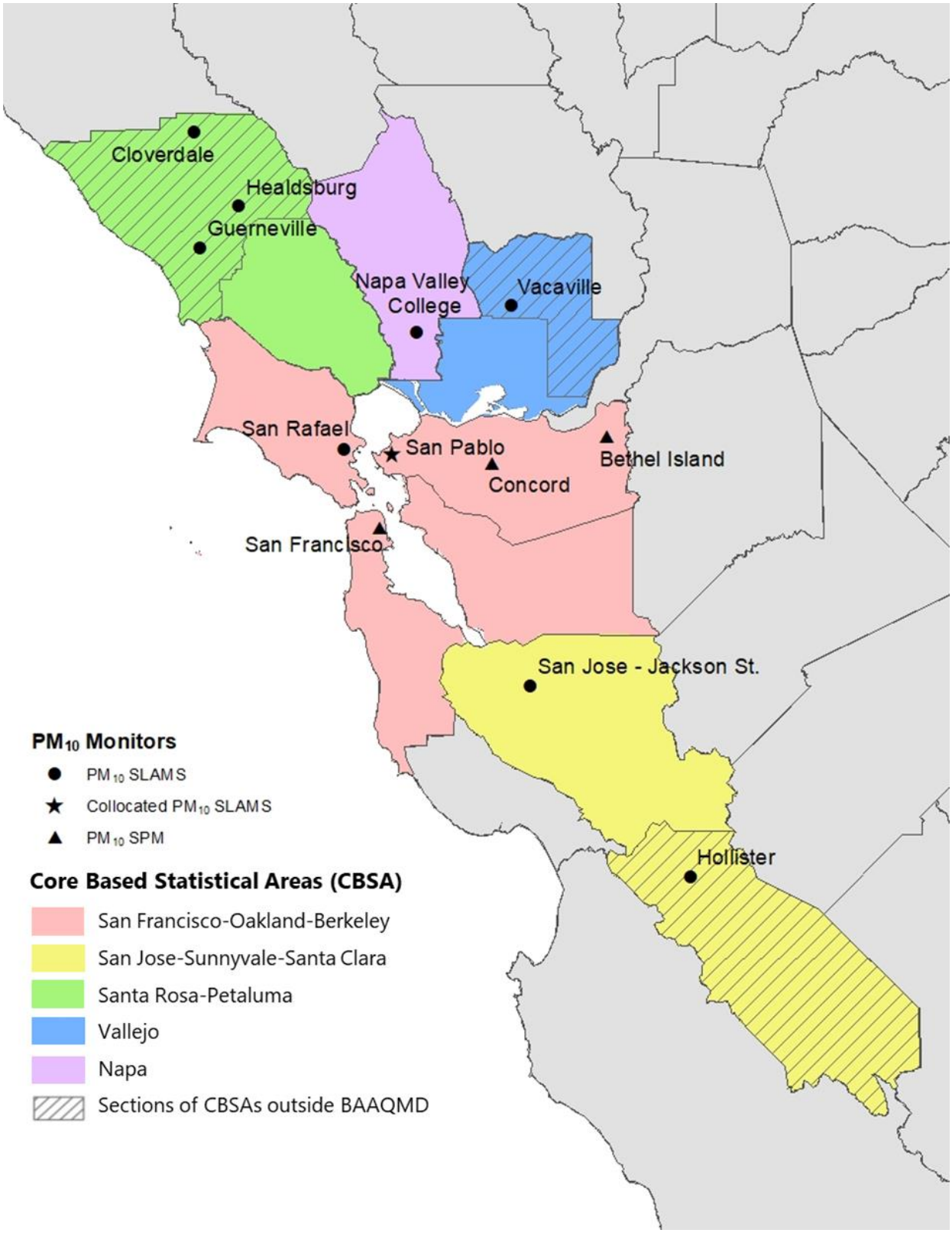


Figure 2-6. PM_{10} Monitoring in the San Francisco Bay Area in 2020

2.2.4 Minimum Monitoring Requirements for Collocated PM_{10}

EPA requires a network of manual PM_{10} samplers to have collocated monitoring at 15% (or at least one) of the monitoring sites within a PQAO (40 CFR part 58 Appendix D, §3.3.4). All primary PM_{10} SLAMS in the Bay Area network are manual methods (method codes 063, 141, and 127). Table 2-11 summarizes the collocation of PM_{10} in the Bay Area during 2020.

Table 2-11. Collocated PM_{10} Monitoring in the Bay Area in 2020

Methods Codes	Number of Primary Manual SLAMS	Number of Required Collocated Manual SLAMS	Number of Active Collocated Manual SLAMS
063, 141, 127	4	1	1 (San Pablo)

Collocated PM_{10} monitoring was moved to San Pablo on October 17, 2016 since the site could accommodate the logistics of collocation. It is an appropriate collocation site because the maximum concentrations at these sites are among the highest in the network and the concentrations are relatively consistent throughout the network.

Although the collocated sampler is only required to operate on a 1:12 schedule, the Air District operates the sampler 1:6 throughout the year; the collocated sampling frequency may be reevaluated in the future.

2.2.5 Minimum Monitoring Requirements for SO_2

The number of required SO_2 monitors in each CBSA is determined by the product of the total amount of SO_2 emissions in the CBSA and its population as specified in 40 CFR part 58 Appendix D, §4.4.2 (Table 2-12). The resulting value is defined as the Population Weighted Emissions Index (PWEI). One SO_2 monitor is required in CBSAs with PWEI values greater than 5,000 but less than 100,000, and none when the value is less than 5,000. SO_2 emissions shown in Table 2-12 are from the 2017 National Emissions Inventory (NEI). Table 2-10 also shows that the Air District monitoring network meets or surpasses the SO_2 minimum requirements for monitoring by the PWEI.

In addition to minimum monitoring requirements by the PWEI, EPA requires trace-level SO_2 monitoring at NCore sites (40 CFR part 58 Appendix D, §4.4.5), which is fulfilled by a trace-level SO_2 monitor at the San Jose – Jackson NCore site.

The Data Requirements Rule (DRR) for the 2010 1-hour SO_2 NAAQS also requires monitoring or modeling to characterize ambient SO_2 concentrations near SO_2 sources that emit more than 2,000 tons per year (tpy). While there is no single source in the Bay Area that exceeds this emission threshold, EPA required further air quality characterization

of the following sources in Martinez, a city in the San Francisco-Oakland-Hayward CBSA: The Shell Refinery, Tesoro Refinery, and Eco Services Sulfuric Acid Plant. In 2016, EPA approved the SO_2 SLAMS in Martinez as meeting this requirement.

The Air District may add additional SO_2 SLAMS around the five refineries to further characterize the air quality in the communities near refineries per our Regulation 3, and Regulation 12, Rule 15.

SO_2 Special Purpose Monitor

The Crockett SO_2 monitor is too close to a nearby tree to meet 40 CFR 58 Appendix E siting requirements. Therefore, it is designated a source-oriented SPM and is not counted towards minimum monitoring requirements. However, this monitor meets the requirements of 40 CFR part 58 Appendix A and is considered NAAQS comparable since it could show a valid violation of the NAAQS.

Table 2-12. Minimum Monitoring Requirements for SO_2

MSA	County or Counties	Population 2010 Census	Total SO_2 (tons/yr) 2017 NEI	PWEI (million-person-tons/yr)	Number of SLAMS		
					Required	Active	Additional Needed
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,335,391	3350	14522	1[a] (PWEI and DRR)	6	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,836,911	1637	3008	1[b] (NCore)	1	0
Santa Rosa-Petaluma	Sonoma	483,878	1	0.5	0	0	0
Vallejo	Solano	413,344	76	31	0	1	0
Napa	Napa	136,484	0	0	0	0	0

[a] There is a requirement for one SO_2 monitor both from the PWEI and from the final SO_2 DRR. These requirements could be met by the same monitor, so the requirement is listed as one monitor. However, the Air District intends to continue operating more SO_2 monitors than are required to characterize the effects of sources in this CBSA.

[b] A trace-level SO_2 monitor is required at the San Jose – Jackson site as part of the NCore program (40 CFR part 58 Appendix D, §4.4.5). There are no monitoring requirements by PWEI for the San Jose-Sunnyvale-Santa Clara CBSA.

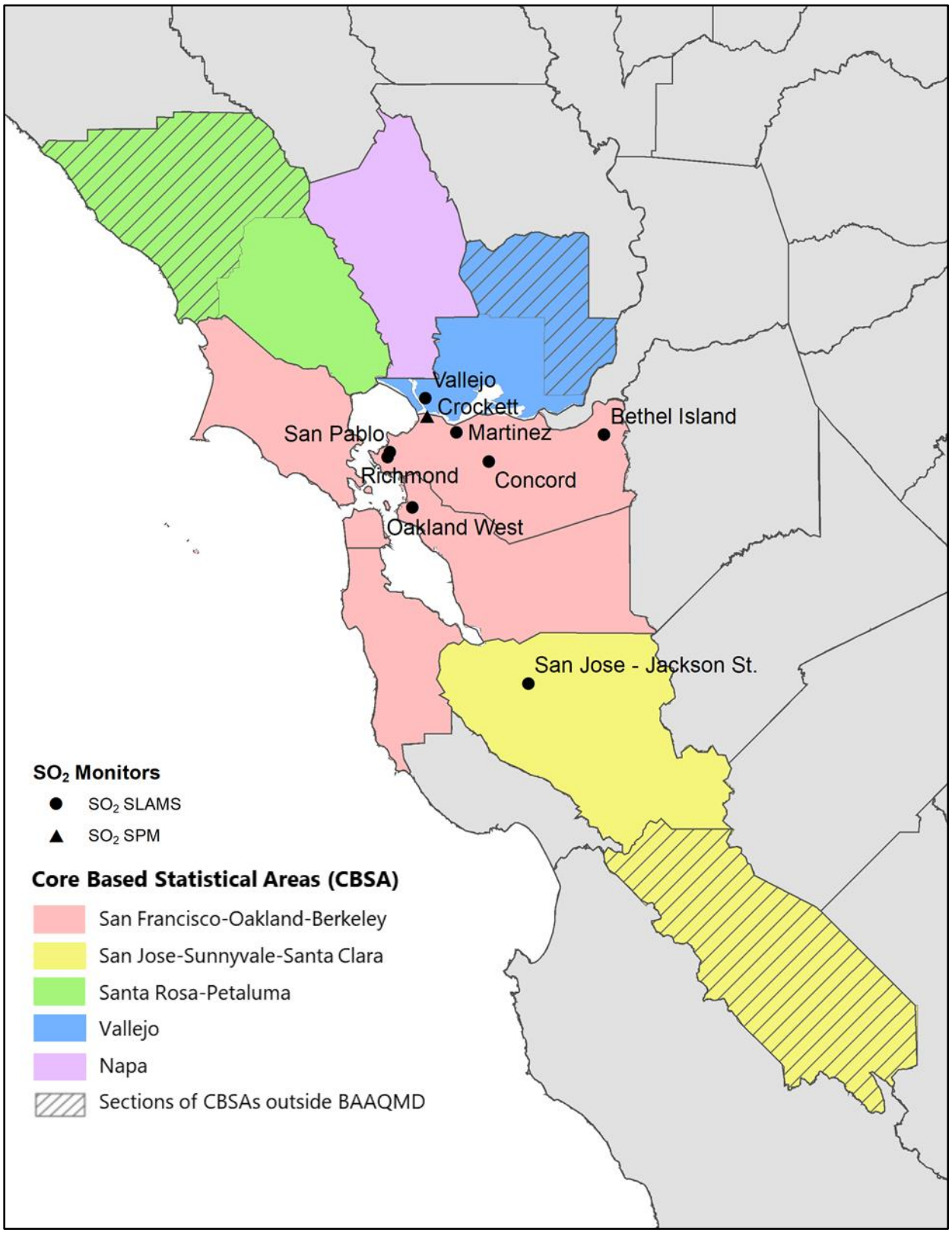


Figure 2-6. SO_2 Monitoring in the San Francisco Bay Area in 2020

2.2.6 Minimum Monitoring Requirements for NO_2

On April 12, 2010, EPA revised the minimum monitoring requirements for NO_2 in 40 CFR part 58 Appendix D. The revision required the Air District to operate NO_2 monitors at neighborhood-scale or larger sites to monitor the expected highest area-wide concentrations, and at sites within 50 meters of major freeways (near-road sites). In addition, the rule required the EPA Regional Administrators to identify an additional 40 sites nationwide to monitor NO_2 in areas with susceptible and vulnerable populations by January 1, 2013. In implementing this requirement, EPA selected existing area-wide SLAMS in areas with susceptible and vulnerable populations to meet this requirement.

On March 7, 2013 and December 30, 2016, EPA issued final rules revising the requirements and implementation dates for near-road NO_2 sites. The current requirements are for one near-road NO_2 monitor in CBSA's with a population greater than 1 million, and a second near-road NO_2 monitor in CBSA's with a population greater than 2.5 million or CBSA's with populations over 1 million and roadway with annual average daily traffic (AADT) over 250,000. Based on CBSA population and traffic counts, the Air District was initially required to operate three near-road monitoring sites. In addition to the near-road monitoring requirement, the Air District is required to monitor for area-wide NO_2 concentrations at one site in both the San Francisco-Oakland-Berkeley and the San Jose-Sunnyvale-Santa Clara CBSAs (see Table 2-13).

As part of the NO_2 network design criteria, EPA defined the most important scale for different NO_2 monitoring objectives. The most important spatial scale for near-road NO_2 monitoring stations to effectively characterize the maximum expected hourly NO_2 concentration due to mobile source emissions on major roadways is microscale. The most important spatial scales for other monitoring stations characterizing maximum expected hourly NO_2 concentrations are microscale and middle scale. The most important spatial scale for area-wide monitoring of high NO_2 concentrations is neighborhood scale.

In 2020, the Air District operated ten area-wide neighborhood scale NO_2 SLAMS in the Bay Area, including six in the San Francisco-Oakland-Berkeley CBSA and one in the San Jose-Sunnyvale-Santa Clara CBSA. One of the ten, the Oakland West site, was selected as one of the 40 nationwide sites for monitoring NO_2 in areas with susceptible and vulnerable populations.

Table 2-13 shows NO_2 minimum monitoring requirements by CBSA for near-road and area-wide monitoring; Figure 2-7 is a map of the NO_2 SLAMS and SPMs in the Bay Area.

Table 2-14 shows the various spatial scales of the NO_2 SLAMS and SPMs in each CBSA. NO_2 monitoring at Oakland East, San Rafael, and San Pablo is middle scale based on traffic counts and the distance between the monitors and the nearest traffic lane to the monitors.

Therefore, these sites, like the near-road sites, are not counted toward meeting the area-wide requirements of 40 CFR part 58 Appendix D, §4.3.3.

In 2020, the Air District continued to meet the NO_2 minimum monitoring requirements for area-wide and Regional Administrator Required Monitoring in areas with susceptible and vulnerable populations. The Air District also meets the near-road NO_2 minimum monitoring requirements in the San Francisco-Oakland-Berkeley CBSA with the addition of the Berkeley Aquatic Park monitoring site.

While there have been decreases in the traffic counts in the San Jose-Sunnyvale-Santa Clara CBSA since 2017, one road segment in the CBSA still exceeds the 250,000 AADT threshold for a second near-road NO_2 site in a CBSA. As stated in the Air District's 2020 Network Assessment, the Air District will continue to track whether traffic amounts are expected to remain consistently above the threshold. The existing four near road sites in the Bay Area have higher fleet adjusted AADT, and therefore higher expected NO_2 emissions than a fourth site. Therefore, given the low concentrations measured at these existing sites, the Air District believes that the resources needed to construct and operate a new near-road NO_2 site could be deployed elsewhere with a larger benefit to public health. The Air District will work with EPA to determine whether there are resources to fund additions to the near-road NO_2 network, or if there is discretion for a waiver given the characterization of near road environments already occurring in the Bay Area.

NO_2 Special Purpose Monitor

San Ramon is a NO_2 SPM, operated as part of the Air District's voluntary PAMS program, and meets the requirements of 40 CFR part 58 Appendices E and A. In 2020, San Ramon was operated year-round. Therefore, NO_2 data meets the data completeness requirement and can be compared to the NAAQS but cannot be counted towards meeting the minimum monitoring requirements.

Table 2-13. Minimum Monitoring Requirements for NO_2

CBSA	Population 2010 Census	Maximum AADT (2018[a])	Road Segment for Max AADT	Near-road Monitors			Area-wide Monitors		
				Required	Active	Additional Needed	Required	Active	Additional Needed
San Francisco-Oakland-Berkeley	4,335,391	291,000	Walnut Creek, North Main St., Rte. 680	2	2[f]	0	1[b]	6	0
San Jose-Sunnyvale-Santa Clara	1,836,911	270,000	San Jose, Tully Road, Rte. 101	2[c]	1[d]	1[c]	1	1	0
Santa Rosa - Petaluma	483,878	153,000	Baker Avenue, Rte. 101	0	0	0	0	1	0
Vallejo	413,344	232,000	Suisun Valley Road, Rte. 80	0	0	0	0	1	0
Napa	136,484	134,000	Solano/Napa County Line, Rte. 80	0	0	0	0	1[e]	0

[a] Updated May 25, 2021. Maximum AADT data was taken from CalTrans estimates here: https://gisdata-caltrans.opendata.arcgis.com/datasets/f71f49fb87b3426e9688fe66039170bc_0

[b] One area-wide monitor is required; additionally, the Oakland West monitoring site was selected by EPA as one of the 40 nationwide sites for monitoring near susceptible and vulnerable populations. Since the two requirements for this CSBA can be met by the same site, there is only one required monitor in this CBSA.

[c] Recent increases in traffic triggered a second required monitor in the San Jose-Sunnyvale-Santa Clara CBSA. The Air District will continue to track whether traffic amounts are expected to remain consistently above the threshold and will work with EPA to determine whether there are resources to fund additions to the near-road NO_2 network.

[d] This monitor is shared with Monterey Bay Unified APCD. The monitoring agreement is in Appendix C.

[e] NO_2 at Napa is monitored at middle scale based on distance to the roadway and traffic count which cannot be counted as an area-wide monitor. The NO_2 sensor at Napa Valley College (replacement for Napa site) is monitored at neighborhood scale. Therefore, it can be counted as an area-wide monitor.

[f] The Pleasanton-Owens Ct. site meets siting for a near-road monitoring objective. However, the NO_2 monitor at that site that is an SPM, and as such, is not counted toward fulfilling this requirement.

Table 2-13. NO_2 Monitors at Various Spatial Scales

CBSA	County or Counties	Population 2010 Census	Sites at Micro Scale[a]	Sites at Middle Scale[a]	Sites at Neighborhood Scale or Greater
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,335,391	Laney College, Berkeley Aquatic Park, Pleasanton[b]	Oakland East, San Pablo, San Rafael	Bethel Island, Concord, Livermore, Oakland West, Redwood City, San Francisco, San Ramon[b]
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,836,911	San Jose-Knox	None	San Jose-Jackson
Santa Rosa-Petaluma	Sonoma	483,878	None	None	Sebastopol
Vallejo	Solano	413,344	None	None	Vallejo
Napa	Napa	136,484	None	None	Napa Valley College

[a] Micro- and middle-scale sites are not counted towards meeting the requirement for monitoring area-wide concentrations, unless it is determined that they are representative of many such locations in the same CBSA and represent area-wide air quality.

[b] Pleasanton and San Ramon are SPMs and are not counted toward meeting the requirement for monitoring near-road and area-wide concentrations, respectively.

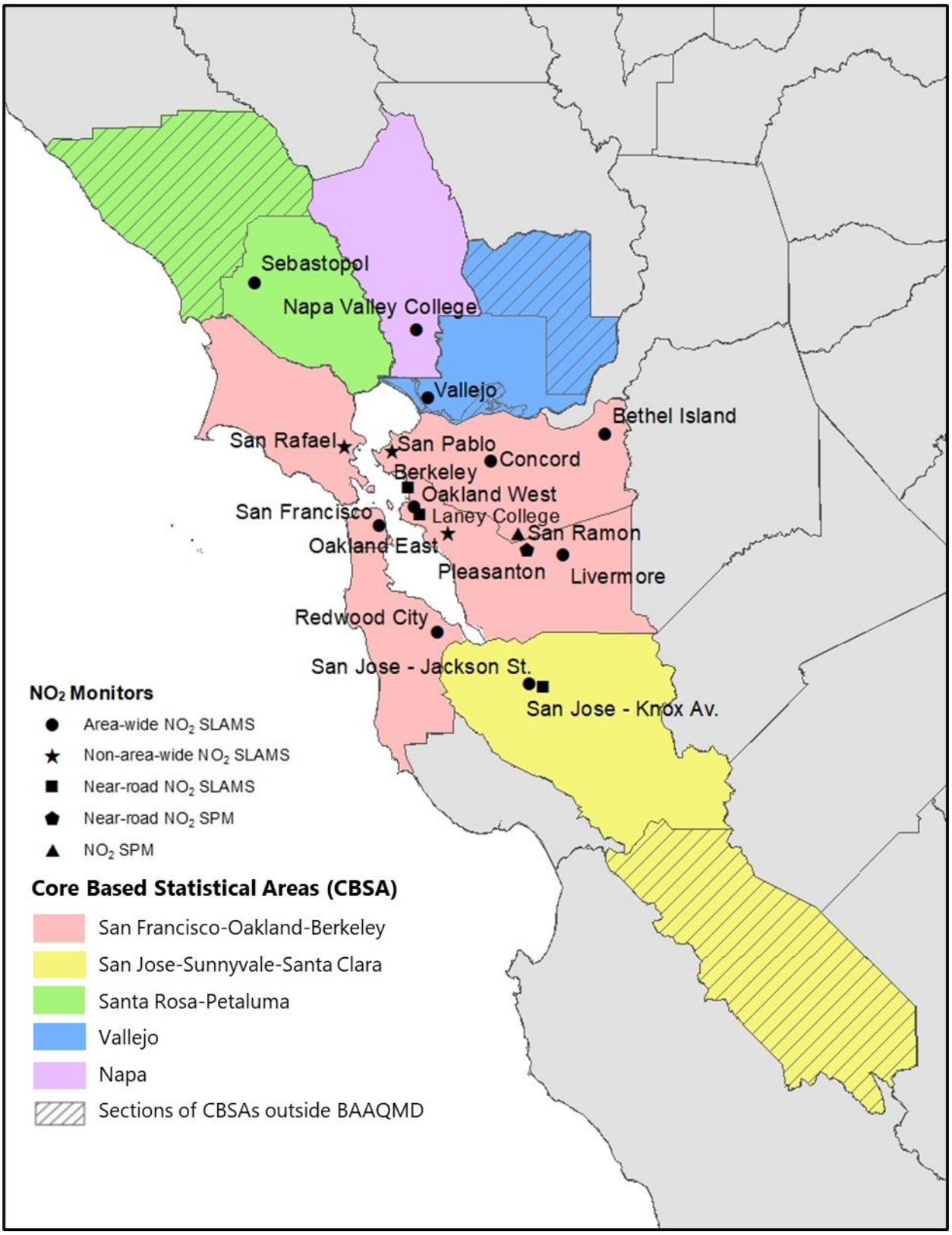


Figure 2-7. NO_2 Monitoring in the San Francisco Bay Area in 2020

2.2.7 Minimum Monitoring Requirements for CO

Effective October 31, 2011, EPA revised 40 CFR part 58 Appendix D for carbon monoxide (CO) monitoring. The revision requires one CO monitor to operate collocated with a near-road NO_2 monitor in CBSAs having a population of 1 million or more. If a CBSA is required to have more than one near-road NO_2 monitor, only one CO monitor is required to be collocated with a near-road NO_2 monitor within that CBSA. Table 2-15 shows these requirements applied to the Bay Area CBSAs. The Air District operates CO monitors at all near-road sites, and meets the minimum monitoring requirements for CO.

Table 2-14. Minimum Monitoring Requirements for CO

CBSA	County or Counties	Population 2010 Census	Near-road Monitors Required	Near-road Monitors Active	Near-road Monitors Needed
San Francisco-Oakland-Berkeley	SF, San Mateo, Alameda, Marin, Contra Costa	4,335,391	1	2[a]	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	1,836,911	1	1[b]	0
Santa Rosa - Petaluma	Sonoma	483,878	0	0	0
Vallejo	Solano	413,344	0	0	0
Napa	Napa	136,484	0	0	0

[a] The Pleasanton-Owens Ct. site meets siting for a near-road monitoring objective. However, the CO monitor at that site that is an SPM, and as such, is not counted toward fulfilling this requirement.
[b] This monitor will be shared with MBUAPCD. The monitoring agreement is in Appendix D.

In addition to minimum monitoring requirements for near-road CO, EPA requires trace-level CO monitoring at NCore sites (40 CFR part 58 Appendix D, §4.4.5), which is fulfilled by a trace-level CO monitor at the San Jose-Jackson NCore site. In 2020, the Air District operated 17 CO SLAMS: one within each of the nine Bay Area counties plus additional CO monitors in large cities and four near-road CO monitors (Figure 2-8).

