San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

2014 Air Monitoring Network Plan

San Joaquin Valley Air Pollution Control District

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January 28, 2015

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TABLE OF CONTENTS

Appendices

LIST OF FIGURES

LIST OF TABLES

The District's Core Values Exhibited in the Air Monitoring Network

* Protect Public Health *

The District uses data collected from the Valley air monitoring network to generate daily air quality forecasts and, when needed, issue health advisories. The District also uses data collected from the Valley's air monitoring network as the basis for long-term attainment strategies and to track progress towards health-based air quality standards.

* Active and effective air pollution control efforts with minimal disruption to the Valley's economic prosperity *

The District uses air monitoring data to help determine what kind of air pollution control efforts are needed to achieve health-based air quality standards.

* Outstanding Customer Service *
* Accountability to the public *

The District's website provides timely and easy public access to data from the Valley's real-time air monitors. The public can also access summaries of the previous seven days of air quality for ozone and particulate matter.

* Open and transparent public processes *

In addition to making air quality data available in real-time, the District uses air quality data in a variety of publicly available documents and reports. The District also conducts a public review period for annual monitoring network plans.

* Respect for the opinions and interest of all Valley residents *

The District has actively made daily air quality information available to Valley residents in a variety of formats, from the District website to the media, and even with air quality flags at schools. The District considers public interests in establishing new air monitoring stations.

* Ingenuity and innovation *

The District uses new and improved air monitoring techniques as these techniques are approved by the EPA. The District uses the latest science when siting air monitors. In turn, data collected from the monitoring network contributes to ongoing scientific evaluations.

* Continuous improvement *

The District evaluates the air monitoring network in the annual Monitoring Network plan for opportunities for better data collection and greater efficiency. Furthermore, improved air monitoring is a continuous effort; throughout the year, the District seeks out opportunities to improve the air monitoring network.

* Recognition of the uniqueness of the San Joaquin Valley *

The San Joaquin Valley is an expansive and diverse area. The District sites air monitors to represent each type of area and each portion of the region.

* Effective and efficient use of public funds *

An air monitoring network requires personnel, instruments, parts, energy, and leases. The District makes the most of limited resources by structuring the air monitoring network in a way that optimizes personnel time and funding for instruments. The result is a robust air monitoring network that helps the Valley reach its air quality goals without unnecessary expenditures.

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Executive Summary

The San Joaquin Valley Air Pollution Control District (SJVAPCD or District) operates an extensive network of air quality monitors throughout the San Joaquin Valley (Valley) to support its mission of improving and protecting public health. District staff uses the hourly readings from real–time monitors to communicate the state of the air quality to Valley residents. Through programs and venues such as the Real–time Air Advisory Network (RAAN), the Air Quality Flag program, the District website, and Valley media, Valley residents are able to obtain air quality information that can help them with their activity planning. The District also uses real–time air quality data to manage prescribed burning, agricultural burning, and residential wood combustion to ensure these activities do not result in adverse impacts to our air quality.

The Valley's attainment status for the U.S. Environmental Protection Agency's (EPA) health–based air quality standards is the foundation of the District's air quality attainment plans (such as the ***2013 Plan for the Revoked 1-Hour Ozone Standard***, the ***2012 PM2.5 Plan***, and upcoming plans). As part of the District's long–term efforts to improve public health, air monitors collect data that is rigorously analyzed by laboratory technicians and District staff. This monitoring data determines the Valley's air quality and is fundamental in the Valley's effort to improve air quality and achieve attainment of EPA's health–based standards as quickly as possible.

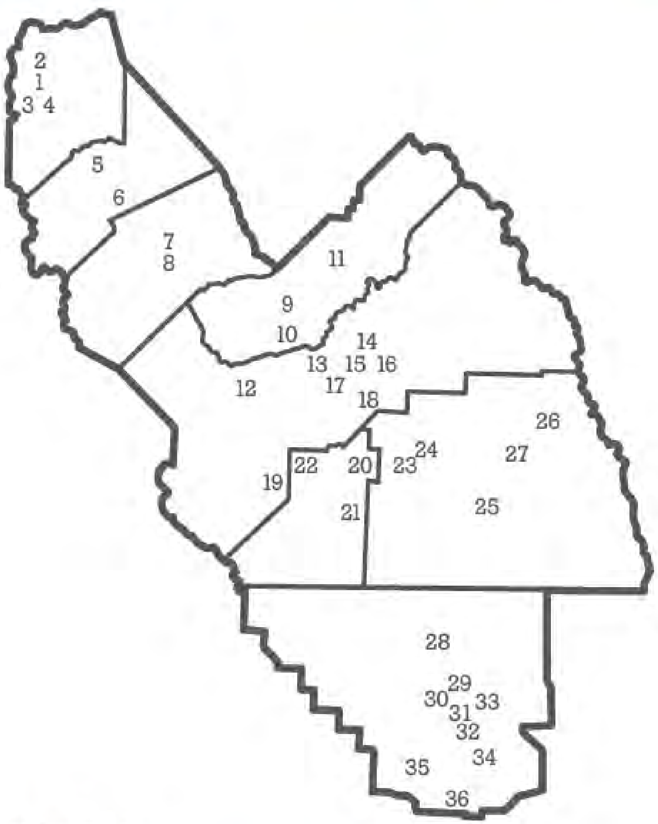
The San Joaquin Valley covers an area of 23,490 square miles, and is home to one of the most challenging air quality problems in the nation. The Valley is nonattainment for federal PM2.5 and ozone standards, and is in attainment of the federal standards for lead (Pb), Nitrogen dioxide (NO_2), Sulfur dioxide (SO_2), and Carbon monoxide (CO). In addition, the Valley is an attainment/maintenance area for PM10. The Valley is home to approximately 4 million residents, and includes several major metropolitan areas, vast expanses of agricultural land, industrial sources, highways, and schools. This expansive and diverse area comprises many air quality needs, yet there are limited financial and personnel resources for air quality monitoring.

Despite these limitations and challenges, the District maintains a robust air monitoring program. The District's air monitoring network also includes air monitoring stations that are managed and operated by the California Air Resources Board (CARB), and the National Park Service. Additionally, there are two tribal air monitoring stations operating in the Valley. The Tachi Yokut Tribe operates a monitoring station at Santa Rosa Rancheria located in Kings County, and the Chukchansi Indians of California operate a monitoring station at the Picayune Rancheria located in Madera County. A map of the air monitoring stations in the San Joaquin Valley is shown in Figure 1.

The District follows federal monitoring requirements and guidelines to ensure an efficient and effective monitoring network. This monitoring network plan describes the District's approach for implementing federal air monitoring and quality control requirements. The plan also summarizes the current state of the network as well as upcoming changes that are planned for it. As specified in 40 CFR 58.10(a), this plan is made available for public inspection at least 30 days prior to submission to EPA.

Figure 1 Map of Air Monitoring Sites in the San Joaquin Valley

Air Monitoring Sites in Operation



As of May 2014

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

SAN JOAQUIN COUNTY
- ■ 1 Stockton-Hazelton: G, M, P, F, T
- ★ 2 Stockton-Wagner/Holt: P
- ★ 3 Tracy: G, M, P, F
- ★ 4 Manteca: P, F, M

STANISLAUS COUNTY
- ■ 5 Modesto-14th St: G, M, P, F
- ★ 6 Turlock: G, M, P, F

MERCED COUNTY
- ★ 7 Merced-M St: P, F
- ★ 8 Merced-Coffee: G, F, M

MADERA COUNTY
- ★ 9 Madera City: G, P, F, M
- ★ 10 Madera-Pump Yard: G, M

Other[1]:
Chukchansi Indians
- ▲ 11 Picayune Rancheria: G,F,P,M

FRESNO COUNTY
- ★ 12 Tranquillity: G, F, M
- ★ 13 Sierra Sky Park: G, M
- ★ 14 Clovis: G, M, P, F
- ■ 15 Fresno-Garland: G,M, P, F, T, N,L
- ★ 16 Fresno-Pacific: F
- ★ 17 Drummond: G, P, M
- ★ 18 Parlier: G, M
- ★ 19 Huron: F, M