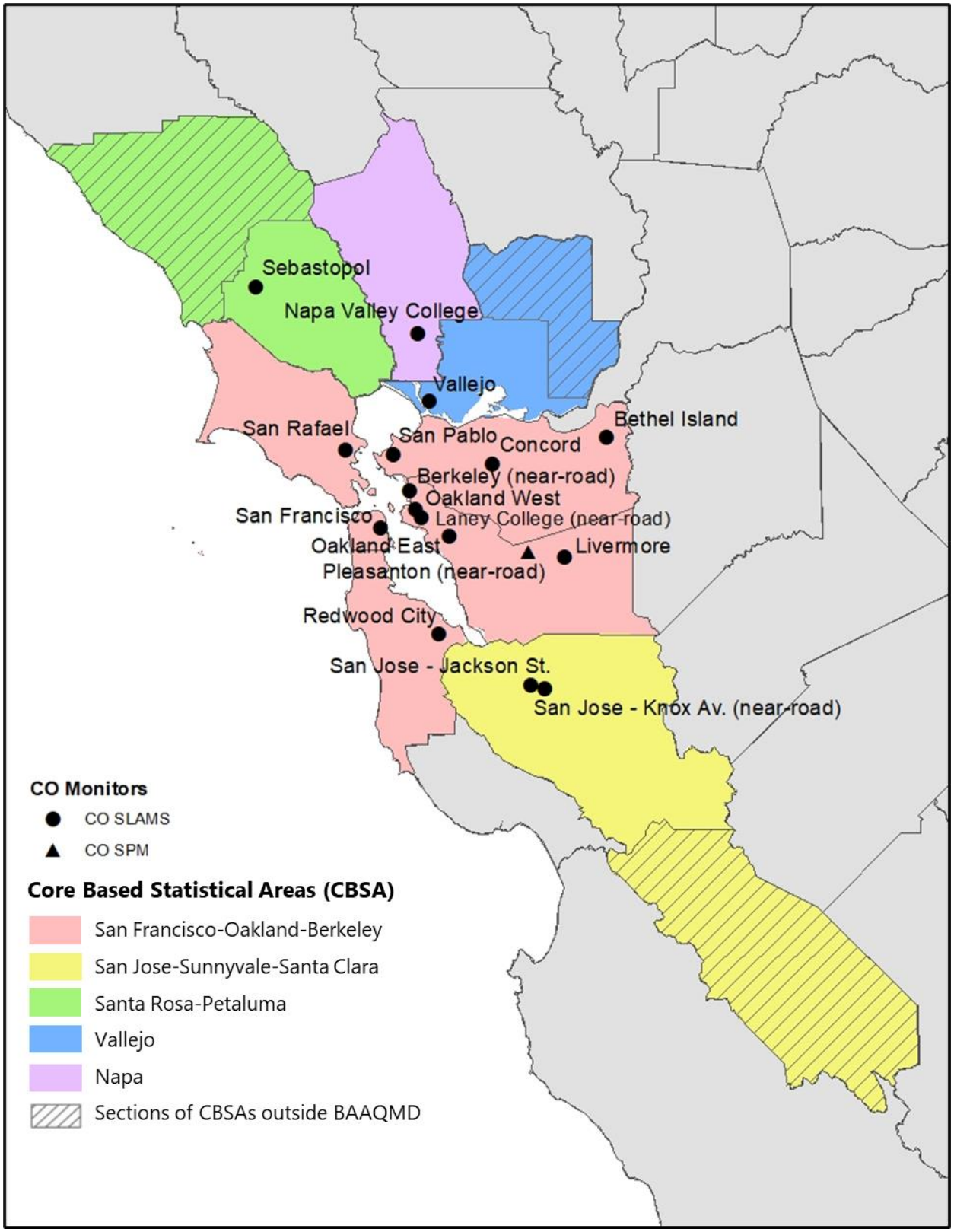


Figure 2-8. CO Monitoring in the San Francisco Bay Area in 2020

2.2.8 Minimum Monitoring Requirements for Lead

40 CFR part 58 Appendix D, §4.5(a) requires monitoring near lead sources which are expected to or have been shown to contribute to a maximum lead concentration in ambient air in excess of the NAAQS, taking into account the logistics and potential for population exposure. These monitors are to be sited, considering logistics and the potential for population oriented, where the ambient Pb concentration is expected to be at its maximum. The applicable sources are identified by having emissions greater than 0.5 tpy for non-airport sources and greater than 1.0 tpy for airports. In the Bay Area, there are no sources meeting this criterion according to the 2017 National Emissions Inventory (NEI). However, 40 CFR part 58 Appendix D, §4.5(a)(iii) separately required source-oriented monitoring near an additional 15 airports to evaluate air quality near airports with emissions from piston engine aircraft using leaded fuel that may approach 0.50 tons per year, including three airports in the Bay Area (Palo Alto, San Carlos, and Reid-Hillview). One of the airport lead monitoring sites is also required to operate a collocated sampler.

40 CFR part 58 Appendix D, §4.5(a)(iii) further states that "any monitoring location that measures a rolling 3-month average that exceeds 50 percent of the NAAQS…shall become a required monitor according to 40 CFR 58 paragraph 4.5(c) of this appendix, and shall continue to monitor for Pb unless a waiver is granted allowing it to stop operating as allowed by the provisions in paragraph 4.5(a)(ii) of this appendix".

As described below, each of the airport lead sites in the Bay Area have been either permanently or temporarily shut down due to logistical problems beyond the District's control that made it impossible to continue operation at their current locations. The Air District will continue to work with EPA to determine an appropriate path forward for airport lead monitoring.

Palo Alto Airport

The Palo Alto Airport lead monitoring site was shut down at the end of December 2014 because Santa Clara County sold the property to the city of Palo Alto. The sale triggered FAA review of various operational plans and permits, revealing that the lead sampler location violated FAA regulations. The Air District has been working with EPA to find a suitable alternate location, but the Air District expects to request EPA approval of the shutdown of the Palo Alto Airport monitoring site outside the annual network plan process in 2021.

San Carlos Airport

The San Carlos Airport lead monitoring site was moved about 120 yards to the southeast because the property owner at the original site did not renew the lease. Data collected at the original site ended on September 13, 2013 and resumed at the new location (San Carlos Airport II) on March 25, 2015.

As of Tuesday, April 11, 2017, the TSP-Pb monitoring at the San Carlos Airport II monitoring site has been discontinued due to circumstances beyond the Air District's control. The San Carlos Airport management informed the Air District site operator on April 11 that the Air District is no longer allowed access to the site, citing the expired lease. The Air District has tried unsuccessfully to renegotiate the lease since November 2016. The airport management is requiring that a shutdown provision be included in the renewed lease. However, the Air District cannot commit to the provision, since EPA, not the Air District, has the authority to approve the closure of the site. The Air District notified EPA of the discontinuation on April 13, 2017. The Air District expects to request EPA approval of the shutdown of the San Carlos Airport II monitoring site outside the annual network plan process in 2021 considering the of the most recent 3-month averages of lead concentrations are below 50% of the NAAQS.

Reid-Hillview Airport

The Reid-Hillview Airport lead monitor temporarily ceased operating on June 20, 2020 due to electrical hazards and the subsequent site repair. The Air District expects to request EPA approval of the shutdown of the Reid Hillview monitoring site outside the annual network plan process in 2021 considering the most recent 3-month averages of lead concentrations are below 50% of the NAAQS.

Figure 2-9 shows the lead SLAMS in the San Francisco Bay Area in 2020. Minimum monitoring requirements for source-oriented lead at airports and collocation requirements are provided in Table 2-14 and Table 2-15.

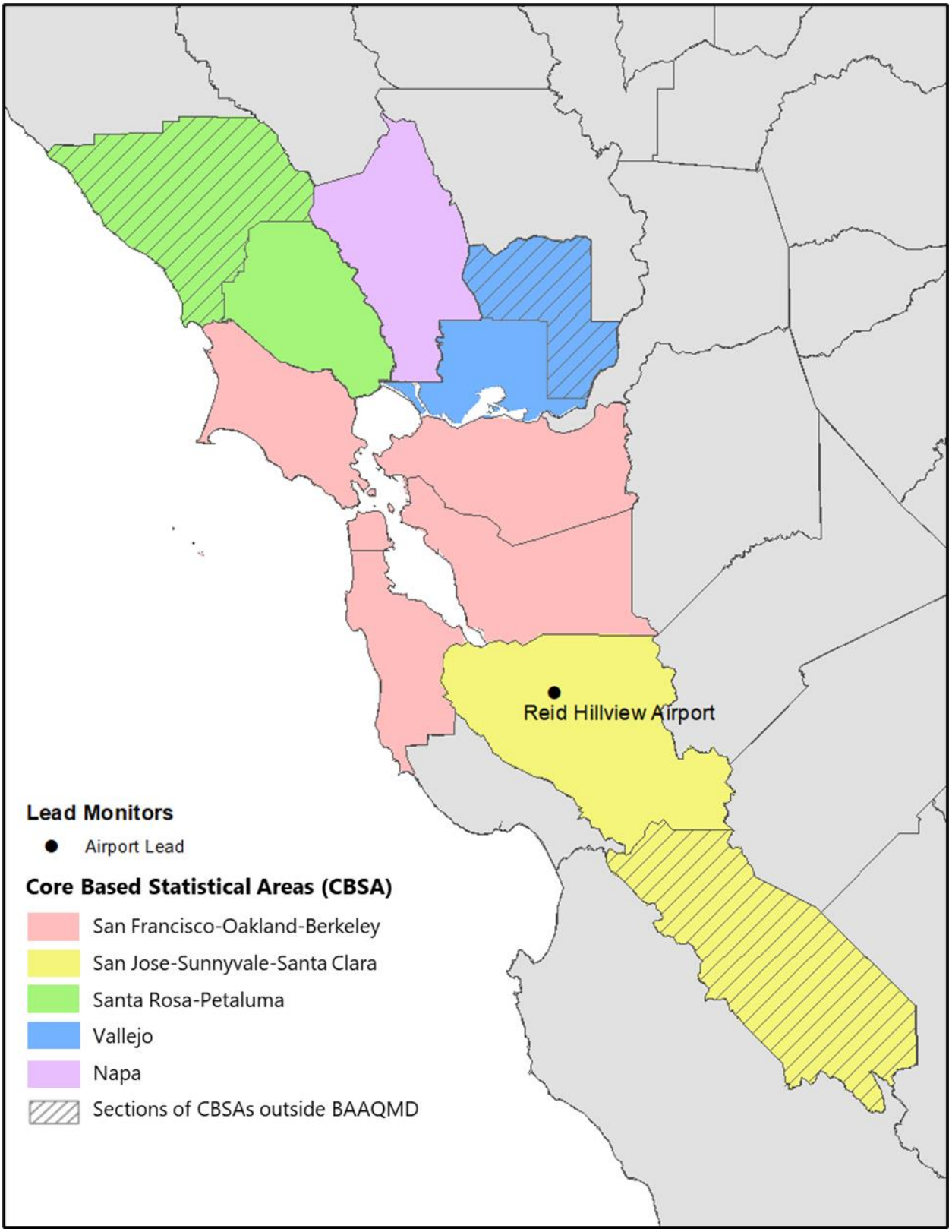


Figure 2-9. Lead Monitoring in the San Francisco Bay Area in 2020

Table 2-15. Source Oriented Lead Monitoring at Airports

Source Name	Address	Lead Emissions (tons/yr) 2017 NEI	Number of SLAMS		
			Required	Active	Additional Needed
San Carlos Airport	620 Airport Way San Carlos 94070	0.30	1	0[a]	1[a]
Palo Alto Airport	1925 Embarcadero Rd. Palo Alto 94303	0.48	1	0[b]	1[b]
Reid-Hillview Airport	2500 Cunningham Ave. San Jose 95148	0.37	1	1[c]	0

[a] The San Carlos Airport II monitor began operation on March 25, 2015. On Tuesday, April 11, 2017, the San Carlos Airport II monitor was shut down due to an expired lease and the inability to come to terms with a new lease.

[b] The Palo Alto Airport monitor was shut down in December 2014, after it was found to violate FAA regulations and would therefore need to be relocated. EPA and the Air District have been working together to identify a suitable location so that lead monitoring can resume at this airport, but the Air District has decided to request approval to shutdown the monitoring site.

[c] The Reid-Hillview Airport monitor temporarily ceased operating on June 20, 2020.

Table 2-16. Collocated Source Oriented Lead Monitoring at Airports

Source Name	Address	Lead Emissions (tons/yr) 2017 NEI	Collocated Monitors Required	Active Monitors	Additional Monitors Needed
San Carlos Airport	620 Airport Way San Carlos 94070	0.30	1	0[a]	1[a]

[a] The San Carlos Airport II sampler began operation on March 25, 2015. On Tuesday, April 11, 2017, the San Carlos Airport II monitor was shut down due to an expired lease and the inability to come to terms with a new lease.

2.3 Modifications Made to the Network in 2020

Bethel Island - PM_{10}

On March 16, 2020, the Air District closed the PM_{10} SPM monitor at Bethel Island in order to consolidate Air District resources. 40 CFR 58.11 (c) states that "SPM stations do not require approvals, but a change in the designation of a monitoring site from SLAMS to SPM requires approval of the Regional Administrator". EPA previously approved the change in designation from a SLAMS to SPM in 2013. Therefore, EPA approval is not required for the discontinuation of the PM_{10} SPM at Bethel Island.

Reid-Hillview – Lead

On June 20, 2020, the Air District temporarily close the Lead (TSP) monitor at the Reid-Hillview Airport due to electrical hazards and the subsequent site repair.

2.4 Proposed Modifications to the Network in 2021–2022

Napa Valley College Relocation

On February 26, 2021, the Napa Valley Community College District notified the Air District that due to scheduled construction of the Napa Valley College's student housing project, the BAAQMD air monitoring station could no longer remain at the site beyond June 1, 2021, and the lease was being terminated. As such, in 2021 the Air District will be seeking approval for a site relocation under 40 CFR 58.14 (c)(6), which states that sites "may be moved to a nearby location with the same scale of representation if logistical problems beyond the State's control make it impossible to continue operation at its current site". The Air District will work with EPA to find a suitable relocation site.

Community Monitoring Near Refineries

During the Regulation 12, Rule 15 rulemaking process, the Air District committed to conducting additional monitoring in communities near refineries, funded by fees paid by the facilities, per Regulation 3.

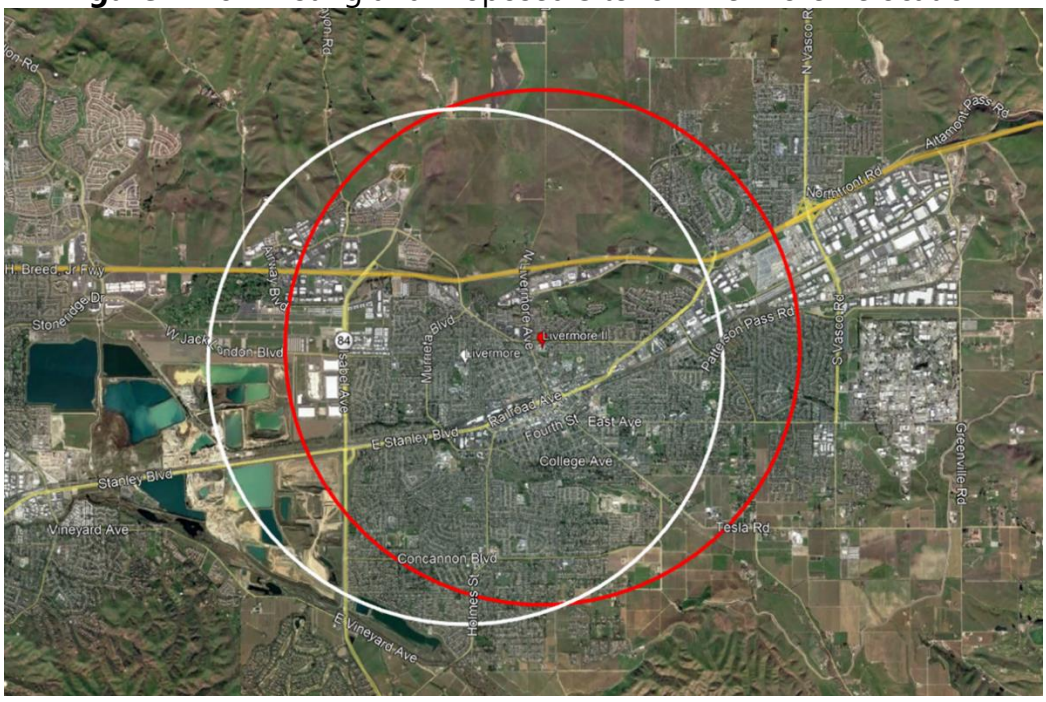
In 2018, the Air District conducted workshops to ask for public input on the cumulative impacts experienced in these areas. The Air District is evaluating the information submitted by the public, along with the most up-to-date source location, emissions, modeling, and ambient monitoring data to determine the best monitoring locations to further evaluate the exposure the nearby communities are experiencing and will continue looking for places that logistically accommodate enhanced monitoring in these communities throughout 2021 and 2022.

Livermore Relocation and PAMS

The Air District is required to operate a core PAMS site beginning June 2021. EPA approved a waiver for the Air District to fulfill this requirement at the Livermore site rather than the San Jose – Jackson site since the Livermore site is critical for the Bay Area regional ozone modeling. PAMS measurements are planned to start in fall of 2021. See Section 5.4 and Appendix G for additional details.

The Air District is also requesting approval for the relocation of the Livermore monitoring site to a nearby location. The existing location will be demolished to make way for a mixed-use development project. 40 CFR 58.14(c)(6) states that monitoring sites "may be moved to a nearby location with the same scale of representation if logistical problems beyond the State's control make it impossible to continue operation at its current site". The proposed new location will be located 0.75 miles to the east near Lawrence Elementary School at 2451 Portola Avenue Livermore, CA and is expected to be at the same scale of representation; measuring similar concentrations from similar sources. Furthermore, the relocation will not compromise data collection needed for implementation of the NAAQS and all requirements in 40 CFR part 58 Appendices D and E will continue to be met. Figure 2-10 shows the overlapping spatial scales of representation (neighborhood – 4 km) for both the existing and proposed new locations. Due to short distance from the existing location, the Air District also requests that the new site maintain the existing AQS ID (06-001-0007). If a new AQS ID is recommended, the Air District requests that data from the new and existing sites be combined for purposes of design value calculations.

Figure 2-10 Existing and Proposed Site for Livermore Relocation



2.5 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 website for 30 days for public comment on the proposed changes. After the public comment period, the Air District reviews and considers the comments before making a final decision on a change to air monitoring network. The Air District submits the Annual Monitoring Network Plan with public comments to the EPA Region 9 Regional Administrator by July 1 each year.

Before shutting down a SLAMS (State or Local Air Monitoring Station) monitor, 40 CFR part 58.14(c) requires that the Air District obtain the Regional Administrator's written approval. The Regional Administrator will normally approve the shutdown of a SLAMS monitor when any of the following situations apply:

1. Criteria pollutant monitors which have shown attainment of the national standards during the previous five years may be removed if the probability is less than 10% that the monitor will exceed 80% of NAAQS during the next three years, and if the monitor is not required by an attainment or maintenance plan.
2. CO, PM_{10}, SO_2, or NO_2 monitors not required by an attainment or maintenance plan may be removed if the monitor has shown consistently lower concentrations than another monitor for the same pollutant in the same county during the previous five years and is expected to remain higher during the following five years given expected implementation of control measures in the area.
3. Criteria pollutant monitors that have not violated the national standards in the most recent five years may be removed if the State Implementation Plan (SIP) provides a method of representing the air quality in the applicable county in the absence of monitoring.
4. $PM_{2.5}$ monitors may be removed when EPA determines that measurements are not comparable to the relevant NAAQS because of siting issues in accordance with 40 CFR 58.30.
5. Criteria pollutant monitors that are located upwind of an urban area to characterize transport into the area may be removed if the monitor has not recorded violations of the relevant NAAQS in the previous five years and the monitor is being replaced by another monitor characterizing transport.
6. Criteria pollutant monitors not eligible for removal under any of the above criteria may be relocated to a nearby location with the same scale of representation if logistical problems beyond the agency's control make it impossible to continue operation at its current site.

EPA may also approve other requests for discontinuation on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of 40 CFR part 58 Appendix D continue to be met.

The closure of an SPM does not require approval from EPA (see 40 CFR 58.20(f)), but changing the monitor type from SLAMS to SPM requires approval of the Regional Administrator.

2.6 Data Submission Requirement

After all data review procedures are complete, the Air District submits monthly air quality and associated precision and accuracy reports to the EPA AQS database within 90 days of the end of every month. By May 1 each year, the Air District submits a data certification letter to Region 9 stating that the previous calendar year of data is complete and correct. The certification letter for 2020 data was submitted to EPA Region 9 on April 30, 2021.

3. SPECIAL MONITORING PROGRAMS

3.1 NCore Program

In October 2006, EPA revised 40 CFR parts 53 and 58 to establish the National Core multi-pollutant monitoring stations (NCore) program. These sites replace the National Air Monitoring Station (NAMS) network that previously existed and are intended to be long-term sites useful for a variety of applications including air quality trends analyses, model evaluation, and tracking metropolitan area statistics at a national level. NCore sites must measure $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, O_3, SO_2, CO, NO/NO_Y, wind speed, wind direction, relative humidity, and ambient temperature.

EPA designed the national NCore network to have a mixture of urban and rural sites. In California, EPA required numerous sites in the state that would represent a large urban area. Recommendations for locating NCore urban sites are found in 40 CFR part 58 Appendix D, and other EPA publications:

- Urban NCore stations are to be located at neighborhood or urban scale to provide representative exposure levels throughout the metropolitan area population.
- Urban NCore stations should be located where significant pollution levels exist.
- Population oriented monitoring is highly recommended.
- No biasing local pollutant emission sources should be within 500 meters at urban stations.
- Collocation with other network programs (such as NATTS, CSN, CASTNET, IMPROVE, NADP, PAMS) is encouraged.
- Siting of monitors at NCore sites must meet SLAMS requirements as specified in 40 CFR Part 58.

EPA and the Air District cooperatively agreed to establish a NCore site in San Jose effective January 1, 2011. San Jose was chosen as the NCore site because it is the city with largest population in the Bay Area with nearly one million residents based on 2010 census data. Exceedances of both the ozone and 24-hour $PM_{2.5}$ national standards have been measured in San Jose. Consequently, operating an NCore station in the San Jose area meets the requirement of being in an urban area with significant air pollution problems.

San Jose is located in the southern part of the Bay Area and lies within the Santa Clara Valley. Wind patterns in the Santa Clara Valley are influenced greatly by the terrain, resulting in a prevailing flow roughly parallel to the valley's northwest-southeast

orientation. During the daytime a sea breeze commonly carries pollutants from San Francisco, San Mateo, and Alameda counties southward into the Santa Clara Valley, while a drainage flow carrying pollutants toward the bay, in the opposite direction, occurs during the nighttime hours.

The monitoring objective for the current San Jose – Jackson monitoring site is population exposure and a neighborhood spatial scale and is intended to represent air quality levels over a large area having a high population density. Consequently, the site cannot be too close to large emission sources such as industrial sources or highways, and the surrounding land use should be relatively uniform. Table 3-1 shows the location of the current San Jose monitoring station, and a 4-km circle around the site representing a neighborhood scale area.

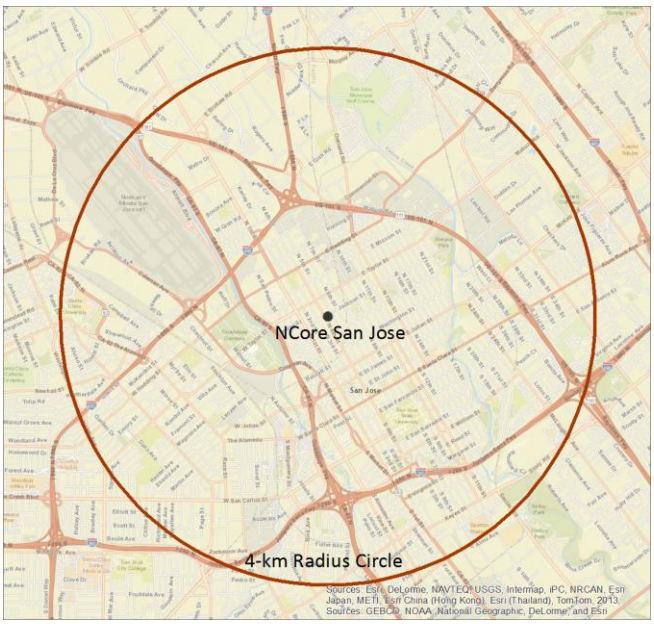


Figure 3-1 Map showing area of Neighborhood Scale at the San Jose NCore station

The map shows that the current station is in a residential/commercial area of San Jose. The station is located on Jackson Street, 1.6 km northwest of the downtown core. The Air District has operated air monitoring sites at various locations near downtown San Jose since 1968, and the current station has been in operation since 2002. The downtown area is encircled by freeways, but the closest freeway to the air monitoring station is 800 meters to the west-southwest, which is sufficiently distant to prevent vehicular emissions from dominating the general air quality at the site. There are no large point sources within 500 meters of the site. The only significant point source emissions within a 4-km radius of the San Jose- Jackson air monitoring site are:

- The Norman Y. Mineta San Jose International Airport, located from 2-4 km NW of the site, is a significant source. The airport averaged 250 commercial and 81 general aviation departures and landings per day in 2015.
- Reed & Graham, Inc. (an asphalt batch plant), located 3.7 km SSW of the site.
- Central Concrete Supply Company, Inc., located 1.9 km SSW of the site.
- San Jose State University Cogeneration Plant, located 2.6 km SSE of the site.

The station currently monitors all criteria pollutants, criteria pollutant precursors, and toxics. In addition to the NCore network, the site is part of the EPA STN network. Starting July 1, 2018, the San Jose Jackson air monitoring station is no longer part of NATTS program.

3.1.1 NCore Monitors

Table 3-1 lists the NCore monitors operating at the San Jose Jackson station including the sampling methodology, sampling frequency, and spatial scale. Because ambient concentrations of CO and SO_2 are well below the NAAQS at population-oriented sites across the U.S., EPA requires NCore sites to use higher sensitivity instruments than conventional instruments for these pollutants (note the use of Trace Level-Enhanced (TLE) type instruments for CO and SO_2). $PM_{10-2.5}$ is measured using the difference between measurements of a pair of Partisol-Plus Model 2025 Sequential samplers, with one configured as a $PM_{2.5}$ sampler and the other configured as a PM_{10} sampler.

On March 10, 2016, EPA issued a final rule revising monitoring requirements in 40 CFR Part 58. As a result, lead monitoring at NCore sites is not required after April 27, 2016.

In March 2014, the Air District requested a waiver to discontinue NO_y monitoring at San Jose because the past three years of data showed an insignificant statistical difference between NO_x and NO_y and was approved by the EPA (see Appendix E). Under this approval, the District plans to monitor NO_y at Livermore in the fall of 2021 and this site will become the official PAMS site in the Bay Area.

Table 3-1 NCore Monitors

Pollutant	Monitoring Method	Sampling Frequency	Spatial Scale
CO (trace level)	TECO 48i TLE	Continuously	Neighborhood
O_3	TECO 49i	Continuously	Neighborhood
SO_2 (trace level)	TECO 43i TLE	Continuously	Neighborhood
$PM_{2.5}$ – filter-based FRM	Partisol-Plus 2025 w/VSCC	1:3	Neighborhood
$PM_{2.5}$ – continuous FEM	Met One FEM BAM 1020	Continuously	Neighborhood
$PM_{2.5}$ Speciation	Met One SASS	1:3	Neighborhood
NO_y	API 200EU/NOy	Continuously	Neighborhood
NO (from NO_y Analyzer)	API 200EU/NOy	Continuously	Neighborhood
$PM_{10\text{-}2.5}$	Partisol-Plus 2025 Sequential $PM_{10\text{-}2.5}$ Air Sampler Pair	1:3	Neighborhood
Meteorological	n/a[a]	Continuously	n/a

[a] EPA approved a waiver to use meteorological data from the San Jose Airport as official data for the NCore site.

3.2 $PM_{2.5}$ Chemical Speciation Network

In 1997, the EPA 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. EPA also established a network of chemical speciation monitors to provide information for the development of control strategies in implementation plans and then to track the success of the plans. This monitoring program is known as the Chemical Speciation Network (CSN).

Speciation monitors provide chemical composition of $PM_{2.5}$, which aides in identification of emissions sources. Some CSN sites were designated as long-term trend sites predominately located in large urban areas. Such sites are part of the Speciation Trends Network (STN) to study longer term trends in the chemical composition of $PM_{2.5.}$ Other sites in the CSN program are known as CSN supplemental sites.