KINGS COUNTY
- ★ 20 Hanford: G, F, M, P
- ★ 21 Corcoran: F, M, P

Other[1]:
Tachi Yokut Tribe
- ▲ 22 Santa Rosa Rancheria: G, M, P

TULARE COUNTY
- ★ 23 Visalia Airport: M
- ■ 24 Visalia-Church St: G, F, M, P
- ★ 25 Porterville: G, F, M

Other[2]:
- ▲ 26 Lower Kaweah: A, G, M
- ▲ 27 Ash Mountain: A, G, M, F

KERN COUNTY
- ● 28 Shafter: G, M
- ■ 29 Oildale: G, M, P
- ■ 30 California Avenue: A, G, M, P, F, T,L
- ★ 31 Bakersfield-Muni: G, M
- ■ 32 Planz Road: F
- ■ 33 Edison: G, M
- ■ 34 Arvin-Di-Giorgio: G, M
- ★ 35 Maricopa: G,M
- ★ 36 Lebec: F, M

MONITORING DESIGNATIONS
- A Acid Deposition
- F Fine Particulate (PM2.5)
- G Gaseous
- M Meteorological
- P Particulate (PM10)
- N National Core
- T Toxins
- L Lead

MONITORING OPERATION
- ★ Sites operated by the District
- ● Sites operated by the District & CARB
- ■ Sites operated by CARB
- ▲ Sites operated by other agencies
  - Other[1] Tribal
  - Other[2] National Park Service

Air Monitoring Network Plan Requirements

As specified in 40 CFR (Code of Federal Regulations) 58.10, and as required as a part of the District's EPA 105 Grant, this air monitoring network plan describes the current state of the District's monitoring network and changes that are planned for the network. The annual monitoring network plan is updated and submitted to the EPA Regional Administrator each year, and is made available for public inspection for at least 30 days prior to submission to EPA. Air monitoring network plans provide the establishment and maintenance of air monitoring networks that may include the types of stations and monitors listed in Table 1.

Table 1: Types of Air Monitoring Stations and Monitors

Abbreviation	Full Name	Description
ARM	Approved Regional Method	A method that has been approved within a specific region for comparison to federal air quality standards. ***Currently, there are no ARM monitors in the San Joaquin Valley.***
FEM	Federal Equivalent Method	These monitors are considered to be equivalent to FRM monitors for the purpose of determining compliance with EPA's health–based air quality standards.
FRM	Federal Reference Method	EPA defines how these monitors are to work, how they are to be engineered, and how they are to measure pollutants. These monitors are used to determine compliance with EPA's health–based air quality standards.
NCore	National Core	Multipollutant monitoring stations; in California, these are operated by CARB.
PAMS	Photochemical Assessment Monitoring Station	VOC (volatile organic compounds) speciation sites used in serious, severe, or extreme ozone nonattainment areas for precursor evaluation.
SLAMS	State and Local Air Monitoring Station	Monitoring sites that are used for determinations of compliance with federal air quality standards, though they may be used for other purposes as well.
SPM	Special Purpose Monitor	Not included when showing compliance with the minimum air monitoring requirements; an example might include a temporary monitoring station set up in an area to measure short term air quality impacts of a source. Data collected from an SPM can be used for Regulatory purposes if the monitor has been operational for two years and if the monitor is an ARM, FEM, or FRM.
STN	Speciated Trends Network	PM2.5 speciation stations that provide chemical speciation data of PM.