STN monitoring has the primary objective of defining concentration trends of the elements, ions, and organic and elemental carbon components of $PM_{2.5}$. In January 1999, a $PM_{2.5}$ FRM sampler was installed in San Jose and the first year of data showed exceedances of the national standard. Consequently, EPA requested that a Met One Spiral Ambient Speciation Sampler (SASS) be installed at the San Jose monitoring site (which was located on Fourth Street at the time) as part of the STN program because the site is in a major urban area. The site was relocated to Jackson Street in 2002. The

sampler operates 24 hours, from midnight to midnight, and samples are collected on a 1:3 schedule.

In April 2005, the Clean Air Scientific Advisory Committee supported changes to the EPA $PM_{2.5}$ speciation network to improve comparability with the rural Interagency Monitoring of Protected Visual Environments (IMPROVE) $PM_{2.5}$ carbon concentration data. The EPA process, designed to achieve this comparability, included replacing the carbon sampling method with the IMPROVE carbon Thermal Optical Reflectance (TOR) analysis method instead of the Thermal Optical Transmittance (TOT) method. Additionally, the EPA also requested the manufacturer of the IMPROVE sampler, URG Corporation, to modify the sampler to incorporate mass flow control versus fixed-orifice flow control. This effort resulted in a new instrument called the URG-3000N Sequential Particulate Speciation System. In the Bay Area, the Air District began operating the URG 3000 to collect $PM_{2.5}$ carbon concentrations at San Jose - Jackson starting on April 1, 2009, while continuing to operate the SASS sampler to collect all the other compounds.

Filters collected by the SASS and URG-3000 samplers are later analyzed using energy-dispersive X-ray fluorescence, ion chromatography, and thermal/optical analysis techniques to measure metals, anions and cations, and carbon (elemental and organic) components, respectively. The STN filters are analyzed by an EPA national contract laboratory. The sixty-five chemical species measured are listed in Table 3-2 and can be viewed on the EPA's AirData website at http://www.epa.gov/airdata/ad_maps.html.

3.2.1 BAAQMD Supplemental $PM_{2.5}$ Speciation Network Program

The Air District added SASS samplers to existing air monitoring sites at Vallejo and Livermore in 2008 and at the Oakland West site in 2009. These samplers are not part of the national CSN program but contribute to local monitoring objectives. Vallejo and Livermore were selected for sampling because there was an interest in determining the sources of $PM_{2.5}$ on days that exceed the standard at those sites, since exceedances can often occur on days when the air flow is from the Central Valley. These sites may have a different $PM_{2.5}$ composition than at San Jose – Jackson. Oakland West was selected because it is downwind of the Port of Oakland, a major source of diesel particulate matter. The Air District operates these samplers on a 1:6 schedule. Prior to 2015, DRI provided the filters, did the analysis, and submitted the data to AQS; and the filters were also analyzed for palladium, thallium and uranium. Starting with data collected in January 2015, the Air District's laboratory staff have prepared the filters and performed the analysis.

Table 3-2 $PM_{2.5}$ Speciation Measurements at Air District Sites in 2020

Compound	Parameter Code at San Jose	Parameter Code at Other Sites	Method Code at San Jose	Method Code at Other Sites
Metals				
Aluminum	88104	88104	811	811
Antimony	88102	88102	811	811
Arsenic	88103	88103	811	811
Barium	88107	88107	811	811
Bromine	88109	88109	811	811
Cadmium	88110	88110	811	811
Calcium	88111	88111	811	811
Chromium	88112	88112	811	811
Cobalt	88113	88113	811	811
Copper	88114	88114	811	811
Chlorine	88115	88115	811	811
Cerium	88117	88117	811	811
Cesium	88118	88118	811	811
Indium	88131	88131	811	811
Iron	88126	88126	811	811
Lead	88128	88128	811	811
Manganese	88132	88132	811	811
Molybdenum	88134	88134	811	811
Magnesium	88140	88140	811	811
Mercury	88142	88142	811	811
Nickel	88136	88136	811	811
Phosphorous	88152	88152	811	811
Potassium	88180	88180	811	811
Rubidium	88176	88176	811	811
Selenium	88154	88154	811	811
Silicon	88165	88165	811	811
Silver	88166	88166	811	811
Sodium	88184	88184	811	811
Strontium	88168	88168	811	811
Sulfur	88169	88169	811	811
Tin	88160	88160	811	811
Titanium	88161	88161	811	811
Vanadium	88164	88164	811	811
Yttrium	88183	88183	811	811
Zinc	88167	88167	811	811
Zirconium	88185	88185	811	811
Anions and Cations				

Compound	Parameter Code at San Jose	Parameter Code at Other Sites	Method Code at San Jose	Method Code at Other Sites
Ammonium Cation	88301	88301	812	812
Sodium Cation	88302	88302	812	812
Chloride Anion	88203	88203	812	812
Sulfate Anion	88403	88403	812	812
Potassium Cation	88303	88303	812	812
Nitrate Anion	88306	88306	812	812
Organic and Elemental Carbon				
Total Organic Carbon (sum of the OC Fractions below)	88370	88320	838	815
Elemental Carbon Fraction 1 (carbon released at 550ºC in 10% oxygen/90% helium gas)	88383	88329	841	814
Elemental Carbon Fraction 2 (carbon released at 700ºC in 10% oxygen/90% helium gas)	88384	88330	841	814
Elemental Carbon Fraction 3 (carbon released at 800ºC in 10% oxygen/90% helium gas)	88384	88331	841	814
Organic Carbon Fraction 1 (carbon released at 120ºC in helium gas)	88374	88324	841	814
Organic Carbon Fraction 2 (carbon released at 250ºC in helium gas)	88375	88325	841	814
Organic Carbon Fraction 3 (carbon released at 450ºC in helium gas)	88376	88326	841	814
Organic Carbon Fraction 4 (carbon released at 550ºC in helium gas)	88377	88327	841	814

3.3 Photochemical Assessment Monitoring Stations

This section describes the Air District's unofficial Photochemical Assessment Monitoring Stations (PAMS) monitoring in 2020. For a discussion of upcoming changes to the Air District's PAMS monitoring to meet new EPA requirements under 40 CFR part 58 Appendix D, §5(a), please see Appendix H.

The 1990 Clean Air Act Amendments required EPA to promulgate rules for the enhanced monitoring of ozone and its precursors (NO/NO_2 and VOCs) to collect information to address the continued nonattainment of the NAAQS for ozone nationwide. Subsequent revisions to EPA's Air Monitoring regulations, 40 CFR part 58, required air pollution agencies to establish PAMS in ozone nonattainment areas classified as serious, severe, or extreme. The Bay Area is not in any of these categories but is in marginal nonattainment of the ozone NAAQS. However, the Air District chose to voluntarily conduct unofficial-PAMS monitoring to collect data that would improve our understanding of ozone formation in the area, which could be used to improve air quality forecasting and management activities. Monitoring began in 2010 (at Livermore)

and in 2012 (at San Ramon). The objectives of the Bay Area unofficial PAMS program are to:

- Measure air quality improvement progress by tracking ambient concentrations of ozone and ozone precursors.
- Improve photochemical model performance.
- Adjust ozone control strategies.

Traditionally, summertime Bay Area ozone concentrations are highest in the Livermore and Santa Clara Valleys. Meteorological conditions are ideal for ozone formation in these areas when precursor NO/NO_2 and VOCs are present in upwind areas. To better understand the atmospheric chemistry, pollutant concentrations, emission reductions strategies, and transport, two locations in the Livermore area monitor for ozone and ozone precursors. Each PAMS site has meteorological wind and temperature sensors, as listed in Table 3-3.

Table 3-3 Monitoring Start Dates for PAMS Sites

Site	Parameter	Start Date for PAMS Data Collection
Livermore	Air Monitoring	August 1, 2010
	Meteorology	August 1, 2010
San Ramon	Air Monitoring	January 1, 2012 (NO/NO_2)
		May 1, 2012 (VOC)
	Meteorology	December 14, 2011

The Air District's long-existing Livermore air monitoring station was selected as a PAMS site because Livermore usually has the highest annual number of days exceeding the ozone NAAQS in the Bay Area. The site already had meteorological sensors measuring wind, temperature, and solar radiation; and air monitoring instruments measuring NO/NO_2 and ozone. Speciated VOCs were added to the San Ramon site in 2012. All ozone, NO/NO_2, and VOC data are submitted to EPA's AQS database.

The San Ramon site is a temporary site operated solely for the unofficial-PAMS program research. The San Ramon PAMS provides information on ozone precursors and ozone formation in the San Ramon Valley that may contribute to ozone concentrations in the Livermore Valley. The two PAMS locations are shown in Figure 3-2.

Based on 40 CFR part 58 Appendix D, air monitoring agencies were originally required to begin making PAMS measurements at their NCore location(s) by June 1, 2020. However, the EPA delayed the start date for the revised PAMS monitoring site network until June 1, 2021. As a result, the Air District did not begin making PAMS measurements

at the Livermore site in 2020, and will work with EPA to begin measurements on in the fall of 2021.

Figure 3-2 Map of the Two PAMS sites in the Livermore Valley

Prior to November 2013, EPA identified 57 ozone precursor compounds usually measured at PAMS locations because of their significance in photochemical ozone pollution. On November 20, 2013, EPA released a memo (http://www.epa.gov/ttn/amtic/files/ambient/pams/targetlist.pdf) revising the photochemical assessment monitoring station compound target list. The revisions divide the previous list into two categories: priority compounds and optional compounds. In addition, seven new compounds were added to the priority list, for a total of 34 priority compounds and 29 optional compounds.

The Air District measures 56 compounds every hour using a gas chromatograph (GC) instrument. The GC does not analyze for two compounds EPA considers important ozone precursors: formaldehyde and acetone. The Air District determined that it is too costly to measure these compounds on an hourly basis. In addition, the GC does not measure the new priority compounds identified in the November 2013 EPA memo, α/β-Pinene, 1,3 Butadiene, benzaldehyde, carbon tetrachloride, ethanol, and tetrachloroethylene. However, the GC does measure two additional compounds not on the EPA target list, 1-hexene and n-dodecane. Table 3-4 lists the 56 compounds measured by the GC. The Air district operated the GC at Livermore and San Ramon from April to November in 2020. The ozone and NO/NO_2 monitors operate year-round starting in 2019 at both sites.

Table 3-4 List of Speciated Hydrocarbons Measured by GC in 2020

Compound	Parameter Code	Compound	Parameter Code	Method Code
n-dodecane	43141	Methylcyclohexane	43261	142
Ethane	43202	Methylcyclopentane	43262	142
Ethylene	43203	2-methylhexane	43263	142
Propane	43204	1-butene	43280	142
Propylene	43205	2-3-dimethylbutane	43284	142
Acetylene	43206	2-methylpentane	43285	142
n-butane	43212	2-3-dimethylpentane	43291	142
Isobutane	43214	n-undecane	43954	142
t-2-butene / trans-2-butene	43216	2-methylheptane	43960	142
c-2-butene / cis-2-butene	43217	m/p xylene	45109	142
n-pentane	43220	Benzene	45201	142
Isopentane	43221	Toluene	45202	142
1-pentene	43224	Ethylbenzene	45203	142
t-2-pentene / trans-2-pentene	43226	o-xylene	45204	142
c-2-pentene / cis-2-pentene	43227	1-3-5-trimethylbenzene	45207	142
3-methylpentane	43230	1-2-4-trimethylbenzene	45208	142
n-hexane	43231	n-propylbenzene	45209	142
n-heptane	43232	Isopropylbenzene	45210	142
n-octane	43233	o-ethyltoluene	45211	142
n-nonane	43235	m-ethyltoluene	45212	142
n-decane	43238	p-ethyltoluene	45213	142
Cyclopentane	43242	m-diethylbenzene	45218	142
Isoprene	43243	p-diethylbenzene	45219	142
2-2-dimethylbutane	43244	Styrene	45220	142
2-4-dimethylpentane	43247	1-2-3-trimethylbenzene	45225	142
1-hexene	43245			142
Cyclohexane	43248			142
3-methylhexane	43249			142
2-2-4-trimethylpentane	43250			142
2-3-4-trimethylpentane	43252			142
3-methylheptane	43253			142

3.4 Toxics Program

The Clean Air Act Amendments of 1990 required EPA to set emission standards for major sources of Hazardous Air Pollutants (HAPs). The Act also required EPA to assess the risks to human health from HAPs. As of 2012 EPA had listed 187 compounds as HAPs and are known to cause or are suspected of causing cancer, birth defects, reproduction problems, and other serious illnesses. Exposure time to certain levels of some HAPs can cause difficulty in breathing, nausea, or other illnesses and can even cause death.

HAPs are emitted daily by industrial and chemical manufacturing processes, commercial activities, refinery operations, gasoline marketing, and motor vehicles within the Bay Area. Ambient concentrations vary by proximity to sources and current meteorological conditions. The toxics monitoring program has the following objectives:

- Establishing trends and evaluating the effectiveness of HAP reduction strategies.
- Characterizing ambient concentrations in local areas.
- Providing data to support and evaluate dispersion and deposition models.
- Providing data to the scientific community to support studies to reduce uncertainty about the relationships between ambient levels of HAPs, actual human exposure to air toxics, and health effects from such exposures.

Figure 3-3 is a map of the 23 toxics monitoring sites operating in 2020. They are located at existing Air District monitoring sites to measure a wide range of contaminant levels throughout the Bay Area. The sites are generally located in major population centers or downwind of major industrial sources such as refineries. There is also an ambient background site at Fort Cronkhite.

Air samples are collected at Air District toxics monitoring sites for a 24-hour period on a 1:12 schedule. At San Jose - Jackson, the sampling schedule was on a 1:6 as part of the NATTS program through August 6, 2018 and was changed to a 1:12 starting August 18, 2018 because this site is no longer part of the NATTS program. A 1:12 schedule allows samples to be taken on a different day of the week over the course of months. This is the same schedule EPA and CARB use for their toxics monitoring programs, thereby allowing Bay Area toxics concentrations to be compared to concentrations measured elsewhere across the country.

Gaseous VOC toxics are collected in 6-liter SUMMA stainless steel canisters using Xontech 910 samplers. The sampler continuously collects an ambient air sample for 24-hours to ensure capturing transient and intermittent toxic releases. Since 2012, samples have been analyzed using gas chromatography mass spectrometry.

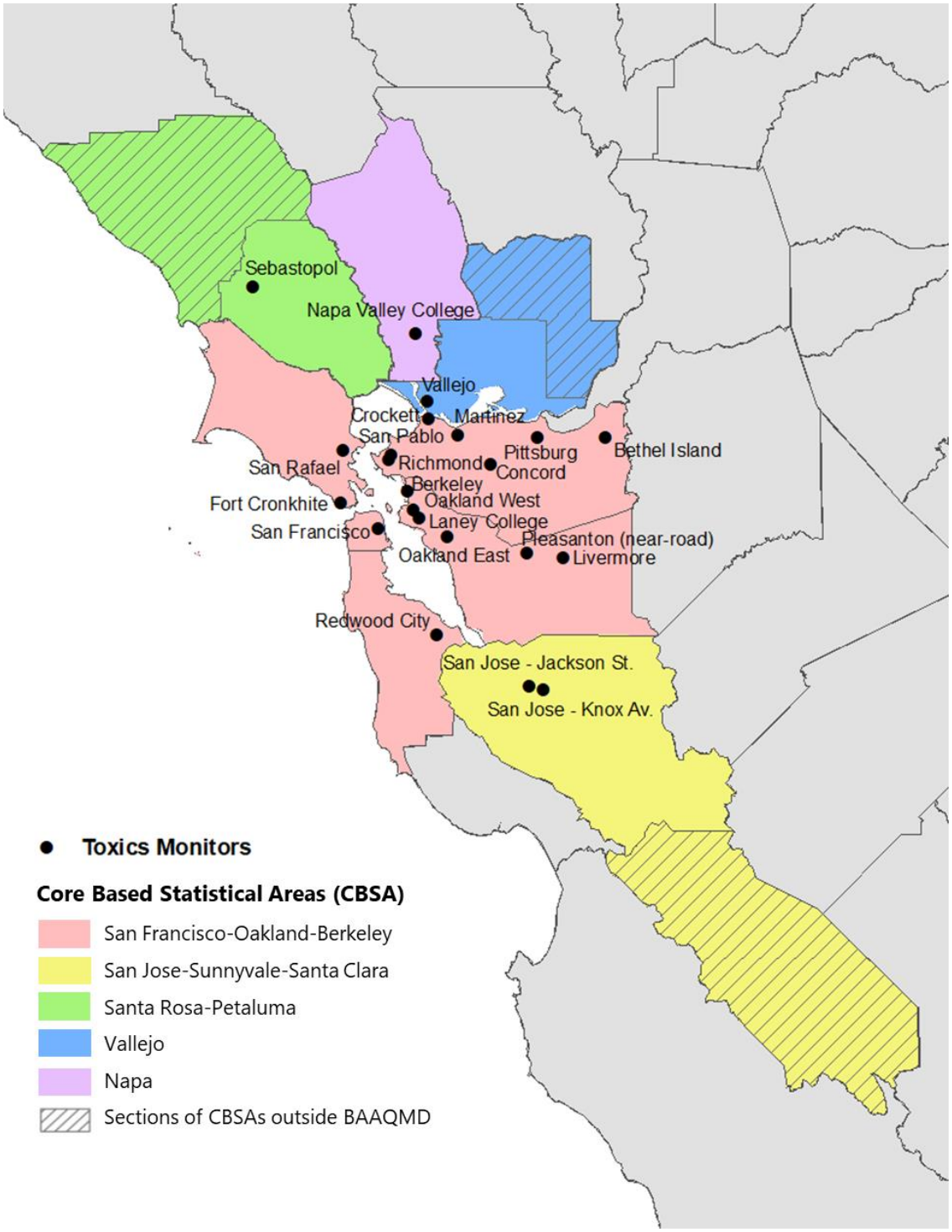


Figure 3-3 May of Air District Toxics Monitoring Sites in 2020

Both the Air District and CARB have toxics monitoring programs in the Bay Area. CARB conducts toxics monitoring on a 1:12 schedule at two sites: San Francisco and San Jose. CARB supplies the canisters and performs the laboratory analyses, while Air District staff operates the CARB sampler and ships the canisters to CARB. Because the Air District also does toxics monitoring at San Francisco and San Jose, the two sets of data allow calculation of the measurement precision at these sites, and by extrapolation, an estimate of the precision of the toxics measurement program.

For quality assurance purposes, once a quarter at San Francisco, an additional canister sample is taken on a scheduled sample day using a collocated sampler. Both samples are analyzed by the Air District laboratory, and the results allow an additional measure of precision. Additionally, at least one canister per month is chosen at random for a second analysis. The results are submitted to AQS for both the San Francisco collocated sample and the randomly selected replicate analysis.

From each canister sample, the Air District laboratory analyzes for the 22 gaseous toxic compounds shown in Table 3-5 from canister samples collected using a gas chromatography mass spectrometry instrument. The compounds selected for analysis were those that had high toxicity or were known to have high emissions in the Bay Area, or a combination of the two. Another consideration was whether the current methodology could accurately detect a compound at reasonable expense, based on previous CARB studies. Some compounds, such as carbon tetrachloride, are measured because their concentrations do not change much over time. This is useful because carbon tetrachloride or other similar, stable compounds can be used for quality control purposes. If the measurement of such a control is unusually high or low, there may be a problem in the sampling, transport, storage, or analysis procedures.

Table 3-5 List of Toxic Compounds Measured by the Air District in 2020

Compound	Parameter Code	Compound	Parameter Code	Method Code
1,3-Butadiene	43218	Ethylene dichloride	43815	210
Acetone	43551	Freon 113	43207	210
Acetonitrile	43702	m/p Xylene	45109	210
Acrylonitrile	43704	Methyl chloroform	43814	210
Benzene	45201	Methyl ethyl ketone	43552	210
Carbon tetrachloride	43804	o-Xylene	45204	210
Chloroform	43803	Tetrachloroethylene	43817	210
Dichloromethane	43802	Toluene	45202	210
Ethyl alcohol	43302	Trichloroethylene	43824	210
Ethylbenzene	45203	Trichlorofluoromethane	43811	210
Ethylene dibromide	43843	Vinyl chloride	43860	210

3.4.1 Additional Toxics Monitoring at San Jose - Jackson

In addition to the compounds listed in Table 3-5 formaldehyde and acetaldehyde are measured at San Jose - Jackson on a 1:6 schedule through August 6, 2018 and on a 1:12 schedule starting August 18, 2018 through present. These compounds are highly reactive and cannot be accurately measured using a canister sample. Instead, they are collected on a chemically treated cartridge using a Xontech 924 sampler. Samples are analyzed at the Air District laboratory using High Performance Liquid Chromatography (HPLC).

Metals are also measured at San Jose - Jackson. In addition, summary toxics data are available from the EPA's AirData website at: http://www.epa.gov/airdata/.

3.5 Meteorology Program

The Air District operates a meteorological monitoring program to provide measurements of ambient meteorological parameters to meet the objectives of many programs within the Air District. Air District programs using meteorological data include air quality forecasting, photochemical modeling, source modeling, and data analysis. To obtain high quality data to be used for regulatory applications, the Air District considers EPA recommendations for siting, instrumentation, data accuracy, and quality assurance.

The placement of meteorological stations depends on the use of the data. Sites chosen for air quality forecasting are located in areas that show the general wind and temperature patterns within the Air District. Photochemical modeling sites are chosen to show boundary conditions, general conditions, and upper air meteorological conditions.

Source modeling sites are chosen to be representative of the source and receptor domain to be modeled. Sites used for data analysis are usually located near high pollution areas to determine the relationship between source areas and downwind high concentration areas, as well as the general atmospheric conditions occurring during pollution episodes.

Because most Air District air monitoring stations are in urban or suburban neighborhoods where multistory buildings and trees are nearby, it is not possible to place meteorological systems at all Air District air monitoring stations that meet EPA meteorological siting recommendations. EPA recommends that wind speed and direction sensors be located at a height of 10 meters or at plume height if the use is source-oriented modeling. In addition, the distance between the sensors and any obstruction should be at least 10 times the height of the obstruction.

In 2020, the meteorological network consisted of 19 sites. Point San Pablo is currently being relocated due to vandalism that cut power to the station. Eight are adjacent to Air District air monitoring sites (Bethel Island, Fairfield, Concord, San Ramon, Vallejo, Livermore, Gilroy, and San Martin). The other air monitoring sites have obstructions to air flow nearby, necessitating placement of the meteorological sites further away. Additionally, to meet forecasting or photochemical modeling needs, some meteorological sites have been placed on ridges or mountain-tops, such as at Chabot and Livermore. Sensors used in the Air District's meteorological network include wind speed and direction, temperature, relative humidity, precipitation, and pressure. Figure 3-4 shows their locations.

Hourly-averaged data are made available to Air District staff and the public on the Air District's web page and are archived in the Meteorology and Measurement Division's database. Each site is visited monthly by Air District staff for a visual inspection of the instrumentation and a technician visits the site to correct problems, if needed. Data are also reviewed on an ongoing basis by Air District meteorologists producing daily air quality forecasts for the Bay Area.

Data recorded at airports, oil refineries, sewage treatment plants, universities, and private companies are included in the Meteorology and Measurement Division meteorological database if they meet EPA recommended siting and maintenance specifications.

Figure 3-4 Map of Air District Meteorological Monitoring Sites in 2020

4. SITE INFORMATION DEFINITIONS

Monitors that are operated to determine compliance with the NAAQS must be operated in accordance with EPA requirements in 40 CFR part 58.

explains the monitoring terms and definitions used in the detailed site information tables in Section 5.

Table 4-1 Monitor Information Definitions and EPA Air Monitoring Siting Criteria

Site or Monitor Information	Definition of Terms
AQS ID	The 9-digit code that identifies each site in the EPA's AQS database
GPS coordinates (decimal degrees)	The latitude and longitude of the site from the World Geodetic System (WGS-84) used as the reference coordinate system for Global Positioning System (GPS).
Distance to roadways from the gaseous probe (meters)	40 CFR Part 58 Appendix E, 6.0: specifies the distance monitors must be from roadways to be considered neighborhood- or urban-scale. Recommended distances are found in Table E-1 for NO_x and O_3, Table E-2 for CO, and Figure E-1 for PM.
Traffic count	The annual average daily traffic (AADT) count.
Groundcover	40 CFR Part 58 Appendix E, 3.0: 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.
Statistical Area	The core based statistical area (CBSA) or Metropolitan Statistical Area (MSA) the site is located within.
Pollutant, POC	The pollutant being measured and its Parameter Occurrence Code (POC). There may be multiple instruments measuring a pollutant at a site. Each instrument of the same pollutant is assigned a unique POC to differentiate it from the others in EPA's AQS database.
Primary/QA Collocated/Other	This row applies to parameters that have collocation requirements as well as parameters that are combined at a site level for design value calculations. This currently includes $PM_{2.5}$, PM_{10}, $PM_{10-2.5}$, Pb and NO_2. Non-PM, Pb, and NO_2 monitors are listed as "N/A".
Parameter code	The 5-digit code assigned to each pollutant in the EPA's AQS database.
Basic monitoring objective(s)	The purpose for monitoring at that location. Choices include public information, NAAQS comparison, and research.