The monitoring network plan should include a statement of purpose for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of 40 CFR Part 58. The plan must contain the following information for each existing and proposed site (40 CFR 58.10 (b)):

- The MSA, CBSA, CSA, or other area represented by the monitor. MSA, CBSA, and CSA are statistical–based definitions for metropolitan areas provided by the Office of Management and Budget and the Census Bureau (see Table 2):
    - MSA: Metropolitan statistical area
    - CBSA: Core–based statistical area
    - CSA: Combined statistical area
- Air quality system (AQS) Aerometric Information Retrieval System (AIRS) Code site identification number (see Table 3).
- Locations: street address and geographical coordinates (see Appendix B).
- Sampling and analysis methods for each measured parameter (see Appendix B).
- Operating schedules for each monitor (see Appendix B).
- Monitoring objective and spatial scale of representativeness for each monitor (as defined in Appendix D to 40 CFR 58) (see Appendix B).
- Any proposals to remove or move a monitoring station within 18 months of a plan submittal. Any proposed additions and discontinuations of SLAMS monitors are subject to approval according to 40 CFR 58.14 (see planned changes section below).
- Each air monitor is sited to satisfy at least one of three specific criteria:
    - Population (see Table 4)
    - A specific geographic scale (see Appendix B)
    - Generally consistent pollution concentrations

There are several network plan requirements that pertain specifically to PM2.5 monitoring:

- The monitoring network plan must identify which sites are suitable and which are not suitable for comparison against the annual PM2.5 national ambient air quality standards (NAAQS) as described in 40 CFR 58.30 (see PM2.5 Monitors in the Valley section below).
- The plan must also document how the District provides for public review of changes to the PM2.5 monitoring network when the change impacts the location of a violating PM2.5 monitor, or the creation/change to a community monitoring zone.
- The District should submit any public comments received on PM2.5 monitoring changes in the submittal of the network plan.
- On March 18, 2013, EPA finalized the rule to revoke the term “population–oriented.” The final rule states that PM2.5 monitors at neighborhood scale or larger, or smaller scales that represent many locations in the same CBSA, are the only monitors representative of “area–wide” air quality that can be compared to the PM2.5 NAAQS.

Table 2: San Joaquin Valley Areas of Representation

TITLE	CODE
Metropolitan Statistical Area (MSA)	**Core–Based Statistical Area (CBSA) Code**
Stockton–Lodi	44700
Modesto	33700
Merced	32900
Madera	31460
Fresno	23420
Hanford–Corcoran	25260
Visalia–Porterville	47300
Bakersfield [1]	12540

[1] Monitors from both the District and the Eastern Kern County Air Pollution Control District can be counted when determining compliance with minimum monitoring requirements for the Bakersfield CBSA. However, only monitors located within the District's boundaries are included in this network plan.

Table 3: Site Identification and AQS AIRS Codes

MSA/CBSA: Stockton		
County: San Joaquin		
Site Name	**AIRS Code**	**Operating Agency**
Manteca	060772010	SJVAPCD
Stockton–Hazelton	060771002	CARB
Stockton–Wagner/Holt	060773010	SJVAPCD
Tracy–Airport	060773005	SJVAPCD
MSA/CBSA: Modesto		
County: Stanislaus		
Site Name	**AIRS Code**	**Operating Agency**
Modesto–14th St	060990005	CARB
Turlock	060990006	SJVAPCD
MSA/CBSA: Merced		
County: Merced		
Site Name	**AIRS Code**	**Operating Agency**
Merced–Coffee	060470003	SJVAPCD
Merced–M St	060472510	SJVAPCD
MSA/CBSA: Madera		
County: Madera		
Site Name	**AIRS Code**	**Operating Agency**
Madera–City	060392010	SJVAPCD
Madera–Pump Yard	060390004	SJVAPCD

Table 3: Site Identification and AQS AIRS Codes (Continued)