Site or Monitor Information	Definition of Terms
Site type(s)	Choices include highest concentration, population oriented, source impact, general/background, regional transport, and welfare-related impacts.
Monitor type(s)	Choices include SLAMS, Special Purpose (SPM), Industrial, Non-EPA Federal, Tribal, EPA and Other.
Network affiliation(s)	Some monitors are used for specific types of monitoring networks. Examples that apply to the Bay Area include: CSN STN, CSN Supplemental, NATTS, NCore, Near Road, and Unofficial PAMS. The full list may be found at: https://aqs.epa.gov/aqsweb/documents/codetables/networks.html
Instrument manufacturer and model	Details about the instrumentation used to measure the pollutant.
Method code	Based on the Instrument manufacture and model, a method code is assigned and is reported to the EPA AQS database system. 40 CFR Part 58 Appendix C, 2.0: requires that the monitor used must be from EPA's current List of Designated Reference and Equivalent Methods.
FRM/FEM/ARM/other	FRMs (Federal Reference Methods) and FEMs (Federal Equivalent Methods) are approved by EPA for criteria pollutant monitoring to determine compliance with the. An ARM (Approved Regional Method) may be approved by EPA as an alternative to and FRM or FEM, however, no ARMs are used in the Bay Area.
Collecting Agency	The agency that operates the instrument at a site, which currently is the Air District for all BAAQMD sites in this report.
Analytical Lab	The agency that weighs particulate filters or does chemical analysis of particulate filters or air samples.
Reporting Agency	The agency that uploads air monitoring data to the EPA's AQS database.
Spatial scale	The relative distance over which the air pollution measurements are representative. Choices are micro, middle, neighborhood, urban, regional, national, or global scales.
Monitor start date	The date valid data collection began for that pollutant at an air monitoring station.
Current Sampling frequency	This reflects the sampling frequency used for district monitors in 2016. This frequency describes if the monitor is operated continuously or intermittently. Intermittent sampling for particulate matter ($PM_{2.5}$, PM_{10}, PM_{10}-Pb, and TSP-Pb) and toxics is performed by collecting a sample (filter, air canister or other) either every day, every 3rd day, every 6th day or every 12th day (1:1, 1:3, 1:6, 1:12). Samples are subsequently

Site or Monitor Information	Definition of Terms
	analyzed for the pollutant of interest, for example, $PM_{2.5}$ mass or lead concentrations. The Air District at times elects to operate a monitor more frequently than is required. For more information about how the current sampling frequency compares to the required sampling frequency, see the sections on minimum monitoring requirements for that pollutant.
Sampling season	The date range (season) monitors were operated during 2016. While California has a required yearlong O_3 season, EPA has granted a waiver to the Air District so that some ozone sites in the Bay Area are not required to run during the winter.
Probe height (meters)	40 CFR Part 58 Appendix E, 2.0: requires that probe height be 2-15 meters above ground level (AGL).
Distance from supporting structure (meters)	40 CFR Part 58 Appendix E, 2.0: requires the probe be at least 1 meter vertically or horizontally away from any supporting structure unless it is a roof, in which case 1 meter separation is required.
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	40 CFR Part 58 Appendix E, 4.0: 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.
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	40 CFR Part 58 Appendix E, 4.0: 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 trees (meters)	40 CFR Part 58 Appendix E, 5.0: requires that probe be at least 10 meters from the nearest tree drip line.
Distance to furnace or incinerator flue (meters)	40 CFR Part 58 Appendix E, 3.0: requires that scavenging be minimized by keeping the probe away from furnace or incineration flues or other minor sources of SO_2 or NO_x. 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 monitors fulfilling a QA collocation requirement (meters)	Collocated $PM_{2.5}$, PM_{10}, and Pb monitors must be 2-4 meters apart for flow rates >200L/m and 1-4 meters apart for flow rates <200 L/m (40 CFR 58, Appendix A 3.2.3.4(c), 3.3.4.1(c), and 3.4.4.2(b)).
For low volume PM instruments (flow rate < 200 liters/minute) is any PM	40 CFR Part 58, Appendix A 3.2.3.4(c), 3.3.4.1(c), and 3.4.4.2(b) require that PM monitors with flow rates <200L/m have at least a 1 meter separation.

Site or Monitor Information	Definition of Terms
instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	40 CFR Part 58, Appendix A 3.2.3.4(c), 3.3.4.1(c), and 3.4.4.2(b) require that PM monitors with flow rates > 200L/m have at least a 2 meter separation.
Unrestricted airflow (degrees)	40 CFR Part 58 Appendix E, 4.0: 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 for reactive gases	40 CFR Part 58, Appendix E, 9.0: requires that either Pyrex glass or FEP Teflon be used for intake sampling lines.
Residence time for reactive gases (seconds)	40 CFR Part 58, Appendix E, 9.0: requires a residence time of 20 seconds or less for reactive gas monitors.
Will there be changes within the next 18 months?	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 $PM_{2.5}$?	40 CFR 58.30: $PM_{2.5}$ data from monitors that are located are at relatively unique micro-scale, localized hot spot, or unique middle-scale impact sites, and do not represent area-wide concentrations, are not eligible for comparison to the Annual $PM_{2.5}$ NAAQS (they are eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS). Currently, all of the $PM_{2.5}$ sites in the Bay Area are considered to be representative of area-wide concentrations.
Frequency of flow rate verification for PM samplers	40 CFR Part 58, Appendix A, Sections 3.2.1, 3.3.1, 3.3.2, 3.4.1, 3.4.2: require 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 one-point QC check for gaseous instruments	40 CFR Part 58 Appendix A, 3.1.1: requires that QC checks be performed at least once every two weeks.
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	40 CFR Part 58 Appendix A, 3.1.2: requires that SO_2, CO, O_3, and NO_2 monitors have annual performance evaluations.
Date of two semi-annual flow rate audits conducted in the	40 CFR Part 58 Appendix A, Sections 3.2.2, 3.3.3, 3.4.3: require that PM samplers have flow rate checks every six months.

Site or Monitor Information	Definition of Terms
past calendar year for PM monitors	

5. DETAILED SITE INFORMATION

The tables below describe each of the monitors that were operating at air monitoring sites in 2020. The site descriptions include siting information about the physical properties of the site and monitors, detailed descriptions of the individual monitors at the site and their monitoring objective, site type, and spatial scale of representativeness.

5.1 Berkeley Aquatic Park (near-road)

Site Information for Berkeley Aquatic Park	
AQS ID	06-001-0013
GPS coordinates	37.864767, -122.302741
Location	Trailer within 50m east of Interstate 80
Address	1 Bolivar, Berkeley CA 94710
County	Alameda
Distance to road from gaseous probe (meters)	I-80: 8 University Ave: 250
Traffic count (AADT, year)	I-80: 280,400 (2017) University Ave: 18,800 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel, grass, small plants.
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Berkley Aquatic Park	
Pollutants Measured	O_3, NO_x, CO, $PM_{2.5C,}$ Toxics, BC, UFP
Spatial Scale	Microscale (100 m)
Notes	The site is located 8 m downwind from the I-80 and designated as a near-road monitoring site which are a category of sites designed to representative of population exposure in the near-road environment. Due to the prevalence of areas that have large roadways adjacent to population centers, Berkley Aquatic Park is considered to be representative of area-wide or neighborhood scale air quality.

Berkeley Aquatic Park Monitor Information

Pollutant, POC	O3, 1	NO2, 1	CO, 1	PM2.5, 3
Primary/QA Collocated/Other	N/A	Primary	N/A	Primary
Parameter code	44201	42602	42101	88101
Basic monitoring objective(s)	Public Information	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented & Source Oriented	Population Oriented & Source Oriented	Population Oriented & Source Oriented
Monitor type(s)	SPM	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	Near Road	Near Road	Near Road
Instrument manufacturer and model	TECO 49c	TECO 42i	TECO 48i	Met One FEM BAM 1020
Method code	047	074	054	170
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Micro	Micro	Micro	Micro
Monitor start date	07/01/2016	07/01/2016	07/01/2016	07/01/2016
Current Sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	6	6	6	5
Distance from supporting structure (meters)	>1	>1	>1	>2
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	4, 0	4, 0	4, 0	5, 0.75
Distance from trees (meters)	25	25	25	25
Distance to furnace or incinerator flue (meters)	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	N/A
Residence time for reactive gases (seconds)	17	19	19	N/A
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	Y
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A	Bi-weekly
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	See Table 5.35

Berkeley Aquatic Park Monitor Information

Pollutant, POC	BC, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A
Parameter code	84313	See toxics section
Basic monitoring objective(s)	Research	Research
Site type(s)	Population Oriented & Source Oriented	Population Oriented
Monitor type(s)	SPM	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	Teledyne API model 633	Xontech 910A
Method code	894	210
FRM/FEM/ARM/other	N/A	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Micro	Micro
Monitor start date	07/01/2016	07/23/2016
Current Sampling frequency	Continuous	1:12
Sampling season	01/01-12/31	01/01 – 12/31
Probe height (meters)	4	5
Distance from supporting structure (meters)	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	6, 1	4, 0
Distance from trees (meters)	25	25
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

5.2 Bethel Island

Site Information for Bethel Island	
AQS ID	06-013-1002
GPS coordinates	38.006311, -121.641918
Location	Trailer in parking lot
Address	5551 Bethel Island Rd, Bethel Island, CA 94511
County	Contra Costa
Distance to road from gaseous probe (meters)	Bethel Island Rd: 63 Sandmound Blvd: 110
Traffic count (AADT, year)	Bethel Island Rd: 13,050 (2010) Sandmound Blvd: 4,270 (2010) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel surrounded by grassy fields
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Bethel Island	
Pollutants Measured	O_3, NO_x, SO_2, CO, PM_{10}, Toxics
Spatial Scale	Urban scale (4 – 50 km)
Notes	The site is located east of sea-level gap (the Carquinez Strait) and within the transport corridor between the San Francisco Bay Area and the Central Valley, both of which are major sources of ozone, ozone precursors, and particulates. Traffic volume near the site is low, so measurements tend to be representative of natural background levels, or regional transport. PM_{10} monitoring was changed from 1:6 to 1:12 sampling effective January 1, 2013 to accommodate limited resources. Because the Bay Area is well above the minimum monitoring requirements for PM_{10}, EPA approved this decrease in sampling frequency as well as converting these PM_{10} monitors from SLAMS to SPMs. Therefore, this monitor is no longer counted in PM_{10} minimum monitoring requirements. The PM_{10} SPM at Bethel Island was closed on March 16, 2020.

Bethel Island Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary
Parameter code	44201	42101	42601 / 42602
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Regional Transport & Highest Conc.	General Background	Regional Transport
Monitor type(s)	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i
Method code	047	054	074
FRM/FEM/ARM/other	FEM	FRM	FRM
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District
Spatial scale	Urban	Urban	Urban
Monitor start date	03/01/1981	03/01/1981	03/01/1981
Current Sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	7	7	7
Distance from supporting structure (meters)	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	13	13	13
Distance to furnace or incinerator flue (meters)	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	15	16	17
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A

Bethel Island Monitor Information

Pollutant, POC	SO2, 1	PM10, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	Primary	N/A
Parameter code	42401	81102	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Regional Transport	Regional Transport	General / Background
Monitor type(s)	SLAMS	SPM	SPM
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 43i	Andersen GUV-16HBLA	Xontech 901
Method code	060	063	210
FRM/FEM/ARM/other	FEM	FRM	N/A
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	Air District	Air District
Reporting Agency	Air District	Air District	Air District
Spatial scale	Urban	Neighborhood	Neighborhood
Monitor start date	03/01/1981	11/05/1986	03/27/1998
Current Sampling frequency	Continuous	1:12	1:12
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	7	5	6
Distance from supporting structure (meters)	>1	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	13	14	13
Distance to furnace or incinerator flue (meters)	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	No	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	Glass
Residence time for reactive gases (seconds)	16	N/A	N/A
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	Quarterly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	See Table 5.35	N/A

5.3 Concord

Site Information for Concord	
AQS ID	06-013-0002
GPS coordinates	37.936013, -122.026154
Location	One-story commercial building
Address	2956-A Treat Blvd, Concord CA 94518
County	Contra Costa
Distance to road from gaseous probe (meters)	Treat Blvd: 181 Oak Grove Rd: 244
Traffic count (AADT, year)	Treat Blvd: 39,860 (2017) Oak Grove Rd: 24,910 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Concord	
Pollutants Measured	O_3, NO_x, SO_2, CO, PM_{10}, $PM_{2.5F}$, $PM_{2.5C}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located within the city of Concord, which is the largest city in Contra Costa County. The monitoring site located near a shopping center and surrounded by residential neighborhoods within the Diablo valley where locally emitting pollutants can be trapped under the right meteorological conditions: surface-based inversions during winter months and hot stagnant conditions in the summer months. The site is also six miles south of the Tesoro and the Shell Refineries, both potential major sources of SO_2 PM_{10} monitoring was changed from 1:6 to 1:12 sampling effective January 1, 2013 to accommodate limited resources. Because the Bay Area is well above the minimum monitoring requirements for PM_{10}, EPA approved this decrease in sampling frequency as well as converting these PM_{10} monitors from SLAMS to SPMs. Therefore, this monitor is no longer counted in PM_{10} minimum monitoring requirements.

Concord Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1	SO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A
Parameter code	44201	42101	42601 / 42602	42401
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented	Population Oriented & Source Impact
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	TECO 43i
Method code	047	054	074	060
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	04/09/1980	02/21/1980	2/21/1980	02/21/1980
Current Sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	9	9	9	9
Distance from supporting structure (meters)	>1	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	24	24	24	24
Distance to furnace or incinerator flue (meters)	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	9	10	10	10
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A

Concord Monitor Information

Pollutant, POC	PM10, 1	PM2.5, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	Primary	N/A
Parameter code	81102	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented & Highest Conc.	Population Oriented & Source Impact
Monitor type(s)	SPM	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Andersen HiVol 1200	Met One BAM 1020	Xontech 901
Method code	063	170	210
FRM/FEM/ARM/other	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District
Analytical Lab	Air District	N/A	Air District
Reporting Agency	Air District	Air District	Air District
Spatial scale	Urban	Urban	Urban
Monitor start date	11/04/1986	1/1/2013	08/08/1989
Current Sampling frequency	1:12	Continuous	1:12
Sampling season	01/01-12/31	01/01-12/31	01/01 - 12/31
Probe height (meters)	6	6	9
Distance from supporting structure (meters)	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	15	22	24
Distance to furnace or incinerator flue (meters)	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	N/A	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	Y	N/A
Frequency of flow rate verification for PM samplers	Quarterly	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	See Table 5.35	N/A

5.4 Crockett

Site Information for Crockett	
AQS ID	06-013-1001
GPS coordinates	38.054920, -122.233229
Location	Pump house
Address	End of Kendall Avenue, Crockett CA 94525
County	Contra Costa
Distance to road from gaseous probe (meters)	San Pablo Ave: 68
Traffic count (AADT, year)	San Pablo Ave: 2,797 (2013) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Crockett	
Pollutants Measured	SO_2, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site located is 0.9 miles downwind of the Phillips 66 Refinery where prevailing west winds can transport SO_2 emissions from the refinery over the town of Crockett, a predominately residential community. Crockett is classified as an SPM site. EPA siting criteria require the probe be located at least 10 meters from the drip line of all trees within the 180-degree arc of unrestricted airflow for source-oriented monitoring as determined by the predominant wind direction and the direction of the refinery. The closest tree drip line within the 180-degree arc is less than 10 meters from the probe, which does not meet siting criteria. The Air District has been unable to negotiate with the local homeowner's association for the removal of this tree. Even though the siting criteria for a SLAMS site cannot be met, the site is still suitable for source-oriented monitoring as an SPM site.

Crockett Monitor Information

Pollutant, POC	SO2, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A
Parameter code	42401	See toxics section
Basic monitoring objective(s)	NAAQS comparison	Research
Site type(s)	Population Oriented & Source Oriented	Population Oriented & Source Oriented
Monitor type(s)	SPM	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	TECO 43i	Xontech 901
Method code	060	210
FRM/FEM/ARM/other	FEM	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	01/01/1979	06/05/1999
Current Sampling frequency	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 - 12/31
Probe height (meters)	6	6
Distance from supporting structure (meters)	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	1	1
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	270	270
Probe material for reactive gases	Teflon	Glass
Residence time for reactive gases (seconds)	11	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

5.5 Fairfield

Site Information for Fairfield	
AQS ID	06-095-0005
GPS coordinates	38.227066, -122.075624
Location	Small trailer in open field
Address	1010 Chadbourne Rd, Fairfield, CA 94534
County	Solano
Distance to road from gaseous probe (meters)	Cordelia Rd: 194 Chadbourne Rd: 705
Traffic count (AADT, year)	Cordelia Rd: 4,819 (2013) Chadbourne Rd: 3,674 (2013) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistic Area	Vallejo-Fairfield CBSA

Summary for Fairfield	
Pollutants Measured	O_3
Spatial Scale	Urban scale (4 - 50 km)
Notes	The site is located in the Carquinez Strait Region, the only sea level gap between the Bay Area and the Central Valley and located in a rural area between Fairfield and Suisun City which has a combined population of approximately 140,000. Prevailing westerly winds during the summer season have the potential to transport ozone and ozone precursors coming from the Bay Area. Occasionally easterly winds transport ozone from the Central Valley to Fairfield.

Fairfield Monitor Information

Pollutant, POC	O3, 1
Primary/QA Collocated/Other	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Population Oriented & Regional Transport
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 49i
Method code	047
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Urban
Monitor start date	05/29/2002
Current Sampling frequency	Continuous
Sampling season	01/01 - 12/31
Probe height (meters)	4
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	>50
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	4
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	N/A
Frequency of one-point QC check for gaseous instruments	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

5.6 Forest Knolls

Site Information for Forest Knolls	
AQS ID	06-041-2001
GPS coordinates	38.015136, -122.689531
Location	Roof
Address	6 Castro Street, Forest Knolls, CA 94933
County	Marin
Distance to road from probe (meters)	Sir Francis Drake Blvd at Mountain View: 902 Sir Francis Drake Blvd at Montezuma Road: 18 Castro St: 13 Montezuma Road: 55
Traffic count (AADT, year)	Sir Francis Drake Blvd at Montezuma Road: 4,300 (est. 2019) Castro St: <150 (est. 2019) Montezuma Road: <500 (est. 2019) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistic Area	San Francisco-Oakland-Hayward CBSA

Summary for Forest Knolls	
Pollutants Measured	BC
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located in the San Geronimo Valley about 10 miles west to northwest of San Rafael and was deployed in response to community interest about wood smoke in the area and to better characterize wood smoke impacts in sheltered valley locations where winter wood burning often is the primary source of home heating. Lagunitas-Forest Knolls is considered a Census Designated Place (CDP) with a population of approximately 1,800. Wintertime meteorological conditions are frequently conducive to trapping wood smoke in the valley, particularly during cold evenings with stagnant wind conditions.

Forest Knolls Monitor Information

Pollutant, POC	BC, 1
Primary/QA Collocated/Other	N/A
Parameter code	84313
Basic monitoring objective(s)	Research
Site type(s)	Population Oriented
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	Teledyne API AE-633
Method code	894
FRM/FEM/ARM/other	N/A
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	01/16/2013
Current Sampling frequency	Continuous
Sampling season	01/01-12/31
Probe height (meters)	5
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	4
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	N/A
Frequency of one-point QC check for gaseous instruments	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

5.7 Fort Cronkhite

Site Information for Fort Cronkhite	
AQS ID	06-041-0004
GPS coordinates	37.832725, -122.527658
Location	At ground level behind a ranger residence
Address	Building 1111, Fort Cronkhite, Sausalito CA 94965
County	Marin
Distance to road from probe (meters)	Bunker Road: 16
Traffic count (AADT, year)	Bunker Road: 1039 (2018) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Fort Cronkhite	
Pollutants Measured	Toxics
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located within the Golden Gate National Recreation Area (GGNRA) near the visitor center at Fort Cronkhite on the north side of the Golden Gate gap which opens into the San Francisco Bay and is not near any significant sources of air toxics. Due to prevailing westerly winds the site can be representative of background levels of air toxics that are transported into the Bay Area from the Pacific Ocean. However, under the right conditions the site may measure contributions from anthropogenic sources such as ships from the nearby shipping channel or local vehicle traffic within the GGNRA.

Fort Cronkhite Monitor Information

Pollutant, POC	Toxics, 3
Primary/QA Collocated/Other	N/A
Parameter code	See toxics section
Basic monitoring objective(s)	Research
Site type(s)	General / Background
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	Xontech 910A
Method code	210
FRM/FEM/ARM/other	N/A
Collecting Agency	Air District
Analytical Lab	Air District
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	03/26/1987
Current Sampling frequency	1:12
Sampling season	01/01 - 12/31
Probe height (meters)	7
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Glass
Residence time for reactive gases (seconds)	N/A
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	N/A
Frequency of one-point QC check for gaseous instruments	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

5.8 Gilroy

Site Information for Gilroy	
AQS ID	06-085-0002
GPS coordinates	36.999571, -121.574684
Location	Next to water pump station
Address	9th and Princevalle St, Gilroy, CA 95020
County	Santa Clara
Distance to road from gaseous probe (meters)	Princevalle St: 18 9th St: 16 8th St.: 142 10th St: 185
Traffic count (AADT, year)	Princevalle St: 3,627 (2018) 9th St: 1,386 (2019) 8th St.: 2,574 (2019) 10th St: 12,700 (2008) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA

Summary for Gilroy	
Pollutants Measured	O_3, $PM_{2.5C}$
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located in a residential area of Gilroy on the west side of the Santa Clara Valley where prevailing northwesterly afternoon winds carry ozone and ozone precursors from the San Jose area. When temperatures are hot, and solar insolation is strong, these precursors react and can form high concentrations of ozone in the Gilroy area. Light winds combined with surface-based inversions during the winter months can also cause elevated particulate levels.

Gilroy Monitor Information

Pollutant, POC	O3, 1	PM2.5, 3
Primary/QA Collocated/Other	N/A	Primary
Parameter code	44201	88101
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented & Regional Transport	Population Oriented& Regional Transport
Monitor type(s)	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	TECO 49i	Met One FEM BAM 1020
Method code	047	170
FRM/FEM/ARM/other	FEM	FEM
Collecting Agency	Air District	Air District
Analytical Lab	N/A	N/A
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	07/01/1980	10/31/2009
Current Sampling frequency	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	5	4
Distance from supporting structure (meters)	>1	No supporting structure / ground level
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	N/A
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A	1.8[a]
Distance from trees (meters)	26	26
Distance to furnace or incinerator flue (meters)	14	14
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	No
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	Teflon	N/A
Residence time for reactive gases (seconds)	14	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	Y
Frequency of flow rate verification for PM samplers	N/A	Bi-weekly
Frequency of one-point QC check for gaseous instruments	Every other day	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	See Table 5.35

a The PM2.5 monitor is outdoors, ground based. The probe is 4m above ground. A nearby shelter is 1.8m away and is the eve of the shelter is 0.12m above the probe height. This is not an obstruction because the probe is more than twice the distance that the eve extends above the probe. The shelter has a slanted roof that peaks at a height of 3.99m. The probe is 3.9m away from the roof peak, which is 0.99m above the probe. This is not an obstruction because the probe is more than twice the distance that the roof peak extends above the probe.

5.9 Hayward

Site Information for Hayward	
AQS ID	06-001-2001
GPS coordinates	37.654456, -122.031547
Location	Pump house near water tank
Address	3466 La Mesa Drive, Hayward, CA 94542
County	Alameda
Distance to road from gaseous probe (meters)	Hayward Blvd: 26 La Mesa Dr: 38 Farmhill Drive: 205
Traffic count (AADT, year)	Hayward Blvd: 4,293 (2010) La Mesa Drive: 500 (2007) Farmhill Drive: 2,500 (<2006) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Hayward	
Pollutants Measured	O_3
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located on the east side of Hayward at an elevation of 951 feet, which it is the highest elevation ozone site in Air District jurisdiction and can give indication of ozone levels aloft and sub-regional transport from the Oakland area on the west site of the East Bay Hills. The Hayward site is also important because it provides air quality forecasting information on residual ozone concentrations from the previous day. Although there is a large water tank onsite in the upwind direction, the instrument probe is high enough so that the tank is not an obstruction to airflow at the site. As part of the 2019 annual network plan the Air District requested the EPA approve the conversion of the ozone monitor from SLAMS to SPMs and the request was approved. Therefore, this monitor is no longer counted in PM_{10} minimum monitoring requirements. (See Appendix I)

Hayward Monitor Information

Pollutant, POC	O3, 1
Primary/QA Collocated/Other	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison & Research
Site type(s)	Other (Sub-Regional Transport)
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 49i
Method code	047
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	05/31/1977
Current Sampling frequency	Continuous
Sampling season	01/01-12/31
Probe height (meters)	7
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	11
Distance to furnace or incinerator flue (meters)	N/A
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	16
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	N/A
Frequency of one-point QC check for gaseous instruments	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors)	N/A

5.10 Laney College (near-road)

Site Information for Laney College	
AQS ID	06-001-0012
GPS coordinates	37.793624, -122.263376
Location	Trailer east of Interstate 880
Address	Laney College 8th St. parking lot, Aisle J, Oakland, CA 94607
County	Alameda
Distance to road from gaseous probe (meters)	I-880: 20 8th St: 116 Fallon St: 130 5th Ave: 419
Traffic count (AADT, year)	Interstate 880: 219,000 (2017) 8th St: 16,055 (2012) Fallon St: 4,000 (2014) 5th Ave: <5,000 (2014) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Laney College	
Pollutants Measured	NO_x, CO, $PM_{2.5C,}$ Toxics, BC, UFP
Spatial Scale	Microscale (100 m)
Notes	The site is located 20 m downwind of the I-880 (along a segment of roadway with the 2nd highest Fleet Equivalent AADT (FE-AADT) in the Bay Area) and designated as a near-road monitoring site which are a category of sites designed to representative of population exposure in the near-road environment. Due to the prevalence of areas that have large roadways adjacent to population centers, Berkley Aquatic Park is considered to be representative of area-wide or neighborhood scale air quality.

Laney College Monitor Information

Pollutant, POC	NO2, 1	CO, 1	PM2.5, 3	BC, 1	Toxics, 3
Primary/QA Collocated/Other	Primary	N/A	Primary	N/A	N/A
Parameter code	42601 / 42602	42101	88101	84313	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	Public Information	Research
Site type(s)	Source Impact & Population Oriented	Source Impact & Population Oriented	Source Impact & Population Oriented	Source Impact	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS	SPM	SPM
Network affiliation(s)	Near Road	Near Road	Near Road	N/A	N/A
Instrument manufacturer and model	TECO 42i	TECO 48i	Met One FEM BAM 1020	Teledyne API AE-633	Xontech 901
Method code	074	054	170	894	210
FRM/FEM/ARM/other	FRM	FRM	FEM	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District
Spatial scale	Micro	Micro	Micro	Micro	Micro
Monitor start date	02/01/2014	02/01/2014	02/01/2014	02/01/2014	02/04/2014
Current Sampling frequency	Continuous	Continuous	Continuous	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01-12/31	01/01 – 12/31
Probe height (meters)	6	6	5	5	5
Distance from supporting structure (meters)	>1	>1	>2	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from trees (meters)	None	None	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	No	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	N/A	N/A	Glass
Residence time for reactive gases (seconds)	16	16	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	Y	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	Bi-weekly	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	N/A	N/A	N/A
Dates of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	N/A	N/A	N/A
Date of semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	See Table 5.35	N/A	N/A

5.11 Livermore

Site Information for Livermore	
AQS ID	06-001-0007
GPS coordinates	37.687526, -121.784217
Location	One-story commercial building
Address	793 Rincon Avenue, Livermore, CA 94551
County	Alameda
Distance to road from gaseous probe (meters)	Rincon Ave: 68 Pine St: 95 Interstate 580: 1,320 Portola Ave: 722
Traffic count (AADT, year)	Rincon Ave: 3,091 (2013) Portola Ave: 21,747 (2016) Pine St: 4,263 (2013) Interstate 580: 202,000 (2016) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Livermore	
Pollutants Measured	NO_x, CO, $PM_{2.5C,}$ Toxics, BC, UFP
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located west of the city center in a residential neighborhood within the Livermore Valley, an east-west oriented inland valley between the San Francisco Bay and the Central Valley. Livermore can have the highest ozone levels in the Bay Area when ozone precursors are transported from the Hayward and Niles Canyon Gaps to the west, and from the San Ramon Valley to the north. Light winds combined with surface-based inversions during the winter months can also cause elevated particulate matter levels. Livermore is part of an unofficial PAMS program and measures hourly speciated hydrocarbons. The EPA approved a request to conduct PAMS monitoring at Livermore (see Appendix F). Under this approval, NOy was discontinued at San Jose - Jackson and will begin at Livermore in 2021.