MSA/CBSA: Fresno		
County: Fresno		
Site Name	**AIRS Code**	**Operating Agency**
Clovis–Villa	060195001	SJVAPCD
Fresno–Drummond	060190007	SJVAPCD
Fresno–Garland	060190011	CARB
Fresno–Pacific	060195025	SJVAPCD
Fresno–Sky Park	060190242	SJVAPCD
Huron	060192008	SJVAPCD
Parlier	060194001	SJVAPCD
Tranquillity	060192009	SJVAPCD
MSA/CBSA: Hanford–Corcoran		
County: Kings		
Site Name	**AIRS Code**	**Operating Agency**
Corcoran–Patterson	060310004	SJVAPCD
Hanford–Irwin	060311004	SJVAPCD
MSA/CBSA: Visalia–Porterville		
County: Tulare		
Site Name	**AIRS Code**	**Operating Agency**
Porterville	061072010	SJVAPCD
Sequoia–Ash Mountain	061070009	National Park Service
Sequoia–Lower Kaweah	061070006	National Park Service
Visalia–Airport	061073000	SJVAPCD
Visalia–Church St	061072002	CARB
MSA/CBSA: Bakersfield		
County: Kern (Valley Portion)		
Site Name	**AIRS Code**	**Operating Agency**
Arvin–Di Giorgio	060295002	CARB
Bakersfield–California	060290014	CARB
Bakersfield–Muni	060292012	SJVAPCD
Bakersfield–Airport (Planz)	060290016	CARB
Edison	060290007	CARB
Lebec	060292009	SJVAPCD
Maricopa	060290008	SJVAPCD
Oildale	060290232	CARB
Shafter	060296001	Shared [1]

[1] Site operated by CARB and SJVAPCD.

Table 4: San Joaquin Valley 2013 Population

County	Total County Population	Major Urban Area Pop > 100,000	Urban Area Pop < 100,000 and > 50,000
San Joaquin	698,414	Stockton	Lodi, Manteca, Tracy
Stanislaus	524,124	Modesto	Turlock
Merced	262,478	—	Merced
Madera	152,711	—	Madera
Fresno	952,166	Fresno	Clovis
Kings	152,007	—	Hanford
Tulare	455,599	Visalia	Porterville, Tulare
Kern (Entire County)	857,882	Bakersfield	Delano
Kern (Valley Portion)	729,200 [1]	Bakersfield	Delano
San Joaquin Valley Total	**3,926,699**		

[1] Population estimate for Kern County (Valley Portion) was calculated using census tract data for the population living within the District's boundaries. The San Joaquin Valley Total includes the Kern (Valley Portion) population and not the Kern (Entire County) population. Data from California Department of Finance E–1 Population Estimates for Cities, Counties and the State, January 1, 2013.

Monitoring Objectives and Spatial Scales

Appendix D to 40 CFR Part 58 identifies three **basic monitoring objectives** that define the purpose of each analyzer:

- Provide air pollution data to the general public in a timely manner (**timely/public**).
- Support compliance with ambient air quality standards and emissions strategy development (**NAAQS comparison**).
- Support for air pollution research studies (**research support**).

Appendix D then identifies several general monitoring **site types** to meet the objectives that define what the monitor is measuring:

- Sites located to determine the **highest concentrations** in the area covered by the network.
- **Population exposure** sites to measure typical concentrations in areas of high population density.
- **Source impact** sites to determine the impact of significant sources or source categories on air quality.
- **General/background sites** determine background concentration levels.
- **Regional transport sites** located to determine the extent of regional pollutant transport among populated areas and in support of secondary standards
- Sites located to measure air pollution impacts on visibility, vegetation damage, or other welfare–related impacts.