Livermore Monitor Information

Pollutant, POC	O3, 1	NO2, 1	PM2.5, 3
Primary/QA Collocated/Other	N/A	Primary	Primary
Parameter code	44201	42601 / 42602	88101
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison & Research	NAAQS comparison
Site type(s)	Population Oriented, Highest Concentration	Population Oriented	Population Oriented& Highest Conc.
Monitor type(s)	SLAMS	SLAMS	SLAMS
Network affiliation(s)	Unofficial PAMS	Unofficial PAMS	N/A
Instrument manufacturer and model	TECO 49i	TECO 42i	Met One FEM BAM 1020
Method code	047	074	170
FRM/FEM/ARM/other	FEM	FRM	FEM
Collecting Agency	Air District	Air District	Air District
Analytical Lab	Air District	Air District	Air District
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	01/01/2000	12/31/1999	03/01/2011
Current Sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	6	6	5
Distance from supporting structure (meters)	>1	>1	>2
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	51	51	52
Distance to furnace or incinerator flue (meters)	17	17	21
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	No
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	Teflon	N/A
Residence time for reactive gases (seconds)	13	13	N/A
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	Y
Frequency of flow rate verification for PM samplers	N/A	N/A	Bi-weekly
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	See Table 5.35

Livermore Monitor Information

Pollutant, POC	Speciated PM2.5, 5	BC, 1	Toxics, 3
Primary/QA Collocated/Other	Other	N/A	N/A
Parameter code	88502 (pm mass) – many others see Section 5.5.1	84313	See toxics section
Basic monitoring objective(s)	Research	Research	Research
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SPM	SPM	SPM
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Met One SASS	Teledyne API AE-633	Xontech 901
Method code	810	894	210
FRM/FEM/ARM/other	N/A	N/A	N/A
Collecting Agency	Air District	Air District	Air District
Analytical Lab	Air District	N/A	Air District
Reporting Agency	N/A	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	06/11/2008	01/01/2012	01/11/2000
Current Sampling frequency	1:6	Continuous	1:12
Sampling season	01/01 - 12/31	01/01-12/31	01/01 - 12/31
Probe height (meters)	5	6	6
Distance from supporting structure (meters)	>2	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	55	52	51
Distance to furnace or incinerator flue (meters)	17	17	17
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	270
Probe material for reactive gases	N/A	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N	N/A	N/A
Frequency of flow rate verification for PM samplers	Monthly	N/A	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	N/A	N/A

5.12 Los Gatos

Site Information for Los Gatos	
AQS ID	06-085-1001
GPS coordinates	37.226862, -121.979675
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 (meters)	University Ave: 37 Bentley Ave: 27 State Route 17: 291 State Route 9: 121
Traffic count (AADT, year)	University Ave: 13,000 (2016) Bentley Ave: 1,000 (2020) State Route 17: 97,000 (2017) State Route 9: 34,700 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA

Summary for Los Gatos	
Pollutants Measured	O_3
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located in the city of Los Gatos near the downtown area at a fire station surrounded by residential neighborhoods. Los Gatos is situated at the base of the Santa Cruz Mountains where prevailing northerly winds can transport ozone and ozone precursors from the densely populated areas of the south bay area.

Los Gatos Monitor Information

Pollutant, POC	O3, 1
Primary/QA Collocated/Other	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Population Oriented
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 49i
Method code	047
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	04/01/1972
Current Sampling frequency	Continuous
Sampling season	01/01 - 12/31
Probe height (meters)	11.0
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from trees (meters)	16
Distance to furnace or incinerator flue (meters)	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	16
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	N/A
Frequency of one-point QC check for gaseous instruments	Daily
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

5.13 Martinez

Site Information for Martinez	
AQS ID	06-013-2001
GPS coordinates	38.012816, -122.134467
Location	Small sampling shelter next to fire station
Address	521 Jones St, Martinez, CA 94553
County	Contra Costa
Distance to road from gaseous probe (meters)	Jones St: 22 Alhambra Ave: 19
Traffic count (AADT, year)	Jones St: 2,000 (2008) Alhambra Ave: 25,001 (2012) Traffic counts data were updated on April 1, 2020 reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Martinez	
Pollutants Measured	SO_2, Toxics
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located near downtown Martinez and is 0.5 miles south of the Shell Refinery and 2.5 miles west of the Tesoro Refinery. The Carquinez Strait borders the city to the north and the prevailing winds are typically from the west, but north and east winds can transport SO_2 emissions from these refineries to the populated areas of the city of Martinez.

Martinez Monitor Information

Pollutant, POC	SO2, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A
Parameter code	42401	See toxics section
Basic monitoring objective(s)	NAAQS comparison	Research
Site type(s)	Population Oriented & Source Impact	Population Oriented
Monitor type(s)	SLAMS	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	TECO 43i	Xontech 901
Method code	060	210
FRM/FEM/ARM/other	FEM	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	07/02/1973	06/01/2002
Current Sampling frequency	Continuous	1:12
Sampling season	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	7	7
Distance from supporting structure (meters)	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	11	11
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	Teflon	Glass
Residence time for reactive gases (seconds)	13	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

5.14 Napa Valley College

Site Information for Napa Valley College	
AQS ID	06-055-0004
GPS coordinates	38.278849, -122.275024
Location	Trailer in parking lot
Address	North College Parking, Napa, CA 94558
County	Napa
Distance to road from gaseous probe (meters)	Napa Valley Hwy Rt 221: 100 Imola Ave Rt 121: 200
Traffic count (AADT, year)	Napa Valley Hwy Rt 221: 36,000 (2017) Imola Ave (Route 121): 25,400 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data
Groundcover	Paved
Statistical Area	Napa CBSA

Summary for Napa Valley College	
Pollutants Measured	O_3, NO_x, CO, PM_{10}, $PM_{2.5C}$, Toxics
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located in the Napa Valley about 2 miles south of downtown Napa in an open space near a mixed residential and commercial neighborhood with no large industrial sources in the immediate vicinity. In summer months, Napa can have elevated ozone levels when central Bay Area ozone precursors are transported north to the city. Agricultural burning and fireplace usage during the fall and winter months can also result in high particulate matter concentrations. The site was opened on April 1, 2018 as a replacement to the Napa – Jefferson St. site. The Napa site relocation request was approved by EPA on June 12, 2015 (see Appendix I)

Napa Valley College Monitor Information

Pollutant, POC	O3, 1	NO2, 1	CO, 1
Primary/QA Collocated/Other	Primary	Primary	N/A
Parameter code	44201	42601 / 42602	42101
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49c	TECO 42i	TECO 48i
Method code	047	074	054
FRM/FEM/ARM/other	FEM	FRM	FRM
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	04/01/2018	04/01/2018	04/01/2018
Current Sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	5	5	5
Distance from supporting structure (meters)	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	N/A	N/A	N/A
Distance to furnace or incinerator flue (meters)	N/A	N/A	N/A
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	12	15	14
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day
Dates of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35
Date of semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A

Napa Valley College Monitor Information

Pollutant, POC	PM10, 1	PM2.5, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	Primary	N/A
Parameter code	81102	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented & Highest Conc.	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Tisch Env. HiVol TE-60	Met One FEM BAM 1020	Xontech 901
Method code	141	170	210
FRM/FEM/ARM/other	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District
Analytical Lab	Air District	N/A	Air District
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	09/23/2002	04/01/2018	04/01/2018
Current Sampling frequency	1:6	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	4	5	5
Distance from supporting structure (meters)	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	N/A	N/A	N/A
Distance to furnace or incinerator flue (meters)	N/A	N/A	N/A
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	N/A	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	Y	N/A
Frequency of flow rate verification for PM samplers	Quarterly	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A	N/A
Dates of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A
Date of semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	See Table 5.35	N/A

5.15 Oakland East

Site Information for Oakland East	
AQS ID	06-001-0009
GPS coordinates	37.743065, -122.169935
Location	Two-story commercial building
Address	9925 International Blvd, Oakland, CA 94603
County	Alameda
Distance to road from gaseous probe (meters)	International Blvd: 19 98th St: 43 99th St: 23
Traffic count (AADT, year)	International Blvd: 21,988 (2011) 98th St: 31,340 (<2006) 99th St: 100 (2008) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Oakland East	
Pollutants Measured	O_3, NO_x, CO, $PM_{2.5C}$, Toxics
Spatial Scale	Middle scale (100 m – 500 m)
Notes	The site is located seven miles southeast of downtown Oakland, on a commercial strip in a residential area. Oakland is the largest city in Alameda County, with a population of approximately 400,000 and has large emission sources within its boundaries, such as a major maritime port, an international airport, extensive areas of industry, and several major freeways. These sources have the potential to emit significant amounts of ozone precursors, particulates and toxic compounds. Light winds combined with wood burning, vehicular traffic, and surface-based inversions during winter can also cause elevated particulate concentrations. The spatial scale of representativeness for ozone and PM2.5 is middle scale based on the distance to roadways and traffic counts. Based on an EPA Region 9 review of the requirements, the Ozone monitor was changed from a SLAMS to SPM. Consequently, this monitor cannot be used

Summary for Oakland East	
	toward meeting the minimum monitoring requirements for ozone. However, the Air District considers the PM2.5 monitor to represent area-wide air quality and, therefore, comparable to the NAAQS because the site represents many similar locations throughout the metropolitan area.

Oakland East Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary
Parameter code	44201	42101	42601 / 42602
Basic monitoring objective(s)	Research	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SPM	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i
Method code	047	054	074
FRM/FEM/ARM/other	FEM	FRM	FRM
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District
Spatial scale	Middle	Middle	Middle
Monitor start date	11/01/2007	11/01/2007	11/01/2007
Current Sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	10	10	10
Distance from supporting structure (meters)	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	21	21	21
Distance to furnace or incinerator flue (meters)	8	8	8
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	15	16	16
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A

Oakland East Monitor Information

Pollutant, POC	PM2.5, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	N/A
Parameter code	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	Met One FEM BAM 1020	Xontech 901
Method code	170	210
FRM/FEM/ARM/other	FEM	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Middle	Middle
Monitor start date	10/01/2009	11/01/2007
Current Sampling frequency	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	7	9
Distance from supporting structure (meters)	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	21	21
Distance to furnace or incinerator flue (meters)	5	8
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual PM2.5?	Y	N/A
Frequency of flow rate verification for PM samplers	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	N/A

5.16 Oakland West

Site Information for Oakland West	
AQS ID	06-001-0011
GPS coordinates	37.814781, -122.282347
Location	Shelter in parking lot
Address	1100 21st St, Oakland, CA 94607
County	Alameda
Distance to road from gaseous probe (meters)	Grand Ave: 34 Linden St: 33 Adeline St: 168 21st St: 80
Traffic count (AADT, year)	Grand Ave: 19,796 (2012) Linden St: 500 (2015) Adeline St: 8,596 (2013) 21st St: 600 (2015) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Oakland West	
Pollutants Measured	O_3, NO_x, SO_2, CO, $PM_{2.5C,}$ Speciated $PM_{2.5}$, Toxics, BC
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located one mile downwind of the Port of Oakland, which is considered a major area source of diesel particulate matter emissions. Studies have shown that the West Oakland community is exposed to higher concentrations of diesel particulate matter than elsewhere in the Bay Area, resulting in higher potential cancer risks. Diesel-truck traffic emissions from the Port of Oakland, vehicle traffic from nearby highways (I-80, I-880, I-980, and I-550), ship traffic, and additional nearby sources can contribute to high levels of pollution in the area. This site has also been designated one of the 40 nationwide locations for community monitoring of NO_2 intended to characterize vulnerable and susceptible populations.

Oakland West Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1	SO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A
Parameter code	44201	42101	42601 / 42602	42401
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	TECO 43i
Method code	047	054	074	060
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	12/13/2010	02/25/2009	02/25/2009	02/25/2009
Current Sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	6	6	6	6
Distance from supporting structure (meters)	>1	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	40	40	40	40
Distance to furnace or incinerator flue (meters)	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	12	12	13	12
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A

Oakland West Monitor Information

Pollutant, POC	PM2.5, 3	Speciated PM2.5, 5	BC, 1	Toxics, 3
Primary/QA Collocated/Other	Primary	Other	N/A	N/A
Parameter code	88101	88502 (pm mass) – many others see SASS section	84313	See toxics section
Basic monitoring objective(s)	NAAQS comparison	Research	Research	Research
Site type(s)	Population Oriented, Highest Concentration	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SPM	SPM	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A
Instrument manufacturer and model	Met One FEM BAM 1020	Met One SASS	Teledyne API AE-633	Xontech 910A
Method code	170	810	894	210
FRM/FEM/ARM/other	FEM	N/A	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	N/A	Air District	N/A	Air District
Reporting Agency	Air District	N/A	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	12/18/2012	02/12/2009	03/17/2009	03/02/2009
Current Sampling frequency	Continuous	1:6	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	5	5	5	6
Distance from supporting structure (meters)	>2	>2	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	40	39	40	40
Distance to furnace or incinerator flue (meters)	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	No	No	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	N/A	N/A	Glass	Glass
Residence time for reactive gases (seconds)	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	Y	N	N/A	N/A
Frequency of flow rate verification for PM samplers	Bi-weekly	Monthly	N/A	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	See Table 5.35	N/A	N/A

5.17 Palo Alto Airport

Site Information for Palo Alto Airport	
AQS ID	06-085-2010
GPS coordinates	37.457621, -122.112286
Location	The end of the runway in the aircraft run-up zone
Address	1925 Embarcadero Road, Palo Alto, CA 94303
County	Santa Clara
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA

Summary for Palo Alto Airport	
Pollutants Measured	Lead (TSP) [not operational in 2021]
Spatial Scale	Micro scale (100 m)
Notes	The site is located just south of the runway at the Palo Alto Airport and was one of the 15 airports chosen by EPA for required TSP-lead monitoring due to expected lead emissions from piston engine aircraft utilizing this airport. Lead monitoring at this site began on February 3, 2012 but was extended indefinitely because monitoring results showed that lead concentrations exceed 50% of the NAAQS in all but one of the rolling three-month quarters since monitoring began. Lead monitoring ended on December 19, 2014, because Santa Clara County sold the property to the City of Palo Alto. The sale triggered an FAA review of various operational plans and permits, revealing that the lead sampler location violated FAA regulations. The closure date in AQS is December 23, 2014 (the date of the last audit). The Air District continues to work EPA to identify a suitable alternative.

Palo Alto Airport Monitor Information

Pollutant, POC	Lead (TSP), 3
Primary/QA Collocated/Other	Primary
Parameter code	14129
Basic monitoring objective(s)	NAAQS Comparison & Research
Site type(s)	Source Oriented
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	Tisch TE-HVPLUS-BL
Method code	191
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	RTI
Reporting Agency	Air District
Spatial scale	Micro
Monitor start date	02/03/2012
Current Sampling frequency	1:6
Sampling season	01/01 - 12/31
Probe height (meters)	2.0
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	>20
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Will there be changes within the next 18 months?	Yes – closed Dec 2014, working with EPA on alternative
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	Quarterly
Frequency of one-point QC check for gaseous instruments	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	Site closed Dec 2014 due to FAA violations in siting

5.18 Pittsburg

Site Information for Pittsburg	
AQS ID	Not applicable
GPS coordinates	38.007069, -121.868056
Location	Shelter
Address	1398 E Leland Rd, Pittsburg, CA, 94565
County	Contra Costa
Distance to road from gaseous probe (meters)	E Leland Rd: 75 Loveridge Rd: 260
Traffic count (AADT, year)	E Leland Rd: 25,080 (2006) Loveridge Rd: 23,432 (2006) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Pittsburg	
Pollutants Measured	Toxics, BC
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is in the urban area of Pittsburg and located along a transport corridor between the Bay Area and the Central Valley, which is in the vicinity/downwind of several industrial facilities along the Carquinez Strait.

Pittsburg Monitor Information

Pollutant, POC	BC, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A
Parameter code	84313	See toxics section
Basic monitoring objective(s)	Research	Research
Site type(s)	Population Oriented	Population Oriented
Monitor type(s)	SPM	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	Teledyne API AE-633	Xontech 910
Method code	894	210
FRM/FEM/ARM/other	N/A	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	06/27/2017	06/27/2017
Current Sampling frequency	Continuous	1:12
Sampling season	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	3	3
Distance from supporting structure (meters)	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	None	None
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

5.19 Pleasanton (near-road)

Site Information for Pleasanton	
AQS ID	06-001-0015
GPS coordinates	37.701222, -121.903019
Location	Interstate 580 near Hopyard interchange
Address	Owen's Court, Pleasanton, CA
County	Alameda
Distance to road from gaseous probe (meters)	Owen's Court: 53 I-580: 179
Traffic count (AADT, year)	Owen's Court: 21,800 (2018) I-580: 231,500 (2016) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Pleasanton	
Pollutants Measured	NO_x, CO, $PM_{2.5C}$, Toxics
Spatial Scale	Microscale (100 m)
Notes	The site is in a commercial area in the city of Pleasanton and 179 m downwind from the I-580 and designated as a near-road monitoring site which are a category of sites designed to representative of population exposure in the near-road environment. Due to the prevalence of areas that have large roadways adjacent to population centers, Pleasanton is considered to be representative of area-wide or neighborhood scale air quality. The site began operation on April 1, 2018 and was deployed at the request of an Air District board member.

Pleasanton Monitor Information

Pollutant, POC	NO2, 1	CO, 1	PM2.5, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	N/A	Primary	N/A
Parameter code	42601 / 42602	42101	88101	See toxics section
Basic monitoring objective(s)	Public Information	Public Information	Public Information	Public Information
Site type(s)	Source Impact & Population Oriented	Source Impact & Population Oriented	Source Impact & Population Oriented	Population Oriented
Monitor type(s)	SPM	SPM	SPM	SPM
Network affiliation(s)	Near Road	Near Road	Near Road	N/A
Instrument manufacturer and model	TECO 42i	TECO 48i	Met One FEM BAM 1020	Xontech 901
Method code	074	054	170	210
FRM/FEM/ARM/other	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Micro	Micro	Micro	Micro
Monitor start date	04/01/2018	04/01/2018	04/01/2018	04/01/2018
Current Sampling frequency	Continuous	Continuous	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	5	5	5	5
Distance from supporting structure (meters)	>1	>1	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	None	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	N/A	Glass
Residence time for reactive gases (seconds)	14	14	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	Y	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	N/A	N/A
Dates of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	N/A	N/A
Date of semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	See Table 5.35	N/A

5.20 Point Richmond

Site Information for Point Richmond	
AQS ID	06-013-0005
GPS coordinates	37.926162, -122.385561
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 (meters)	Washington Ave: 25 W. Richmond Ave: 10 Park Place: 27 Interstate 580: 266
Traffic count (AADT, year)	Washington Ave: 1,587 (2017) W. Richmond Ave: 4,405 (2006) Park Place: 1,877 (2017) Interstate 580: 82,000 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Point Richmond	
Pollutants Measured	H_2S
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is in the downtown area of the Point Richmond neighborhood, which is 0.2 miles downwind of the southern fence line boundary of the Chevron refinery. Although prevailing winds in the area are from the south-southwest, occasional northerly winds will transport H_2S emissions from the refinery to the community. H_2S gases at Chevron can be emitted from the processing units, one mile to the north, or the Chevron Richmond Long Wharf Complex, one mile to the west, where crude oil and other feedstock chemicals from tankers are unloaded.

Point Richmond Monitor Information

Pollutant, POC	H2S, 1
Primary/QA Collocated/Other	N/A
Parameter code	42402
Basic monitoring objective(s)	Public Information
Site type(s)	Population Oriented& Source Impact
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 43i
Method code	020
FRM/FEM/ARM/other	N/A
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	01/01/1999
Current Sampling frequency	Continuous
Sampling season	01/01 - 12/31
Probe height (meters)	3
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from trees (meters)	17
Distance to furnace or incinerator flue (meters)	7
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	7
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	N/A
Frequency of one-point QC check for gaseous instruments	Every other week
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

5.21 Redwood City

Site Information for Redwood City	
AQS ID	06-081-1001
GPS coordinates	37.482934, -122.203500
Location	One-story commercial building
Address	897 Barron Ave, Redwood City, CA 94063
County	San Mateo
Distance to road from gaseous probe (meters)	Barron Ave: 13 Bay Road: 24 Warrington Ave: 131 US Highway 101: 455
Traffic count (AADT, year)	Barron Ave: 1,100 (2020) Warrington Ave: 1,400 (2020) Bay Road: 3,770 (2012) U.S. Highway 101: 222,600 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Redwood City	
Pollutants Measured	O_3, NO_x, CO, $PM_{2.5C}$, Toxics, UFP
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is in a commercial/industrial zone bordered by U.S. Highway 101 on one side and residential areas on the other three sides. Being midway between San Francisco and San Jose, the site is well positioned to monitor ozone precursors and ozone moving southward across the peninsula as they are channeled by the coastal mountains to the west. Although the sea breeze typically keeps pollution levels low, when winds are light, high levels of ozone precursors, ozone, or particulates can occur due to the large number of sources in the area. Light winds combined with wood burning, vehicular traffic, and surface-based inversions during winter can also cause elevated particulate concentrations.

Redwood City Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary
Parameter code	44201	42101	42601 / 42602
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i
Method code	047	054	074
FRM/FEM/ARM/other	FEM	FRM	FRM
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	07/01/1976	03/01/1967	03/01/1967
Current Sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	7	7	7
Distance from supporting structure (meters)	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	46	46	46
Distance to furnace or incinerator flue (meters)	13	13	13
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	15	16	16
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A

Redwood City Monitor Information

Pollutant, POC	PM2.5, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	N/A
Parameter code	88101	See Toxics Section
Basic monitoring objective(s)	NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	Met One FEM BAM 1020	Xontech 901
Method code	170	210
FRM/FEM/ARM/other	FEM	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	10/01/2009	7/11/2001
Current Sampling frequency	Continuous	1:12
Sampling season	01/01 - 12/31	01/01 - 12 /31
Probe height (meters)	6	7
Distance from supporting structure (meters)	>2	>2
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	40	10
Distance to furnace or incinerator flue (meters)	14	13
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual PM2.5?	Y	N/A
Frequency of flow rate verification for PM samplers	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	N/A

5.22 Reid-Hillview Airport

Site Information for Reid-Hillview Airport	
AQS ID	06-085-2011
GPS coordinates	37.329841, -121.815438
Location	The end of the runway in the aircraft run-up zone
Address	2500 Cunningham Ave., San Jose, CA 95148
County	Santa Clara
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA

Summary for Reid-Hillview Airport	
Pollutants Measured	Lead (TSP) [not operational in 2021]
Spatial Scale	Micro scale (100 m)
Notes	The site is located just south of the runway at the Reid-Hillview and was one of the 15 airports chosen by EPA for required TSP-lead monitoring due to expected lead emissions from piston engine aircraft utilizing this airport. On June 20, 2020 the Reid-Hillview Airport lead monitor temporarily ceased operation due to electrical hazards and the subsequent site repair.

Reid-Hillview Airport Monitor Information

Pollutant, POC	Lead (TSP), 3
Primary/QA Collocated/Other	Primary
Parameter code	14129
Basic monitoring objective(s)	NAAQS Comparison & Research
Site type(s)	Source Oriented
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	Tisch TE-HVPLUS-BL
Method code	191
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	ERG
Reporting Agency	Air District
Spatial scale	Micro
Monitor start date	02/03/2012
Current Sampling frequency	1:6
Sampling season	01/01 - 12/31
Probe height (meters)	1.6[a]
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	> 20
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	Quarterly
Frequency of one-point QC check for gaseous instruments	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35

[a]The probe height of the lead sampler at Reid-Hillview is set to the height of the fence standing between the samplers and Tully Road in order to place the sampler within the area designated by EPA for sampling. This was a requirement of the Reid-Hillview Airport and was designed to ensure that the samplers were in unquestionable compliance with the FAA requirements in 14 CFR Part 77. Operation of the samplers at the airport was contingent on meeting this requirement. Movement of the sampler to achieve a probe height greater than or equal to 2 meters would result in the sampler being located off airport property.

5.23 Richmond 7th

Site Information for Richmond 7th	
AQS ID	06-013-0006
GPS coordinates	37.948172, -122.364852
Location	Fire station
Address	1065 7th Street, Richmond, CA 94801
County	Contra Costa
Distance to road from gaseous probe (meters)	7th St: 22 Hensley St: 30 Richmond Parkway: 200
Traffic count (AADT, year)	7th St: 3,546 (2012) Hensley St: 3,700 (2012) Richmond Parkway: 32,000 (2012) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Richmond 7th	
Pollutants Measured	SO_2, H_2S, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located near the eastern fence line of the Chevron refinery in North Richmond 0.5 miles east of the refinery boundary where public exposure to the highest H_2S and SO_2 concentrations are expected. 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. Because 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.

Richmond 7th Monitor Information

Pollutant, POC	SO2, 1	H2S, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	N/A
Parameter code	42401	42402	See toxics section
Basic monitoring objective(s)	NAAQS comparison	Public information	Research
Site type(s)	Population Oriented & Source Impact	Population Oriented & Source Impact	Population Oriented
Monitor type(s)	SLAMS	SPM	SPM
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 43i	TECO 43i	Xontech 901
Method code	060	020	210
FRM/FEM/ARM/other	FEM	N/A	N/A
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	07/01/1980	01/01/1999	10/14/1992
Current Sampling frequency	Continuous	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	8	8	8
Distance from supporting structure (meters)	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	10	10	10
Distance to furnace or incinerator flue (meters)	12	12	12
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	Teflon	Glass
Residence time for reactive gases (seconds)	8	9	N/A
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other week	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A

5.24 Rodeo

Site Information for Rodeo	
AQS ID	06-013-0007
GPS coordinates	38.034331, -122.270336
Location	Single story storage area at fire station
Address	326 Third Street, Rodeo, CA 94572
County	Contra Costa
Distance to road from gaseous probe (meters)	Third St: 13 Parker St: 249
Traffic count (AADT, year)	Third St: 500 (2007) Parker St: 9,484 (2013) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for Rodeo	
Pollutants Measured	H_2S
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located in a residential area 0.6 miles southwest of the Phillips 66 refinery on the northeastern boundary of the town of Rodeo. Although the prevailing winds in the area are from the southwest, northeast winds can transport H_2S emissions from the refinery to the populated areas of the town of Rodeo.