Appendix D also identifies several scales of spatial representativeness, described in terms of physical dimensions of the air parcel or zone where air quality is expected to be reasonably consistent around the monitor. The monitor thus represents that area, not just the point of the monitor. The **spatial scales** are:

- **Microscale**: An area ranging from several meters up to about 100 meters.
- **Middle scale**: An area covering between about 100 meters to 0.5 kilometers.
- **Neighborhood scale**: Covering an area between 0.5 and 4.0 kilometers in range.
- **Urban scale**: Covering an area of city–like dimensions, from about 4 to 50 kilometers.
- **Regional scale**: Covering a rural area of reasonably homogeneous geography without large sources, extending from tens to hundreds of kilometers.
- **National and global scales**: Representing concentrations characterizing the nation and the globe as a whole.

New monitoring stations and new monitors that are intended to be compared to the NAAQS must meet EPA siting criteria. A particular site might be appropriate for one or more pollutants. Some sites may be appropriate for all air pollutant monitoring, while other sites are only appropriate for a particular pollutant. The District balances a wide range of pollutant siting criteria, spatial scales, monitoring objectives, and practical concerns as it plans and operates its monitoring network.

This Network Plan summarizes the state of the District's air monitoring network during 2013, and through May 2014. Additionally, changes that the District may initiate through December 2015 are described in the Summary of Planned Changes.

Pollutant Monitoring Requirements

Ozone

Ozone is formed when its precursors (oxides of nitrogen (NOx) and volatile organic compounds (VOC)) chemically react in the presence of heat and sunlight. The Valley's topography, high temperatures, subsidence inversions, and light winds are conducive to the formation of elevated ozone levels. Winds (at ground level or at higher altitudes) transport pollutants from other basins into the Valley, within the Valley to areas downwind, and from the Valley into other regions.

As specified in Table D–2 of Appendix D to Part 58, ozone monitoring site requirements are based on MSA and design values (see Table 5). Table 6 shows that the Valley's ozone monitoring network meets the requirements. Sites are intended to represent population exposures and maximum concentrations, and so most ozone monitors are representative of neighborhood and regional scales.
The Valley's SLAMS ozone monitors are continuous analyzers that detect ozone

through ultraviolet absorption. As continuous devices, these monitors meet the "Timely/Public" objective, providing District staff with the data used in Air Quality Index (AQI) forecasting and reporting. The Valley's ozone monitoring sites, their spatial scales, site types, and basic monitoring objectives are shown in Tables 15, 16, 18, and 20 through 27.

Table 5: SLAMS Minimum Ozone Monitoring Requirements
(Table D–2 of Appendix D to Part 58)

MSA population, based on latest available census figures	Number of monitors required if:	
	Most recent 3–year design value concentrations ≥85% of any ozone NAAQS	Most recent 3–year design value concentrations <85% of any ozone NAAQS
> 10 million	4	2
4 – 10 million	3	1
350,000 – < 4 million	2	1
50,000 – < 350,000	1	0

Table 6: 8–Hour Ozone Requirements for the San Joaquin Valley

Metropolitan Statistical Area (MSA)	2013 Population	Highest 2013 Ozone Design Value in MSA (ppb)	≥85% of 2008 ozone NAAQS (75 ppb)	Number of monitors required	SLAMS monitors in MSA
Stockton	698,414	79	Yes	2	2
Modesto	524,124	86	Yes	2	2
Merced	262,478	81	Yes	1	1
Madera	152,711	84	Yes	1	2
Fresno	952,166	94	Yes	2	5
Hanford–Corcoran	152,007	84	Yes	1	1
Visalia–Porterville	455,599	93	Yes	2	2
Bakersfield[1]	729,200	89	Yes	2	6

[1] Air monitors in the Eastern Kern County Air Pollution Control District would count towards the monitors required for the Bakersfield MSA. However, the "Number of active ozone monitors" listed here includes those in the Valley Portion of Kern County only.