Rodeo Monitor Information

Pollutant, POC	H2S, 1
Primary/QA Collocated/Other	N/A
Parameter code	42402
Basic monitoring objective(s)	Public information
Site type(s)	Population Oriented & Source Impact
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 43i
Method code	020
FRM/FEM/ARM/other	N/A
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	04/01/2002
Current Sampling frequency	Continuous
Sampling season	01/01 – 12/31
Probe height (meters)	7
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	>50
Distance to furnace or incinerator flue (meters)	11
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	6
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	N/A
Frequency of one-point QC check for gaseous instruments	Every other week
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

5.25 San Carlos Airport II

Site Information for San Carlos Airport II	
AQS ID	06-081-2004
GPS coordinates	37.508162, -122.246305
Location	The end of the runway in the aircraft run-up zone
Address	620 Airport Drive, San Carlos, CA 94070
County	San Mateo
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for San Carlos Airport II	
Pollutants Measured	Lead (TSP) [not operational in 2021]
Spatial Scale	Micro scale (100 m)
Notes	The site is located just south of the runway at the San Carlos Airport and was one of the 15 airports chosen by EPA for required TSP-lead monitoring due to expected lead emissions from piston engine aircraft utilizing this airport. TSP-lead monitoring at the San Carlos II site (both primary and collocated) started on March 25, 2015. The original San Carlos Airport I site was inappropriately sited and had to be moved because it violated FAA air space restrictions. This new site has a different AQS site ID (06-081-2004) than the original San Carlos Airport I site because the new site is about 120 meters to the southeast and farther away from the aircraft run-up area. Three-month rolling averages during 2015 and 2016 at this site ranged from 0.016 µg/m^3 to 0.025 µg/m^3. The TSP-lead monitoring at the San Carlos Airport II monitoring site was discontinued on April 11, 2017 due to circumstances beyond the Air District's control. The Air District notified EPA of the discontinuation of data collection on April 13, 2017. The Air District will continue to work with EPA to find a suitable alternative.

San Carlos Airport II Monitor Information

Pollutant, POC	Lead (TSP), 3	Lead (TSP), 5
Primary/QA Collocated/Other	Primary	QA Collocated
Parameter code	14129	14129
Basic monitoring objective(s)	NAAQS Comparison & Research	NAAQS Comparison & Research
Site type(s)	Source Oriented	Source Oriented
Monitor type(s)	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	Tisch TE-HVPLUS-BL	Tisch TE-HVPLUS-BL
Method code	191	191
FRM/FEM/ARM/other	FEM	FEM
Collecting Agency	Air District	Air District
Analytical Lab	ERG	ERG
Reporting Agency	Air District	Air District
Spatial scale	Micro	Micro
Monitor start date	03/25/2015	03/25/2015
Current Sampling frequency	1:6	1:12
Sampling season	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	2.1	2.1
Distance from supporting structure (meters)	N/A	N/A
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	>30	>30
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	2.8	2.8
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No	No
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases (seconds)	N/A	N/A
Will there be changes within the next 18 months?	No	No
Is it suitable for comparison against the annual PM2.5?	N/A	N/A
Frequency of flow rate verification for PM samplers	Quarterly	Quarterly
Frequency of one-point QC check for gaseous instruments	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A
Dates of semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

5.26 San Francisco

Site Information for San Francisco	
AQS ID	06-075-0005
GPS coordinates	37.765946, -122.399044
Location	One-story commercial building
Address	10 Arkansas St, Suite N, San Francisco, CA 94107
County	San Francisco
Distance to road from gaseous probe (meters)	16^{th} St: 32 Interstate 280: 300 Arkansas St: 17 U.S. Highway 101: 504
Traffic count (AADT, year)	16^{th} St: 11,764 (2012) Arkansas St: 1,750 (2015) Interstate 280: 106,000 (2015) U.S. Highway 101: 226,000 (2015) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for San Francisco	
Pollutants Measured	O_3, NO_x, CO, PM_{10}, $PM_{2.5C}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located near the northern boundary of the Potrero Hill neighborhood in San Francisco, which is adjacent to light industrial activities, residential neighborhoods and in-between two major roadways: U.S 101 and I-28. Although the westerly wind sea breeze usually keeps pollution levels low, light wind conditions and surface-based inversions can result in elevated concentrations of ozone precursors and/or particulate matter. PM_{10} monitoring was changed from 1:6 to 1:12 sampling effective January 1, 2013 to accommodate limited resources. Because the Bay Area is well above the minimum monitoring requirements for PM_{10}, EPA approved this decrease in sampling frequency as well as converting these PM_{10} monitors from SLAMS to SPMs. Therefore, this monitor is no longer counted in PM_{10} minimum monitoring requirements.

San Francisco Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary
Parameter code	44201	42101	42601 / 42602
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i
Method code	047	054	074
FRM/FEM/ARM/other	FEM	FRM	FRM
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	01/01/1986	01/01/1986	NO: 12/01/1985 NO2: 01/01/1986
Current Sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	11	11	11
Distance from supporting structure (meters)	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	15	15	15
Distance to furnace or incinerator flue (meters)	5	5	5
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	13	13	14
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A

San Francisco Monitor Information

Pollutant, POC	PM10, 1	PM2.5, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	Primary	N/A
Parameter code	81102	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SPM	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Andersen HiVol 1200	Met One FEM BAM 1020	Xontech 910A
Method code	063	170	210
FRM/FEM/ARM/other	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District
Analytical Lab	Air District	N/A	Air District
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	11/16/1986	10/01/2009	01/22/1991
Current Sampling frequency	1:12	Continuous	1:12
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	8	8	8
Distance from supporting structure (meters)	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	18	16	14
Distance to furnace or incinerator flue (meters)	7	7	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	N/A	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	Y	N/A
Frequency of flow rate verification for PM samplers	Quarterly	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	See Table 5.35	N/A

5.27 San Jose – Jackson

Site Information for San Jose – Jackson	
AQS ID	06-085-0005
GPS coordinates	37.348497, -121.894898
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 (meters)	Jackson St: 15 4th St: 35
Traffic count (AADT, year)	Jackson St: 5,992 (2007) 4th St: 7,300 (2014) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA

Summary for San Jose – Jackson	
Pollutants Measured	O_3, NO_x, NO_y, SO_2, CO, PM_{10}, $PM_{2.5F}$, $PM_{2.5C}$, Speciated $PM_{2.5}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is in the center of the northern Santa Clara Valley in downtown San Jose, which is near a number of major freeways, the San Jose International Airport, and commercial and residential areas. Prevailing northwesterly winds can transport ozone and ozone precursors from the central and northern portions of the Bay Area to the Santa Clara Valley. Light winds combined with surface-based inversions within the valley during winter months can also cause elevated particulate matter concentrations. San Jose – Jackson was approved as a NCore station in 2009 and began operation on January 1, 2011. On October 11, 2019, EPA approved a request to discontinue NO_y monitoring (see Appendix F), but as part of new PAMS requirements, the Air District plans to monitor NO_y at Livermore in starting 2021. The Air District also discontinued monitoring for the NATTS program on July 1, 2018 (see Section 3.2)

San Jose – Jackson Monitor Information

Pollutant, POC	O3, 1	CO[a], 1	NO2, 1	SO2[a], 1
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A
Parameter code	44201	42101	42601 / 42602	42401
Basic monitoring objective(s)	NAAQS comparison & Research	NAAQS comparison & Research	NAAQS comparison & Research	NAAQS comparison & Research
Site type(s)	Population Oriented	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NCore	NCore	N/A	NCore
Instrument manufacturer and model	TECO 49i	TECO 48iTLE	TECO 42i	TECO 43iTLE
Method code	047	554	074	560
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	11/01/2002	11/01/2002	11/01/2002	02/10/2009
Current Sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	12	12	12	12
Distance from supporting structure (meters)	>1	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	>50	>50	>50	>50
Distance to furnace or incinerator flue (meters)	5	5	5	5
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	13	15	14	15
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A

a Trace level instruments required for CO and SO_2 at NCore sites.

San Jose – Jackson Monitor Information

Pollutant, POC	NO_y, 2	PM10, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	Primary	N/A
Parameter code	42600	81102	See toxics section
Basic monitoring objective(s)	Research	NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SPM
Network affiliation(s)	NCore	N/A	N/A
Instrument manufacturer and model	API 200 EU/NOy	Partisol 2025 without VSCC	Xontech 924 & 901
Method code	699	127	202 & 210
FRM/FEM/ARM/other	N/A	FRM	N/A
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	Air District	Air District
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	01/13/2011	10/15/2002	10/04/2002
Current Sampling frequency	Continuous	1:6	1:12
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 – 12/31
Probe height (meters)	12	9	10
Distance from supporting structure (meters)	>1	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	>50	>50	>50
Distance to furnace or incinerator flue (meters)	3	3	5
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	Glass
Residence time for reactive gases (seconds)	7	N/A	N/A
Will there be changes within the next 18 months?	Y[a]	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	Monthly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	See Table 5.35	N/A

[a]The EPA approved the waiver to shut down NO_y monitor as required by the NCore program (see Appendix E). Under this approval, the Air District is planning to measure NO_y at as part of the new PAMS requirement at Livermore in 2020.

San Jose – Jackson Monitor Information

Pollutant, POC	PM10-2.5 (PMcoarse), 1	PM2.5, 1[a]	PM2.5, 3	Speciated PM2.5, 5
Primary/QA Collocated/Other	Primary	QA Collocated	Primary	Other
Parameter code	86101	88101	88101	88502 (pm mass) – many others see SASS section
Basic monitoring objective(s)	Research	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented	Population Oriented & Highest Conc.	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NCore	NCore	NCore	NCore, CSN STN
Instrument manufacturer and model	Partisol 2025 without VSCC	Partisol-Plus 2025 w/VSCC	Met One FEM BAM 1020	Met One SASS
Method code	176	145	170	810
FRM/FEM/ARM/other	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	Air District	Air District	N/A	RTI
Reporting Agency	Air District	Air District	Air District	RTI
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	1/1/2011	10/05/2002	10/01/2012	10/05/2002
Current Sampling frequency	1:3 (NCore)	1:3 (NCore)	Continuous	1:3
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	9	9	10	9
Distance from supporting structure (meters)	>2	>2	>2	>2
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	>50	>50	>50	>50
Distance to furnace or incinerator flue (meters)	2	2	4	3
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	4.0	4.0	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	No	No	No
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	N/A	N/A	N/A	N/A
Residence time for reactive gases (seconds)	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	Y	Y	N
Frequency of flow rate verification for PM samplers	Monthly	Monthly	Bi-weekly	Monthly
Frequency of one-point QC check for gaseous instruments	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	See Table 5.35	See Table 5.35	See Table 5.35

[a] $PM_{2.5}$ POC 1 was the primary sampler from October 2002 through September 2012 and was changed to be the collocated sampler after October 1, 2012 when $PM_{2.5}$ POC 3 became operational as the primary monitor.

5.28 San Jose – Knox (near-road)

Site Information for San Jose – Knox	
AQS ID	06-085-0006
GPS coordinates	37.338202, -121.849892
Location	Trailer within 50m of freeway
Address	1007 Knox Ave. San Jose, CA 95122
County	Santa Clara
Distance to road from gaseous probe (meters)	Hwy 101: 16 I-280/680: 262 Story Rd: 234 Knox Ave: 236
Traffic count (AADT, year)	Hwy 101: 283,500 (2017) I-280/680: 211,000 (2017) Story Rd: 20,571 (2016) Knox Ave: 2,500 (2020) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA

Summary for San Jose – Knox	
Pollutants Measured	NO_x, CO, $PM_{2.5C,}$ Toxics, BC, UFP
Spatial Scale	Microscale (100 m)
Notes	The site is 16 m downwind from US-101 (along a segment of roadway with with highest Fleet Equivalent AADT (FE-AADT) in Santa Clara County) and designated as a near-road monitoring site which are a category of sites designed to representative of population exposure in the near-road environment. Due to the prevalence of areas that have large roadways adjacent to population centers, San Jose – Knox is considered to be representative of area-wide or neighborhood scale air quality.

San Jose – Knox Monitor Information

Pollutant, POC	NO2, 1	CO, 1	PM2.5, 3	BC, 1	Toxics, 3
Primary/QA Collocated/Other	Primary	N/A	Primary	N/A	N/A
Parameter code	42601 / 42602	42101	88101	84313	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	Public Information	Research
Site type(s)	Source Impact & Population Oriented	Source Impact & Population Oriented	Source Impact & Population Oriented	Source Impact	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS	SPM	SPM
Network affiliation(s)	Near Road	Near Road	Near Road	N/A	N/A
Instrument manufacturer and model	TECO 42i	TECO 48i	Met One FEM BAM 1020	Teledyne API AE-633	Xontech 901
Method code	074	054	170	894	210
FRM/FEM/ARM/other	FRM	FRM	FEM	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District
Spatial scale	Micro	Micro	Micro	Micro	Micro
Monitor start date	09/01/2014	09/01/2014	09/01/2014	09/01/2014	08/15/2014
Current Sampling frequency	Continuous	Continuous	Continuous	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01-12/31	01/01 – 12/31
Probe height (meters)	6	6	5	6	5
Distance from supporting structure (meters)	>1	>1	>2	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from trees (meters)	8[a]	8[a]	8[a]	8	8
Distance to furnace or incinerator flue (meters)	None	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	No	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	N/A	N/A	Glass
Residence time for reactive gases (seconds)	16	15	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	Y	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	Bi-weekly	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	N/A	N/A	N/A
Dates of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	N/A	N/A	N/A
Dates semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	See Table 5.35	N/A	N/A

[a] Due to siting logistics constraints and in an effort to meet the objective of characterizing near-road emissions in the best segment in this MSA, the San Jose – Knox site was chosen even though the distance to the closest tree is less than 10 meters. Region 9 EPA was involved in the development of this site, were aware of the tree placement, and concurred on the siting choice, approving this site as meeting the requirements for near-road monitoring

5.29 San Martin

Site Information for San Martin	
AQS ID	06-085-2006
GPS coordinates	37.079379, -121.600031
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 (meters)	Murphy Ave: 57 US Highway 101: 455 Monterey Rd: 561 San Martin Ave: 931
Traffic count (AADT, year)	Murphy Ave: 1,768 (2018) US Highway 101: 128,100 (2017) Monterey Rd: 15,054 (2018) San Martin Ave: 7,795 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA

Summary for San Martin	
Pollutants Measured	O_3
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located at the South County Airport in an agricultural area at the south end of the Santa Clara Valley approximately 24 miles southeast of downtown San Jose and 0.3 miles west of US-101. Prevailing winds can transport ozone and ozone precursors down the valley from the densely populated San Jose area as well as the surrounding San Francisco Bay Area.

San Martin Monitor Information

Pollutant, POC	O3, 1
Primary/QA Collocated/Other	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Highest Conc. & Population Oriented & Regional Transport
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 49i
Method code	047
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	04/30/1994
Current Sampling frequency	Continuous
Sampling season	01/01-12/31
Probe height (meters)	5
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from trees (meters)	26
Distance to furnace or incinerator flue (meters)	N/A
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	16
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual PM2.5?	N/A
Frequency of flow rate verification for PM samplers	N/A
Frequency of one-point QC check for gaseous instruments	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

5.30 San Pablo

Site Information for San Pablo	
AQS ID	06-013-1004
GPS coordinates	37.960400, -122.356811
Location	One story commercial building
Address	1865-D Rumrill Blvd, San Pablo, CA 94806
County	Contra Costa
Distance to road from gaseous probe (meters)	Rumrill Blvd: 16
Traffic count (AADT, year)	Rumrill Blvd:,15,433 (2013) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for San Pablo	
Pollutants Measured	O_3, NO_x, SO_2, CO, PM_{10}, $PM_{2.5\ C}$, Toxics, UFP
Spatial Scale	Middle scale (100 – 500 m)
Notes	The site is located in the most populated portion of western Contra Costa County and is almost surrounded by the city of Richmond. The nearby areas have heavy industry, high traffic volume including two major freeways, and is 1.2 miles downwind of the Chevron refinery. Light winds combined with surface-based inversions during winter months can cause elevated particulate matter concentrations. The spatial scale of representativeness for ozone and $PM_{2.5}$ is middle scale based on the distance to roadways and traffic counts. Based on an EPA Region 9 review of the requirements, the Ozone monitor was changed from a SLAMS to SPM. Consequently, this monitor cannot be used toward meeting the minimum monitoring requirements for ozone. However, the Air District considers the $PM_{2.5}$ monitor to represent area-wide air quality and, therefore, comparable to the NAAQS because the site represents many similar locations throughout the metropolitan area. On October 19, 2016, a collocated PM_{10} monitor was added for quality assurance purpose.

San Pablo Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1	SO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A
Parameter code	44201	42101	42601 / 42602	42401
Basic monitoring objective(s)	Public Information	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented	Population Oriented& Source Impact
Monitor type(s)	SPM	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	TECO 43i
Method code	047	054	074	060
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Middle	Middle	Middle	Neighborhood
Monitor start date	09/13/2002	09/13/2002	09/13/2002	09/13/2002
Current Sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	9	9	9	9
Distance from supporting structure (meters)	>1	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	>50	>50	>50	>50
Distance to furnace or incinerator flue (meters)	7	7	7	7
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	9	10	10	9
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A

San Pablo Monitor Information

Pollutant, POC	PM10, 1	PM10, 2	PM2.5, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	QA Collocated	Primary	N/A
Parameter code	81102	81102	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A
Instrument manufacturer and model	Tisch Env. HiVol TE-60	Tisch Env. HiVol TE-6000	Met One FEM BAM 1020	Xontech 901
Method code	141	141	170	210
FRM/FEM/ARM/other	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	Air District	Air District	Air District	Air District
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Middle	Middle	Middle	Middle
Monitor start date	09/23/2002	10/19/2016	12/12/2012	09/05/2002
Current Sampling frequency	1:6	1:12	Continuous	1:12
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	5	5	6	8
Distance from supporting structure (meters)	>2	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	>50	>50	>50	>50
Distance to furnace or incinerator flue (meters)	8	5	6	6
Distance between monitors fulfilling a QA collocation requirement (meters)	3	3	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No	No	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	N/A	N/A	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	Y	N/A
Frequency of flow rate verification for PM samplers	Quarterly	Quarterly	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	See Table 5.35	See Table 5.35	N/A

5.31 San Rafael

Site Information for San Rafael	
AQS ID	06-041-0001
GPS coordinates	37.972310, -122.520004
Location	Second floor of two-story commercial building
Address	534 4th Street, San Rafael, CA 94901
County	Marin
Distance to road from gaseous probe (meters)	4th St: 18 Irwin St: 48 US Highway 101: 112 3rd St: 124
Traffic count (AADT, year)	4th St:8,830 (2017) Irwin St: 19,859 (2017) US Highway 101: 156,500 (2017) 3rd St: 28,142 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for San Rafael	
Pollutants Measured	O_3, NO_x, CO, PM_{10}, $PM_{2.5C}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located is at a commercial building about a block east of US-101 and near major highway access ramps and 0.5 miles east of the downtown San Rafael, which is the largest city in Marin County. While afternoon westerly wind sea breezes typically keep pollutant concentrations low, light winds combined with wood burning, vehicular traffic, and surfaced-based inversions during winter can cause elevated particulate matter concentrations. The spatial scale of representativeness for ozone and $PM_{2.5}$ is middle scale based on the distance to roadways and traffic counts. Based on an EPA Region 9 review of the requirements, the Ozone monitor was changed from a SLAMS to SPM. Consequently, this monitor cannot be used toward meeting the minimum monitoring requirements for ozone. However, the Air District considers the PM2.5 monitor to represent area-wide air quality and, therefore, comparable to the NAAQS because the site represents many similar locations throughout the metropolitan area.

San Rafael Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary
Parameter code	44201	42101	42601 / 42602
Basic monitoring objective(s)	Public Information	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SPM	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i
Method code	047	054	074
FRM/FEM/ARM/other	FEM	FRM	FRM
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District
Spatial scale	Middle	Middle	Middle
Monitor start date	07/01/1976	10/01/1967	NO: 01/01/1968 NO2:10/01/1967
Current Sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	12	12	12
Distance from supporting structure (meters)	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	H Dist = 23[a] V Dist above probe = 17	H Dist = 23[a] V Dist above probe = 17	H Dist = 23[a] V Dist above probe = 17
Distance from trees (meters)	14	14	14
Distance to furnace or incinerator flue (meters)	4	4	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	320	320	320
Probe material for reactive gases	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	10	11	13
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A

a The "obstruction not on the roof" is between zero degrees (north) and 40 degrees (northeast) leaving greater than 270 degrees of unobstructed airflow. The prevailing winds are from the south and lay within the unobstructed arc.

San Rafael Monitor Information

Pollutant, POC	PM10, 1	PM2.5, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	Primary	N/A
Parameter code	81102	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Andersen HiVol 1200	Met One FEM BAM 1020	Xontech 901
Method code	063	170	210
FRM/FEM/ARM/other	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District
Analytical Lab	Air District	N/A	Air District
Reporting Agency	Air District	Air District	Air District
Spatial scale	Middle	Middle	Middle
Monitor start date	11/04/1986	10/27/2009	01/01/1985
Current Sampling frequency	1:6	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	8	9	12
Distance from supporting structure (meters)	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	H Dist = 22[a] V Dist above probe = 21	H Dist = 25 [a] V Dist above probe = 20	None
Distance from trees (meters)	13	10	14
Distance to furnace or incinerator flue (meters)	2	3	5
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No	N/A	N/A
Unrestricted airflow (degrees)	320	320	360
Probe material for reactive gases	N/A	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	Y	N/A
Frequency of flow rate verification for PM samplers	Quarterly	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	See Table 5.35	N/A

[a] The "obstruction not on the roof" is between zero degrees (north) and 40 degrees (northeast) leaving greater than 270 degrees of unobstructed airflow. The prevailing winds are from the south and lay within the unobstructed arc.

5.32 San Ramon

Site Information for San Ramon	
AQS ID	06-013-2007
GPS coordinates	37.743649, -121.934188
Location	Top of trailer
Address	9885 Alcosta Blvd, San Ramon, CA 94582
County	Contra Costa
Distance to road from gaseous probe (meters)	Alcosta Blvd (Montevideo): 300 Pine Valley Rd: 350 Alcosta Blvd (S of Bollinger): 100 Estero Dr: 250
Traffic count (AADT, year)	Alcosta Blvd (Montevideo): 9582 (2015) Alcosta Blvd (S. of Bollinger): 21,000 (2017) Pine Valley Rd: 9,500 (2018) Estero Dr: <500 (est. 2012) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel
Statistical Area	San Francisco-Oakland-Hayward CBSA

Summary for San Ramon	
Pollutants Measured	O_3, NO_x
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located in the city of San Ramon along the I-680 corridor, which connects the Livermore Valley with the San Ramon Valley and other major cities of Contra Costa County. During summer months, localized north winds can be channeled southward from Concord and Walnut Creek along the I-680 corridor and pass through San Ramon before turning eastward into the Livermore Valley transporting ozone and ozone precursors to the area. San Ramon is part of the unofficial PAMS program and measures hourly speciated hydrocarbons (see Section 3.4). While the site meets Appendix A and E and eligible for NAAQS comparison, monitors are designated as SPMS and are not used toward meeting the minimum monitoring requirements. In late 2013, the Air District decided to not operate the NO_x monitor during winter months.

San Ramon Monitor Information

Pollutant, POC	O3, 1	NO2, 1
Primary/QA Collocated/Other	N/A	Primary
Parameter code	44201	42601 / 42602
Basic monitoring objective(s)	Research, NAAQS comparison	Research
Site type(s)	Population Oriented	Population Oriented
Monitor type(s)	SPM	SPM
Network affiliation(s)	Unofficial PAMS	Unofficial PAMS
Instrument manufacturer and model	TECO 49i	TECO 42i
Method code	047	074
FRM/FEM/ARM/other	FEM	FRM
Collecting Agency	Air District	Air District
Analytical Lab	N/A	N/A
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	01/01/2012	01/01/2012
Current Sampling frequency	Continuous	Continuous
Sampling season	04/01 – 11/30	01/01-11/30 in 2013 04/01-11/30 since 2014
Probe height (meters)	6	6
Distance from supporting structure (meters)	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	62	62
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	Teflon	Teflon
Residence time for reactive gases (seconds)	18	18
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

5.33 Sebastopol

Site Information for Sebastopol	
AQS ID	06-097-0004
GPS coordinates	38.403765, -122.818294
Location	Top of two-story commercial building
Address	103 Morris Street, Sebastopol, CA 95472
County	Sonoma
Distance to road from gaseous probe (meters)	Morris St.: 80 Highway 12: 70
Traffic count (AADT, year)	Morris St.: 1,120 (2018) Highway 12: 23,000 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	Santa Rosa CBSA

Summary for Sebastopol	
Pollutants Measured	O_3, NO_x, CO, $PM_{2.5C}$, Toxics, UFP
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located in a commercial area on the eastern portion of the city of Sebastopol near State Route 12 and 116 with no large industrial sources in the immediate area. While afternoon westerly wind sea breezes typically keep pollutant concentrations low, light winds combined with wood burning, vehicular traffic, and surfaced-based inversions during winter can cause elevated particulate matter concentrations.

Sebastopol Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary
Parameter code	44201	42101	42601 / 42602
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i
Method code	047	054	074
FRM/FEM/ARM/other	FEM	FRM	FRM
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	01/09/2014	01/09/2014	01/09/2014
Current Sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	12	12	12
Distance from supporting structure (meters)	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	12	12	12
Distance to furnace or incinerator flue (meters)	4	4	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	10	12	13
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A

Sebastopol Monitor Information

Pollutant, POC	PM2.5, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	N/A
Parameter code	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	Research
Site type(s)	Population Oriented& Highest Conc.	Population Oriented
Monitor type(s)	SLAMS	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	Met One FEM BAM 1020	Xontech 901
Method code	170	210
FRM/FEM/ARM/other	FEM	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	01/09/2014	01/11/2014
Current Sampling frequency	Continuous	1:12
Sampling season	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	9	11
Distance from supporting structure (meters)	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	12	12
Distance to furnace or incinerator flue (meters)	4	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual PM2.5?	Y	N/A
Frequency of flow rate verification for PM samplers	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	N/A

5.34 Vallejo

Site Information for Vallejo	
AQS ID	06-095-0004
GPS coordinates	38.102507, -122.237976
Location	One-story commercial building
Address	304 Tuolumne St, Vallejo, CA 94590
County	Solano
Distance to road from probe (meters)	Tuolumne St: 18 Solano Ave: 33 Capitol St: 30 Interstate 80: 700
Traffic count (AADT, year)	Tuolumne St: 8,332 (2008) Capitol St: 500 (2008) Solano Ave: 8,588 (2008) Interstate 80: 159,600 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	Vallejo-Fairfield CBSA

Summary for Vallejo	
Pollutants Measured	O_3, NO_x, SO_2, CO, $PM_{2.5C}$, Speciated $PM_{2.5}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located in a mixed commercial and residential neighborhood one mile east of downtown and 0.5 miles west of I-80. Southerly winds can transport ozone and ozone precursors into Vallejo from the heavily populated central Bay Area. Easterly winds can also transport particulate matter from the Central Valley through the Carquinez Strait during winter months. Light winds combined with wood burning, vehicular traffic, and surfaced-based inversions during winter can cause elevated particulate matter concentrations. A collocated PM2.5 FEM BAM is operated at Vallejo because this site has one of the highest $PM_{2.5}$ design values in the Bay Area. Additionally, numerous refineries are located to the south and east can be significant sources of SO_2.

Vallejo Monitor Information

Pollutant, POC	O3, 1	CO, 1	NO2, 1	SO2, 1
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A
Parameter code	44201	42101	42601 / 42602	42401
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison
Site type(s)	Population Oriented	Population Oriented	Population Oriented	Population Oriented& Source Impact
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	TECO 43i
Method code	047	054	074	060
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	07/01/1976	07/01/1976	07/01/1976	07/01/1976
Current Sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	9	9	9	9
Distance from supporting structure (meters)	>1	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	>50	>50	>50	>50
Distance to furnace or incinerator flue (meters)	4	4	4	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	8	10	10	10
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	N/A	N/A	N/A	N/A
Frequency of flow rate verification for PM samplers	N/A	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 5.35	See Table 5.35	See Table 5.35	See Table 5.35
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A

Vallejo Monitor Information

Pollutant, POC	PM2.5, 3	PM2.5, 4	PM2.5, 5 Speciated	Toxics, 3
Primary/QA Collocated/Other	Primary	QA Collocated	Other	N/A
Parameter code	88101	88101	88502 (pm mass) – many others see SASS section	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	Research	Research
Site type(s)	Population Oriented & Highest Conc. & Regional Transport	Population Oriented	Population Oriented	Population Oriented
Monitor type(s)	SLAMS	SLAMS	SPM	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A
Instrument manufacturer and model	Met One FEM BAM 1020	Met One FEM BAM 1020	Met One SASS	Xontech 901
Method code	170	170	810	210
FRM/FEM/ARM/other	FEM	FEM	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	Air District	Air District	Air District	Air District
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	01/01/2011	01/01/2013	06/11/2008	05/01/1986
Current Sampling frequency	Continuous	Continuous	1:6	1:12
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 – 12/31
Probe height (meters)	6	6	7	10
Distance from supporting structure (meters)	>2	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	>50	>50	>50	>50
Distance to furnace or incinerator flue (meters)	3	3	5	4
Distance between monitors fulfilling a QA collocation requirement (meters)	4	4	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	No	No	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	N/A	N/A	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual PM2.5?	Y	Y	N	N/A
Frequency of flow rate verification for PM samplers	Bi-weekly	Bi-weekly	Monthly	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 5.35	See Table 5.35	See Table 5.35	N/A

5.35 Criteria Pollutant Performance Evaluation and Semi-Annual Flow Audit Dates

Local Site Name	O_3	NO_2	SO_2	CO	$PM_{2.5}$	PM_{10}	Pb
Berkeley Aquatic Park (near-road)	2020-03-06 2020-07-24	2020-03-06 2020-07-24	n/a	2020-03-06 2020-07-24	2020-03-05 2020-05-19 2020-07-23 2020-11-24	n/a	n/a
Bethel Island	2020-04-14 2020-11-05	2020-04-14 2020-11-05	2020-04-14 2020-11-05	2020-04-14 2020-11-05	n/a	2020-01-23	n/a
Concord	2020-01-24 2020-08-12	2020-01-24 2020-08-12	2020-01-24 2020-08-12	2020-01-24 2020-08-12	2020-01-24 2020-05-28 2020-08-11 2020-10-15	2020-01-24 2020-05-28 2020-08-11 2020-10-15	n/a
Crockett	n/a	n/a	2020-04-16 2020-10-05	n/a	n/a	n/a	n/a
Fairfield	2020-01-09 2020-04-08 2020-07-07 2020-10-05	n/a	n/a	n/a	n/a	n/a	n/a
Forest Knolls	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Fort Cronkhite	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Gilroy	2020-01-22 2020-07-14 2020-10-14	n/a	n/a	n/a	2020-01-22 2020-07-14 2020-10-14	n/a	n/a
Hayward	2020-01-06 2020-04-07 2020-07-06 2020-10-06	n/a	n/a	n/a	n/a	n/a	n/a
Laney College (near-road)	n/a	2020-03-20 2020-08-07	n/a	2020-03-20 2020-08-07	2020-03-19 2020-05-20 2020-08-06 2020-11-24	n/a	n/a
Livermore	2020-01-29 2020-09-17	2020-01-29 2020-09-17	n/a	n/a	2020-01-29 2020-06-09 2020-09-17 2020-12-09	n/a	n/a
Los Gatos	2020-01-07 2020-07-10 2020-10-13	n/a	n/a	n/a	n/a	n/a	n/a
Martinez	n/a	n/a	2020-01-08 2020-07-07	n/a	n/a	n/a	n/a
Napa Valley College	2020-01-14 2020-07-15	2020-01-14 2020-07-15	n/a	2020-01-14 2020-07-15	2020-01-13 2020-05-07 2020-07-13 2020-10-20	2020-01-13 2020-05-07 2020-07-13 2020-10-20	n/a
Oakland East	2020-06-16 2020-12-02	2020-06-16 2020-12-02	n/a	2020-06-16 2020-12-02	2020-01-23 2020-06-15 2020-09-21 2020-12-01	n/a	n/a

Local Site Name	O_3	NO_2	SO_2	CO	$PM_{2.5}$	PM_{10}	Pb
Oakland West	2020-04-29 2020-11-04	2020-04-29 2020-11-04	2020-04-29 2020-11-04	2020-04-29 2020-11-04	2020-01-23 2020-04-28 2020-07-27 2020-09-21 2020-11-04	n/a	n/a
Palo Alto Airport	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pittsburg	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pleasanton (near-road)	n/a	2020-02-04 2020-07-22	n/a	2020-02-04 2020-07-22	2020-02-04 2020-05-11 2020-07-22 2020-12-09	n/a	n/a
Point Richmond	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Redwood City	2020-02-11 2020-09-22	2020-02-11 2020-09-22	n/a	2020-02-11 2020-09-22	2020-02-11 2020-06-16 2020-09-22 2020-12-02	n/a	n/a
Reid-Hillview Airport	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Richmond 7th	n/a	n/a	2020-04-23 2020-10-06	n/a	n/a	n/a	n/a
Rodeo	n/a	n/a	n/a	n/a	n/a	n/a	n/a
San Carlos Airport II	n/a	n/a	n/a	n/a	n/a	n/a	n/a
San Francisco	2020-06-18 2020-12-08	2020-06-18 2020-12-08	n/a	2020-06-18 2020-12-08	2020-02-20 2020-06-17 2020-09-28 2020-12-07	2020-02-20 2020-06-17 2020-09-28 2020-12-07	n/a
San Jose – Jackson	2020-06-10 2020-12-15	2020-06-10 2020-12-15	2020-02-06 2020-09-24	2020-02-06 2020-09-24	2020-01-05[a] 2020-06-09[a] 2020-09-28[a] 2020-12-15[a]	2020-01-05 2020-06-09 2020-09-28 2020-12-15	n/a
San Jose – Knox (near-road)	n/a	2020-05-05 2020-11-03	n/a	2020-05-05 2020-11-03	2020-01-05 2020-05-05 2020-07-21 2020-11-03	n/a	2020-03-30
San Martin	2020-01-22 2020-07-14 2020-10-14	n/a	n/a	n/a	n/a	n/a	n/a
San Pablo	2020-05-29 2020-10-30	2020-05-29 2020-10-30	2020-05-29 2020-10-30	2020-05-29 2020-10-30	2020-01-09 2020-05-29 2020-08-06 2020-10-29	2020-01-09[b] 2020-05-29[b] 2020-08-06[b] 2020-10-28[b]	
San Rafael	2020-03-18 2020-10-19	2020-03-18 2020-10-19	n/a	2020-03-18 2020-10-19	2020-03-17 2020-06-12 2020-10-19	2020-03-17 2020-06-12 2020-10-19	n/a
San Ramon	2020-05-13 2020-12-03	2020-05-13 2020-12-03	n/a	n/a	n/a	n/a	n/a
Sebastopol	2020-01-15 2020-07-16	2020-01-15 2020-07-16	n/a	2020-01-15 2020-07-16	2020-01-13 2020-05-01 2020-07-13 2020-10-20	n/a	n/a

Local Site Name	O_3	NO_2	SO_2	CO	$PM_{2.5}$	PM_{10}	Pb
Vallejo	2020-06-04 2020-11-19	2020-06-04 2020-11-19	2020-06-04 2020-11-19	2020-06-04 2020-11-19	2020-01-27[c] 2020-06-04[c] 2020-08-04[c] 2020-11-09[c]		

[a] Semi-Annual flow audits for both POC-1 and POC-3 occurred on the same dates.
[b] Semi-Annual flow audits for both POC-1 and POC-2 occurred on the same dates.
[c] Semi-Annual flow audits for both POC-3 and POC-4 occurred on the same dates.

Appendices A through H

APPENDIX A. OZONE MONITORING AGREEMENT BETWEEN BAAQMD AND MBUAPCD

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

June 4, 2014

Mr. Michael J. Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Dear Mr. Gilroy:

The Bay Area Air Quality Management District has signed the Ozone monitoring agreement as described in your letter of May 23, 2014 (attached). We will continue to operate the Ozone monitors at San Jose, Los Gatos, Gilroy, and San Martin as stated in your letter. We will advise you well in advance if any of these monitors are shutdown or moved to another location.

Sincerely,

Eric D. Stevenson
Director, Technical Services Division

Enclosure

939 ELLIS STREET • SAN FRANCISCO CALIFORNIA 94109 • 415.771.6000 • *www.baaqmd.gov*

MBUAPCD
Monterey Bay Unified Air Pollution Control District
Serving Monterey, San Benito, and Santa Cruz Counties

24580 Silver Cloud Court
Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

May 23, 2014

Mr. Eric D. Stevenson
Director, Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Subject: Shared Ozone Monitoring Responsibilities

Dear Mr. Stevenson:

For Ozone monitoring in the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA), both of our agencies are required to meet the full minimum monitoring requirements of 40 CFR Part 58 Appendix D, section (2)(e) in the absence of an Ozone monitoring agreement. The Monterey Bay Unified Air Pollution Control District (MBUAPCD) currently operates one SLAMS Ozone monitor in this MSA (at Hollister) but two monitors are required. Therefore, MBUAPCD would like this letter to serve as a monitoring agreement between our two agencies.

The MBUAPCD requests BAAQMD reply to this letter confirming agreement to continue operation of the SLAMS Ozone monitors at San Jose, Los Gatos, Gilroy, and San Martin. Both agencies will advise each other if changes to the instruments listed below are planned.

	AQS#	Parameter	Method	POC
San Jose	060850005	44201	047	1
Los Gatos	060851001	44201	047	1
Gilroy	060850002	44201	047	1
San Martin	060852006	44201	047	1
Hollister	060690002	44201	047	1

Sincerely,

Michael J Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940
(831) 647-9411

APPENDIX B. PM_{10} MONITORING AGREEMENT BETWEEN BAAQMD AND MBUAPCD

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

January 14, 2013

Mr. William Chevalier
Supervising Air Monitoring Specialist
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Dear Mr. Chevalier:

During a recent review of the Annual Network Report for the Bay Area Air Quality Management District (BAAQMD), EPA Region 9 pointed out that we do not have a written agreement to share minimum monitoring requirements with neighboring Air Districts. For PM_{10} monitoring in the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA), both of our agencies are required to meet the full minimum monitoring requirements of 40 CFR Part 58 Appendix D, section (2)(e) in the absence of a PM_{10} monitoring agreement.

The San Jose-Sunnyvale-Santa Clara MSA must have two SLAMS PM_{10} monitors to meet EPA minimum monitoring requirements. The BAAQMD operates one SLAMS PM_{10} monitor at San Jose and will continue to operate this instrument indefinitely.

The BAAQMD requests Monterey Bay Unified Air Pollution Control District reply to this letter confirming agreement to continue operating the SLAMS PM_{10} monitor at Hollister. As part of the agreement, both agencies will advise each other if changes to the instruments (as shown below) are planned.

	AQS#	Parameter	Method	POC
San Jose	060850005	81102	127	1
Hollister	060690002	81102	122	3

Sincerely,

Eric D. Stevenson
Director, Technical Services Division

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APPENDIX C. NO_2 MONITORING AGREEMENT BETWEEN BAAQMD AND MBUAPCD

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

June 4, 2014

Mr. Michael J. Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Dear Mr. Gilroy:

The Bay Area Air Quality Management District has signed the NO_2 monitoring agreement as described in your letter of May 23, 2014 (attached). We will continue to operate the NO_2 monitor at San Jose as stated in your letter. We will advise you well in advance if this monitor is shutdown or moved to another location.

Sincerely,

Eric D. Stevenson
Director, Technical Services Division

Enclosure

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MBUAPCD
Monterey Bay Unified Air Pollution Control District
Serving Monterey, San Benito, and Santa Cruz Counties

24580 Silver Cloud Court
Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

May 23, 2014

Mr. Eric D. Stevenson
Director, Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Subject: Shared NO/NO2/NOX Monitoring Responsibilities

Dear Mr. Stevenson:

40 CFR Part 58 Appendix D, section (2)(e), requires air monitoring of oxides of nitrogen to be performed to meet minimum federal requirement for the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA). The Monterey Bay Unified Air Pollution Control District (MBUAPCD) currently does not operate any SLAMS NO_2 monitors in this MSA and would like this letter to serve as a monitoring agreement between our two agencies.

The MBUAPCD requests the Bay Area Air Quality Management District reply to this letter confirming agreement to continue operation of the SLAMS NO_2 monitor at San Jose and advise MBUAPCD if changes to this instrument are planned.

	AQS#	Parameter	Method	POC
San Jose	060850005	42602	074	1

Sincerely,

Michael J Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940
(831) 647-9411

APPENDIX D. CO, NO_2, AND $PM_{2.5}$ NEAR-ROAD MONITORING AGREEMENT BETWEEN BAAQMD AND MBUAPCD

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

May 14, 2015

Mr. Michael J. Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Dear Mr. Gilroy:

The Bay Area Air Quality Management District has signed the shared near-road CO, NO_2 and $PM_{2.5}$ monitoring agreement as described in your letter of May 13, 2015 (attached). We will continue to operate these monitors at the San Jose Knox monitoring site (060850006) as stated in your letter. We will advise you in advance if any of these monitors are shutdown or moved to another location.

Sincerely,

Eric D. Stevenson
Director, Meteorology, Measurement and Rules Division

Enclosure

939 ELLIS STREET • SAN FRANCISCO CALIFORNIA 94109 • 415.771.6000 • *www.baaqmd.gov*

MBUAPCD
Monterey Bay Unified Air Pollution Control District
Serving Monterey, San Benito, and Santa Cruz Counties

24580 Silver Cloud Court
Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

May 13, 2015

Mr. Eric D. Stevenson
Director, Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Subject: Shared Near-Road CO, NO2, and $PM_{2.5}$ Monitoring Responsibilities

Dear Mr. Stevenson:

40 CFR Part 58 Subparts 58.10(a)(7), 58.13(e)(1), and Appendix D section 4.3.1, requires near-road monitoring of CO, NOx, and $PM_{2.5}$ to be performed to meet minimum federal requirements for the San Jose-Sunnyvale-Santa Clara Core Based Statistical Area (CBSA), 41940. The Bay Area Air Quality Management District (BAAQMD) established a near-road monitor in San Jose on September 1, 2014 and will take responsibility for meeting these near-road requirements as they currently exist. The Monterey Bay Unified Air Pollution Control District (MBUAPCD) currently does not operate any Near-Road CO, NO2, and $PM_{2.5}$ monitors in this MSA and would like this letter to serve as a monitoring agreement between our two agencies.

The MBUAPCD requests the Bay Area Air Quality Management District reply to this letter confirming agreement to continue operation of the Near-Road CO, NO2, and $PM_{2.5}$ monitors at San Jose-Knox Avenue and advise MBUAPCD if changes to this instrument are planned.

	AQS#	Parameter	Method	POC
San Jose	060850006	42101	054	1
San Jose	060850006	42602	074	1
San Jose	060850006	88101	170	1

Sincerely,

Michael J Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940
(831) 647-9411

APPENDIX E. OZONE MONITORING AGREEMENT BETWEEN BAAQMD AND NSCAPCD

NORTHERN SONOMA COUNTY AIR POLLUTION CONTROL DISTRICT
150 Matheson Street, Healdsburg, CA 95448 • PH: (707) 433-5911 • FX: (707) 433-4823

December 29, 2020

Dr. Ranyee Chiang, Director
Meteorology and Measurements Division
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Subject: Agreement of Shared Ozone (O_3) Monitoring Responsibilities

Dear Dr. Chiang:

40 CFR, Part 58 Appendix D, section (2)(e), requires air monitoring of ozone to be performed in order for our agencies to meet the minimum monitoring requirements for our shared Santa Rosa Metropolitan Statistical Area (MSA). The Santa Rosa MSA is required to have a minimum of one ozone monitor to meet Environmental Protection Agency (EPA) minimum monitoring requirements.

The Bay Area Air Quality Management District (BAAQMD) currently operates one State or Local Monitoring Station (SLAMS) ozone monitor in our shared MSA located at its Sebastopol site. The Northern Sonoma County Air Pollution Control District (NSCAPCD) recently decommissioned, with EPA and CARB approval, one State or Local Monitoring Station (SLAMS) ozone monitor in our shared MSA located at the Healdsburg Airport.

The NSCAPCD is hereby notifying BAAQMD of the decommission its Healdsburg Airport site. The EPA approval of decommission is enclosed for reference. The CARB also discussed and anticipated the decommission of the Healdsburg airport site in its recent 5-year network assessment.

The EPA has requested that the NSCAPCD and BAAQMD recognize the shared MSA monitoring responsibility and agree to ongoing collaboration to ensure the continued operation of at least one ozone monitor. In the spirit of inter-agency collaboration, the NSCAPCD and BAAQMD agree that:

- The NSCAPCD and BAAQMD share the Santa Rosa MSA and the EPA minimum monitoring requiring is at least one ozone monitor for the MSA; and
- The NSCAPCD and BAAQMD recognize that the Santa Rosa MSA currently relies on BAAQMD SLAM ozone monitor at the Sebastopol location to meet the MSA monitoring requirement; and
- BAAQMD shall notify the NSCAPCD of any changes to the Sebastopol ozone monitor and the NSCAPCD shall notify BAAQMD if it re-establishes an ozone monitor; and
- The NSCAPCD and the BAAQMD shall collaborate and include the CARB and the EPA as necessary or required to maintain at least one ozone monitor for the MSA, or meet future ozone monitoring requirements, should they change.

Robert Bamford
Air Pollution Control Officer
Northern Sonoma County Air Pollution Control District
150 Matheson Street
Healdsburg, CA 95448
(707) 433-5911

Dr. Ranyee Chiang, Director
Meteorology and Measurements Division
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Enclosures: EPA December 14, 2020 approval of decommission of the NSCAPCD Healdsburg ozone monitor.

APPENDIX F. EPA APPROVAL TO END MONITORING OF NO_Y AT THE SAN JOSE NCORE SITE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

October 30, 2017

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Eric Stevenson
Director of Technical Services
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Dear Mr. Stevenson:

This letter transmits our approval of the Bay Area Air Quality Management District (BAAQMD) request to shut down the agencies' NOy monitor in concert with continued operation of a NOx monitor at the San Jose-Jackson Street NCore station (AQS site ID: 06-085-0005). This request is being made so that the NOy monitor can be installed and operated at the proposed PAMS station in Livermore, California (AQS site ID: 06-001-0007). Requests to allow monitoring for NOx instead of NOy at NCore stations are covered in our monitoring regulations (see Appendix D to Part 58, Section 3. (b)(1)). According to these rules, a waiver for measuring NOx in lieu of NOy must be approved by the Environmental Protection Agency's (EPA) Administrator. This authority has been delegated to the Director of the Air Quality Assessment Division in EPA's Office of Air Quality Planning and Standards.

In considering your request to operate NOx in lieu of NOy at the San Jose-Jackson Street NCore station, we worked with EPA Region 9 on an evaluation of the NOy and NOx data at the San Jose-Jackson Street station and a review of the rationale for why the proposed PAMS station is better suited for NOy measurements. After careful consideration of your request to move the NOy monitor to the proposed PAMS station in Livermore and operate NOx at San Jose-Jackson Street we are pleased to approve the shut-down of NOy at the San Jose-Jackson Street NCore station. We note that PAMS measurements are required to operate minimally during June, July, and August, while NCore measurements are required to operate year-round. Since the Livermore site would be the only BAAQMD location with both NOy and true NO_2, we expect that you will operate these measurements year-round. Let us know if this is not possible.

The strength of the rationale to prioritize operation of NOy at Livermore over San Jose-Jackson Street is that it allows for collocating NOy with a true NO_2 monitor at Livermore. This collocation of NOy and true NO_2 will ensure that calculations of NOz are made with the most appropriate monitoring technologies. This is consistent with our authority to allow such a waiver since differences between NOy and true NO_2 + NO are expected to be larger than differences between NOy and NOx chemiluminescence monitors, as is the case for the existing monitors at San Jose-Jackson Street.

If you have any questions regarding this letter, please feel free to contact me at (415) 972-3851, or Anna Mebust of my staff at (415) 972-3265.

cc: (via email): Tim Hanley, OAQPS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

October 30, 2017

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Eric Stevenson
Director of Technical Services
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Dear Mr. Stevenson:

This letter transmits our approval of the Bay Area Air Quality Management District (BAAQMD) request to shut down the agencies' NOy monitor in concert with continued operation of a NOx monitor at the San Jose-Jackson Street NCore station (AQS site ID: 06-085-0005). This request is being made so that the NOy monitor can be installed and operated at the proposed PAMS station in Livermore, California (AQS site ID: 06-001-0007). Requests to allow monitoring for NOx instead of NOy at NCore stations are covered in our monitoring regulations (see Appendix D to Part 58, Section 3. (b)(1)). According to these rules, a waiver for measuring NOx in lieu of NOy must be approved by the Environmental Protection Agency's (EPA) Administrator. This authority has been delegated to the Director of the Air Quality Assessment Division in EPA's Office of Air Quality Planning and Standards.

In considering your request to operate NOx in lieu of NOy at the San Jose-Jackson Street NCore station, we worked with EPA Region 9 on an evaluation of the NOy and NOx data at the San Jose-Jackson Street station and a review of the rationale for why the proposed PAMS station is better suited for NOy measurements. After careful consideration of your request to move the NOy monitor to the proposed PAMS station in Livermore and operate NOx at San Jose-Jackson Street we are pleased to approve the shut-down of NOy at the San Jose-Jackson Street NCore station. We note that PAMS measurements are required to operate minimally during June, July, and August, while NCore measurements are required to operate year-round. Since the Livermore site would be the only BAAQMD location with both NOy and true NO_2, we expect that you will operate these measurements year-round. Let us know if this is not possible.

The strength of the rationale to prioritize operation of NOy at Livermore over San Jose-Jackson Street is that it allows for collocating NOy with a true NO_2 monitor at Livermore. This collocation of NOy and true NO_2 will ensure that calculations of NOz are made with the most appropriate monitoring technologies. This is consistent with our authority to allow such a waiver since differences between NOy and true NO_2 + NO are expected to be larger than differences between NOy and NOx chemiluminescence monitors, as is the case for the existing monitors at San Jose-Jackson Street.

Thank you for your program's efforts in working through the issue of optimizing your network to meet multiple needs at NCore and PAMS. For any technical questions on NCore, you may contact Tim Hanley at hanley.tim@epa.gov and 919-541-4417. For technical questions on PAMS, you may contact Kevin Cavender at cavender.kevin@epa.gov and 919-541-2364.

Sincerely,

Richard A. Wayland

Richard A. Wayland
Director
Air Quality Assessment Division

cc: Matthew J. Lakin, EPA Region 9

March 3, 2014

Ms. Meredith Kurpius, Ph.D.
Manager, Air Quality Analysis Office
United States Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Ms. Kurpius:

Since January 2011, the Bay Area Air Quality Management District (Air District) has been operating a federally mandated NOy instrument as part of EPA NCore requirements at our San Jose NCore site; AQS ID 06-085-0005. Hourly average data from this monitor have been submitted to the EPA AQS data base using the required method code 599 and parameter code 42600.

Analysis of 24 hourly NOx vs. NOy averages indicate statistically insignificant differences between NOx and NOy measurements as demonstrated in the three figures (24 hr NOx vs NOy correlation, by year) included below. To enable more efficient utilization of both fiscal and personnel resources within the Air District Air Monitoring Section, we are requesting that the EPA Administrator grant a waiver permitting NOx monitoring to be substituted for the required NOy monitoring at the Air District NCore site, as allowed in ***40CFR Part 58 Appendix D.3: Design Criteria for NCore Sites.***

The EPA NCore requirements from 40CFR Part 58 Appendix D.3: Design Criteria for NCore Sites as last amended on Dec. 27th 2010 includes the following in paragraph 3 (b) (1);

Although the measurement of NOy is required in support of a number of monitoring objectives, available commercial instruments may indicate little difference in their measurement of NOy compared to the conventional measurement of NOX, particularly in areas with relatively fresh sources of nitrogen emissions. Therefore, in areas with negligible expected difference between NOy and NOX measured concentrations, the Administrator may allow for waivers that permit NOX monitoring to be substituted for the required NOy monitoring at applicable NCore sites.

All data represented in the figures below is available for further analysis in the EPA AQS data base, or can be provided upon request if independent verification by EPA is desired. We propose to close this monitor immediately upon receipt of the Administrator's letter providing the requested waiver.

939 ELLIS STREET • SAN FRANCISCO CALIFORNIA 94109 • 415.771.6000 • www.baaqmd.gov

Please contact Glen Colwell at (415) 749-4672 if you have any questions or concerns.

Sincerely,

Eric D. Stevenson
Director of Technical Services

cc: K. Hoag, EPA Region 9
G. Yoshimura, EPA Region 9
E. Felix, EPA Region 9
K. Malone,
M. Flagg, EPA Region 9

Figure 1 – NCore BAAQMD San Jose: NOx vs. NOy 2013 24 Hr Correlation: R2 = 0.995

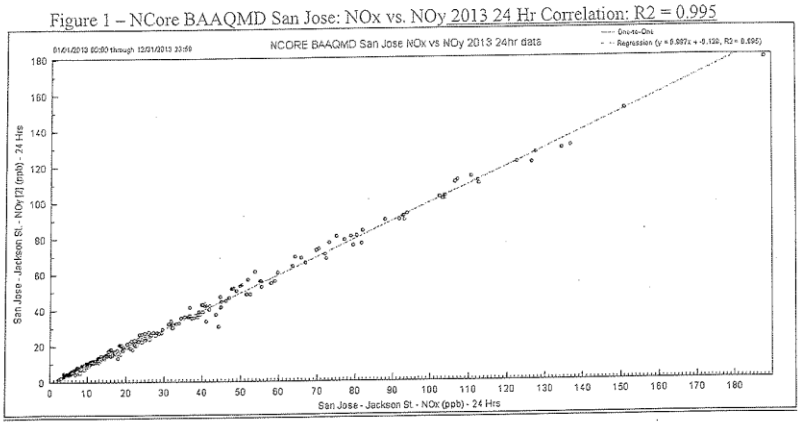


Figure 2 – NCore BAAQMD San Jose: NOx vs. NOy 2012 24 Hr Correlation: R2 = 0.994

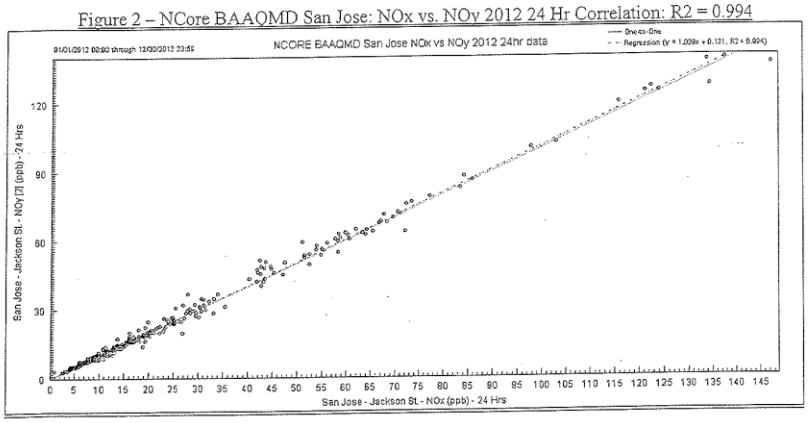
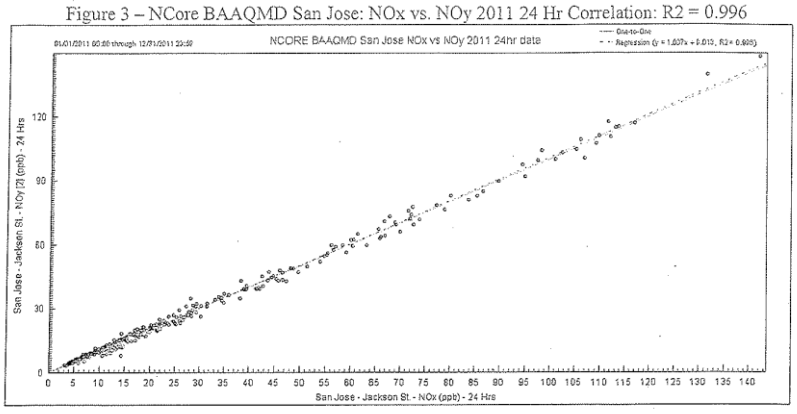


Figure 3 – NCore BAAQMD San Jose: NOx vs. NOy 2011 24 Hr Correlation: R2 = 0.996



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

OCT 11 2017

MEMORANDUM

SUBJECT: Request for OAQPS Approval: NO_y Waiver for the Bay Area Air Quality Management District's San Jose-Jackson NCore Site

FROM: Matthew J. Lakin
Acting Director, Air Division

TO: Richard A. Wayland
Director, Air Quality Assessment Division

I am writing to transmit a request from the Bay Area Air Quality Management District (BAAQMD) for a waiver of the requirement for observations of total reactive nitrogen oxides (NO_y) at the San Jose-Jackson National Core multi-pollutant monitoring (NCore) site (AQS ID: 06-085-0005). BAAQMD communicated this request in their *2016 Air Monitoring Network Plan* (Network Plan), submitted June 29, 2017. As you are aware, 40 CFR 58 Appendix D Section 3(b)(1) allows for the U.S. Environmental Protection Agency (EPA) Administrator to issue waivers to substitute nitrogen oxides (NO_x) for required NO_y monitoring at applicable NCore sites, which has been delegated to your office.

NO_y monitoring is currently required for NCore and will be required for Photochemical Assessment Monitoring Stations (PAMS) beginning in June 2019 for BAAQMD. In Appendix H of their Network Plan, BAAQMD requested a waiver from EPA to locate required PAMS measurements at Livermore (AQS ID: 06-001-0007) rather than at San Jose-Jackson. BAAQMD is requesting this waiver because Livermore is important for regional modeling, as it is the maximum concentration and design value site for the Bay Area ozone (O_3) nonattainment area. Making Livermore an official PAMS will also allow for better tracking of O_3 precursor trends, since it has operated as an unofficial PAMS for the past seven years. An initial assessment of BAAQMD's request suggests that it meets the criteria in 40 CFR 58 Appendix D Section 5(c) for the waiver. EPA Region 9 intends to address this request through the annual network plan approval.

BAAQMD is requesting a waiver from the NCore requirement for NO_y at San Jose-Jackson in order to move the NO_y instrument to Livermore, as part of the required PAMS measurements. Locating NO_y at Livermore with PAMS rather than at San Jose-Jackson with NCore will allow for collocation of NO_y with important O_3 precursor measurements. Additionally, BAAQMD has included analysis in their Network Plan, Appendix F, and in previous NO_y waiver requests, showing little difference between NO_y and NO_x concentrations at San Jose-Jackson.

Based on our position on BAAQMD's waiver request to locate PAMS at Livermore, as well as your approval of NO_y waivers for other agencies under similar circumstances, we recommend that you approve BAAQMD's request for an NO_y waiver at San Jose-Jackson.

If you have any questions regarding this letter, please feel free to contact me at (415) 972-3851, or Anna Mebust of my staff at (415) 972-3265.

cc: (via email): Tim Hanley, OAQPS

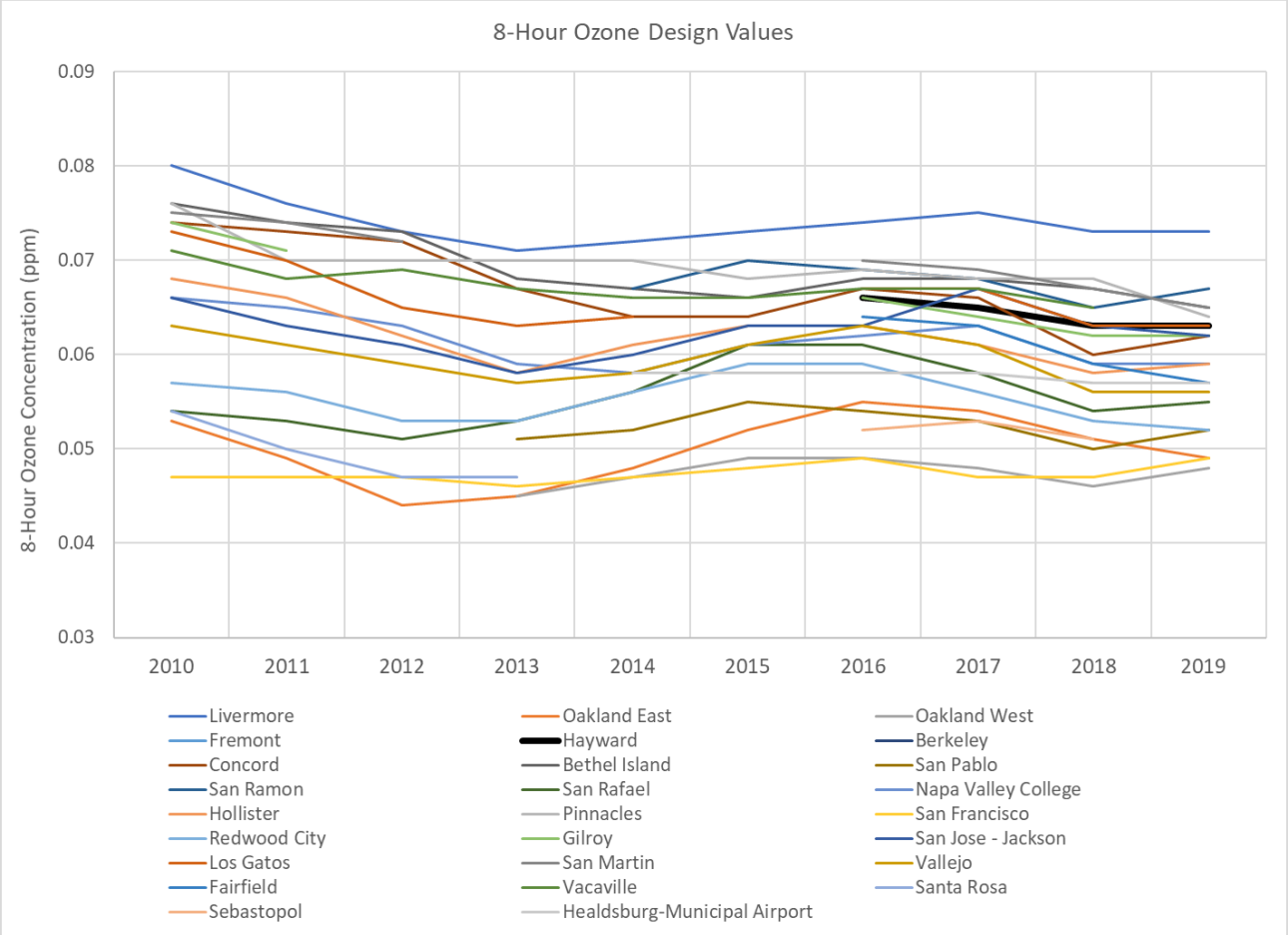
APPENDIX G. HAYWARD SLAMS TO SPM CORRESPONDENCE

(see original request in 2019 ANP, copied below for convenience)

As noted in section 2.2.1, EPA noted in their 2018 TSA that the Hayward O_3 monitor does not meet 40 CFR 58 Appendix E siting requirements and that it should, therefore, be classified as an SPM. The Air District is requesting that EPA approve the closure of the Hayward ozone monitor as a SLAMS since it meets the criteria of 40 CFR 58.14 (c) and 58.14 (c) (2) which state:

> *(c) State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if any of the following criteria are met and if the requirements of appendix D to this part, if any, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part, if any, continue to be met.*
>
> *…*
>
> *(2) Any SLAMS monitor for CO, PM_{10}, SO_2, or NO_2 which has consistently measured lower concentrations than another monitor for the same pollutant in the same county (or portion of a county within a distinct attainment area, nonattainment area, or maintenance area, as applicable) during the previous five years, and which is not specifically required by an attainment plan or maintenance plan, if control measures scheduled to be implemented or discontinued during the next five years would apply to the areas around both monitors and have similar effects on measured concentrations, such that the retained monitor would remain the higher reading of the two monitors being compared.*

The figure below shows that the Hayward site has never been the maximum concentration site for the San Francisco-Oakland-Berkeley CBSA nor for the San Francisco Bay Area nonattainment area. More specifically, the Livermore and San Martin sites, located in the Bay Area's two maximum ozone areas downwind of urban precursors, have always measured higher design values than the Hayward site. Therefore, the discontinuation of the Hayward O_3 monitor as a SLAMS does not compromise data collection needed for implementation of the NAAQS. The Air District intends to continue operating the Hayward ozone monitor as an SPM as resources allow. If the SLAMS closure is approved, the Hayward O_3 SPM will not be counted towards minimum monitoring requirements in future years, however, the San Francisco-Oakland-Berkeley CBSA will still meet minimum monitoring requirements.


8-Hour Ozone Design Values
8-Hour Ozone Concentration (ppm)
0.09
0.08
0.07
0.06
0.05
0.04
0.03
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Livermore
Oakland East
Oakland West
Fremont
Hayward
Berkeley
Concord
Bethel Island
San Pablo
San Ramon
San Rafael
Napa Valley College
Hollister
Pinnacles
San Francisco
Redwood City
Gilroy
San Jose - Jackson
Los Gatos
San Martin
Vallejo
Fairfield
Vacaville
Santa Rosa
Sebastopol
Healdsburg-Municipal Airport

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

October 28, 2020

Dr. Ranyee Chiang
Director of Meteorology and Measurements
Bay Area Air Quality Management District
375 Beale Street
San Francisco, California 94105

Dear Dr. Chiang:

Thank you for your submission of the Bay Area Air Quality Management District (BAAQMD) *2019 Air Monitoring Network Plan* on July 1, 2020. We have reviewed the submitted document based on the requirements set forth in 40 CFR Part 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below. With this plan approval, we also formally approve a system modification for the following site: Hayward (AQS ID: 06-001-2001). More information about this approval is included in enclosure B.

Please note that we cannot approve portions of the annual network plan for which the information in the plan is insufficient to judge whether the requirement has been met, or for which the information provided does not meet the requirements as specified in 40 CFR 58.10 and the associated appendices. EPA Region 9 also cannot approve portions of the plan for which the EPA Administrator has not delegated approval authority to the regional offices. Enclosure A (*A. Annual Monitoring Network Plan Checklist*) is the checklist EPA used to review your plan for items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements. Items highlighted in yellow are those EPA Region 9 is not acting on, as we either lack the authority to approve the specific item, or we have determined that a requirement is either not met or information in the plan is insufficient to judge whether the requirement has been met. Items highlighted in green in enclosure A require attention in order to improve next year's plan.

We also want to thank you for your timely submission of the *Five-Year Assessment of the Fixed-Site Air Monitoring Network* for the BAAQMD, as required under 40 CFR Part 58.10. We recognize that preparing the network assessment was a significant project and we appreciate your effort.

All comments conveyed via this letter and enclosures should be addressed prior to submittal of next year's annual monitoring network plan to EPA.

If you have any questions regarding this letter or the enclosed comments, please feel free to contact me at (415) 947-4134 or Bilal Qazzaz (415) 947-3532.

Sincerely,

GWEN YOSHIMURA Digitally signed by GWEN YOSHIMURA Date: 2020.10.28 15:33:59 -07'00'

Gwen Yoshimura, Manager
Air Quality Analysis Office

Enclosures:
A. Annual Monitoring Network Plan Checklist
B. Approval of BAAQMD Request to Discontinue Hayward Air Monitoring Station as a State and Local Air Monitoring Station and Convert to a Special Purpose Monitor

cc (via email): Charles Knoderer, BAAQMD
Kate Hoag, BAAQMD
Jin Xu, California Air Resources Board (CARB)

B. Approval of BAAQMD Request to discontinue Hayward Air Monitoring Station as a State and Local Air Monitoring Station and convert to a Special Purpose Monitor

Per 40 CFR 58.14, monitoring agencies are required to obtain EPA approval for the discontinuation of SLAMS monitors and per 40 CFR 58.11(c), a change in the designation of a monitoring site from SLAMS to SPM requires approval of the Regional Administrator. BAAQMD's Hayward station (AQS ID: 06-001-2001) consists of one criteria pollutant monitor for O_3. Discontinuation of the Hayward monitor as a SLAMS was specifically reviewed under 40 CFR 58.14(c), which states that requests for discontinuation "may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a [National Ambient Air Quality Standard (NAAQS)] and if the requirements of appendix D to this part, if any, continue to be met."

In evaluating this request, EPA reviewed the information provided by BAAQMD in their annual network plan submitted July 1, 2020 and certified O_3 data submitted to EPA's Air Quality System (AQS) associated with the four most recently available 2015 8-hour O_3 design values (2016-2019) design values. This monitor was in attainment of the 2015 8-hour O_3 NAAQS for the period of 2016-2019 and was found to have lower design values than the highest monitoring site in Alameda County, Livermore (AQS ID: 06-001-007). With the discontinuation of O_3 monitoring at the Hayward site, BAAQMD will continue to operate four O_3 SLAMS monitors in the San Francisco-Oakland-Berkeley Metropolitan Statistical Area (MSA), which exceeds the minimum monitoring requirement for this MSA.

Based on these analyses, the discontinuance of the O_3 monitor at Hayward does not compromise data collection needed for implementation of the 2015 8-hour O_3 NAAQS and will not prevent BAAQMD from meeting 40 CFR 58 Appendix D requirements. Therefore, EPA approves BAQAMD's discontinuation of the Hayward O_3 SLAMS monitor on a case-by-case basis per 40 CFR 58.14(c). Please include this network modification and EPA's approval in your next annual network plan.

APPENDIX H. INITIAL PLAN FOR PAMS REQUIRED SITES

Air District voluntarily operated two unofficial PAMS sites (Livermore and San Ramon) as a PAMS-like network to better understand ozone formation episodes and enhance forecasting capabilities (see Section 5.4 for more details). While a PAMS network was previously required for only serious, severe, or extreme ozone nonattainment areas, the recently revised monitoring rule (80 FR 65292; October 26, 2015) requires PAMS measurements June 1 through August 31 at NCore sites that are located in Core-Based Statistical Areas (CBSAs) with populations of 1,000,000 or more, starting in 2019.

Based on 40 CFR part 58 Appendix D, State air monitoring agencies are required to begin making PAMS measurements at their NCore location(s) by June 1, 2020. The EPA is delaying the start date for the revised PAMS monitoring site network established in 40 CFR part 58, Appendix D. This final action extends the start date from June 1, 2020, to June 1, 2021. As a result of the, delay the BAAQMD will not begin making PAMS measurements at the Livermore (approved NCore-waiver site location) in 2020, and will work with EPA to begin measurements in the fall of 2021.

The PAMS measurements at this site must include hourly measurements of speciated VOCs, O_3, NO, true NO_2, NO_y, ambient temperature, wind speed, wind direction, atmospheric pressure, relative humidity, precipitation, mixing-height, solar radiation, and UV radiation. In addition, three 8-hour average carbonyl samples in a day are required on a 1 in 3 day schedule. The initial plan for implementing this requirement is to be submitted to EPA for their approval by July 1, 2018 (40 CFR 50.10(a)(10). USEPA has indicated that it is working on a proposed rule to extend the start date of PAMS measurements and expects that this proposed rule change will be signed by June 1, 2019. As a result of the, delay the BAAQMD will not begin making PAMS measurements at the Livermore (approved NCore-waiver site location) in 2020, and will work with EPA to begin measurements on or before the final revised start date for this network. However, EPA has requested that monitoring agencies submit the following information by July 1, 2017.

Network Decision

☐ The NCore site located at San Jose – Jackson will serve as the location of the required PAMS site and will measure the following parameters described below. An inventory of equipment used at the site(s) is provided in Attachment 2.

☐ We request a waiver from implementing PAMS at an otherwise required NCore site entirely, or to make PAMS measurements at alternative locations such as existing PAMS sites or existing NATTS sites. The Air District is requesting approval for an alternate location, the current unofficial-PAMS site in Livermore, per 40

CFR 58 Appendix D 5(c). Rationale for this waiver is provided in Attachment 1. An inventory of equipment the Air District expects to use at the site is provided in Attachment 2.

Auto GC Decision

Volatile organic compounds (VOCs) – Table H-1 includes a draft list of the targeted VOCs not yet finalized by EPA.

☐ We will measure hourly speciated VOC measurements with an auto-gas chromatograph (GC). An inventory of equipment the Air District expects to use at the site is provided in Attachment 2.

☐ We request a waiver to allow three 8-hour samples every third day as an alternative to daily hourly speciated VOC measurements at locations (insert locations).

Meteorology Measurements Decision

EPA is suggesting the use of ceilometers for determining mixing height, however other types of meteorological equipment that provide for an indication of mixing height can be proposed.

☐ Will measure wind direction, wind speed, temperature, humidity, atmospheric pressure, precipitation, solar radiation, ultraviolet radiation, and mixing height. An inventory of equipment the Air District expects to use at the site is provided in Attachment 2.

☐ We request a waiver to allow meteorological measurements to be obtained from other nearby sites.

Other Required Measurements

Carbonyls – The Air District intends to meet the carbonyl sampling requirement with continuous formaldehyde sampling if instrumentation that meets performance specifications is identified. The Air District prefers this option due to added value of increased temporal resolution and significant resource savings in operational expenses and staff time. If this option is not technically feasible, the Air District will conduct discrete cartridge sampling using a Xontech 924 or similar instrumentation (has not yet been purchased) and the national contract lab for analyses and data reporting. If selected, cartridge sampling will be conducted at a frequency of three 8-hour samples on a one-in-three day basis.

Table H-1 lists the target carbonyls analyzed by the contract lab if the discrete sampling option is chosen (not yet finalized by EPA).

Nitrogen Oxides – The Air District will monitor for NO and NO_y (total oxides of nitrogen) in addition to true NO_2. The true NO_2 is required to be measured with a direct reading NO_2 analyzer, cavity attenuated phase shift (CAPS) spectroscopy or photolytic-converter NO_x analyzer. An inventory of equipment the Air District expects to use at the site is provided in Attachment 2.

Table H-1. PAMS Target Compound List

Priority Compounds				Optional Compounds			
1	1,2,3-trimethylbenzene [a]	19	n-hexane [b]	1	1,3,5-trimethylbenzene	19	m-diethlybenzene
2	1,2,4-trimethylbenzene [a]	20	n-pentane	2	1-pentene	20	methylcyclohexane
3	1-butene	21	o-ethyltoluene [a]	3	2,2-dimethylbutane	21	methylcyclopentane
4	2,2,4-trimethylpentane [b]	22	o-xylene [a,b]	4	2,3,4-trimethylpentane	22	n-decane
5	acetaldehyde [b,c]	23	p-ethyltoluene [a]	5	2,3-dimethylbutane	23	n-heptane
6	acetone [c,d]	24	Propane	6	2,3-dimethylpentane	24	n-nonane
7	benzene [a,b]	25	propylene	7	2,4-dimethylpentane	25	n-octane
8	c-2-butene	26	styrene [a,b]	8	2-methylheptane	26	n-propylbenzene [a]
9	ethane [d]	27	toluene [a,b]	9	2-methylhexane	27	n-undecane
10	ethylbenzene [a,b]	28	t-2-butene	10	2-methylpentane	28	p-diethylbenzene
11	Ethylene			11	3-methylheptane	29	t-2-pentene
12	formaldehyde [b,c]			12	3-methylhexane	30	α/β-pinene
13	Isobutane			13	3-methylpentane	31	1,3 butadiene [b]
14	Isopentane			14	Acetylene	32	benzaldehyde [c]
15	Isoprene			15	c-2-pentene	33	carbon tetrachloride [b]
16	m&p-xylenes [a,b]			16	cyclohexane	34	Ethanol
17	m-ethyltoluene [a]			17	cyclopentane	35	Tetrachloroethylene [b]
18	n-butane			18	isopropylbenzene [b]		

Source: Revisions to the Photochemical Assessment Monitoring Stations Compound Target List. U.S. EPA, November 20, 2013

[a] Important SOAP (Secondary Organic Aerosols Precursor) Compounds

[b] HAP (Hazardous Air Pollutant) Compounds

[c] Carbonyl compounds

[d] Non-reactive compounds, not considered to be VOC for regulatory purposes

Attachment 1: PAMS Required Site Location Waiver Request and Rationale

The Bay Area Air Quality Management District (Air District) is requesting that EPA approve a waiver to operate the required PAMS site at our current unofficial PAMS location at Livermore (AQS ID 06-001-0007), rather than our NCore site at San Jose – Jackson (AQS ID 06-085-0005). The Livermore site has been the design value site for the Bay Area ozone nonattainment area since 2003-2005. As such, it is the critical site for any required attainment modeling, and therefore it will be more useful to have precursor and meteorological measurements at Livermore than at San Jose – Jackson. Due to the flight path for the San Jose International Airport, meteorological measurements are impossible to conduct at the San Jose – Jackson site, so implementing PAMS at Livermore allows for these measurements at the same location as the O_3 and O_3 precursor measurements, which is also preferable for model validation. Finally, the Air District has conducted O_3 precursor measurements at the Livermore site since 2010, making it a better site to continue to assess trends in the concentrations of these precursors.

Attachment 2: Current Equipment Plans for the PAMS Required Site

Table H-2. PAMS Target Compound List

Parameter	Equipment
VOC	Perkin Elmer TD300 with Clarus GC
True NO_2	API T500U (CAPS)
NO/NO_y	API T200 EU/NO_y
Carbonyls	Continuous formaldehyde sampler or Xontech 924 or similar
Mixing Height	Vaisala CL-51 (ceilometer)
Wind Direction, Wind Speed	Climatronics F460 cup and vane
Ambient Temperature	Campbell Scientific CS107
Relative Humidity	Vaisala HMP-45
Barometric Pressure	Vaisala PTB110
Solar Radiation	Eppley 8-48
UV Radiation	Eppley TUVR
Precipitation	Texas Electronics TR-525USW (tipping bucket)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

OCT 30 2017

Mr. Eric Stevenson
Director of Technical Services
Bay Area Air Quality Management District
375 Beale Street
San Francisco, California 94105

Dear Mr. Stevenson:

Thank you for your submission of the Bay Area Air Quality Management District's (BAAQMD's) 2016 *Air Monitoring Network Plan* on June 29, 2017. We have reviewed the submitted document based on the requirements set forth under 40 CFR 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below. With this plan approval, we also formally approve the waiver to locate your required PAMS site at Livermore (AQS ID: 06-001-0007) rather than at San Jose-Jackson (AQS ID: 06-085-0005). We are also transmitting approval from the Office of Air Quality Planning and Standards (OAQPS) of your request for a waiver to operate a NO_x monitor in lieu of NO_y at San Jose-Jackson, in order to locate the NO_y monitor at Livermore to support PAMS. More information about these approvals is in Enclosures D and E.

Please note that we cannot approve portions of the annual network plan for which the information in the plan is insufficient to judge whether the requirement has been met, or for which the information, as described, does not meet the requirements as specified in 40 CFR 58.10 and the associated appendices. EPA Region 9 also cannot approve portions of the plan for which the EPA Administrator has not delegated approval authority to the regional offices. Accordingly, the first enclosure (*A. Annual Monitoring Network Plan Items where EPA is Not Taking Action*) provides a listing of specific items of your agency's annual monitoring network plan where EPA is not taking action. The second enclosure (*B. Additional Items Requiring Attention*) is a listing of additional items in the plan that EPA wishes to bring to your agency's attention.

The third enclosure (*C. Annual Monitoring Network Plan Checklist*) is the checklist EPA used to review your plan for overall items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements. The fourth enclosure (*D. EPA approval of the waiver request to locate PAMS at Livermore*) documents EPA's approval of the request for a waiver to locate your required PAMS site at Livermore rather than at San Jose-Jackson, as requested in Appendix H of your plan. The fifth and final enclosure (*E. EPA approval of an NO_y waiver at San Jose-Jackson*) includes a copy of correspondence between EPA Region 9 and EPA OAQPS discussing and granting

approval of a waiver to operate a NO_x monitor in lieu of NO_y at San Jose-Jackson, based on the information provided in Appendices F and H and elsewhere in your plan.

The first two enclosures highlight a subset of the more extensive list of items reviewed in the third enclosure. All comments conveyed via this letter (and enclosures) should be addressed (through corrections within the plan, additional information being included, or discussion) in next year's annual monitoring network plan.

If you have any questions regarding this letter or the enclosed comments, please feel free to contact me at (415) 947-4134 or Anna Mebust at (415) 972-3265.

Sincerely,

Gwen Yoshimura, Manager
Air Quality Analysis Office

Enclosures:

A. Annual Monitoring Network Plan Items where EPA is Not Taking Action
B. Additional Items Requiring Attention
C. Annual Monitoring Network Plan Checklist
D. EPA approval of the waiver request to locate PAMS at Livermore
E. EPA correspondence and approval of an NO_y waiver at San Jose-Jackson

cc (via email): Charley Knoderer, BAAQMD
Gayle Sweigert, California Air Resources Board (CARB)
Sunghoon Yoon, CARB
Ranjit Bhullar, CARB