Photochemical Assessment Monitoring Stations

The monitoring objective of Photochemical Assessment Monitoring Stations (PAMS) is research support. Federal regulations (Clean Air Act Section 182 and 40 CFR 58) require serious, severe, and extreme ozone nonattainment areas to have PAMS sites to take speciated measurements of ozone precursors and allow for better understanding of the effect of precursors, control measures, and photochemistry on ozone formation. PAMS sites measure ozone, NOx, total– and speciated–VOC for the PAMS program, CO, and meteorology concurrently. Although the Valley does not exceed federal or state standards for NO_2, NOx reductions contribute to air quality improvement for both ozone and PM.

There are four classifications of PAMS sites:

- Type 1: Background sites upwind of urban areas, where ozone concentrations are presumed not to be influenced by nearby urban emissions.
- Type 2: Maximum ozone precursor emissions sites, typically located in an urban center, where emissions strengths are the greatest.
- Type 3: Maximum ozone concentration sites, intended to show the highest ozone concentrations.
- Type 4: Downwind ozone monitoring sites intended to capture concentrations of transported ozone and precursor pollutants, and determine possible areas from which most of the transport may originate (Type 4 sites are currently not required for the San Joaquin Valley).

As shown in Table 7, the District has a total of six PAMS sites configured as two networks, one centered around Fresno and one around Bakersfield. The PAMS program operates from June 1 through August 31 every year on a 1 in 3 day sampling schedule with an hourly NMOC analyzer. At least four, three–hour integrated samples are collected each sampling day, referred to as a “Trend Day.” However, additional samples are collected on “Episode Days,” days that are forecasted to have high ozone concentrations. The goal is to sample on three to five multi–day episodes in an ozone season.

Table 7: San Joaquin Valley PAMS Sites

Fresno MSA	Madera–Pump Yard	Type 1: Upwind/Background site
	Clovis–Villa	Type 2: Maximum precursor emissions
	Parlier[1]	Type 3: Maximum ozone concentrations
Bakersfield MSA	Shafter	Type 1: Upwind/Background site
	Bakersfield–Muni	Type 2: Maximum precursor emissions
	Arvin[2]	Type 3: Maximum ozone concentrations

[1] The District is in the process of adding an NOy monitor to the site.
[2] PAMS equipment for the Type 3 site at the new Arvin–Di Giorgio site will be installed when space becomes available.

Particulate Matter (PM)

Particulate matter (PM) can be emitted directly as primary PM, and it can form in the atmosphere through chemical reactions of precursors to form secondary PM. Primary PM can be emitted either naturally: windblown dust and wildfires; or from human (anthropogenic) activity: agricultural operations, industrial processes, combustion of wood and fossil fuels, construction and demolition activities, and entrainment of road dust. The resulting ambient PM mixture includes aerosols consisting of components of nitrates, sulfates, elemental carbons, organic carbon compounds, acid aerosols, trace metals, geological materials, etc. Under current regulations, particulate matter is differentiated by particle size as opposed to composition. Federal air quality standards differentiate two size fractions of PM: PM that is 10 microns or less in diameter (PM10) and the smaller subset that is 2.5 microns or less in diameter (PM2.5).

The mountain ranges that surround the Valley contribute to trapping pollutants, including PM, in the Valley. During the winter, weather systems bring rainfall to the Valley, but the atmospheric environment also becomes conducive to secondary PM formation. The Valley's frequent and strong winter temperature inversions prevent air from rising and particulates remain trapped near the surface. During winters with little rainfall or the Valley's hot, dry summers, the dry soils contribute to PM emissions when disturbed.

The California Regional Particulate Air Quality Study (CRPAQS) is the Valley's comprehensive particulate field study. CRPAQS monitoring occurred between December 1999 and February 2001 through the use of over 70 SPM PM10 sites and 50 SPM PM2.5 sites. Researchers have used CRPAQS measurements for database development, analysis, and modeling. Data collection for the study has been completed but the data analysis is still ongoing. In addition to CRPAQS, other studies assess particulate emissions from agricultural operations, unpaved and paved road particulate emissions, and particulate formation in fog episodes. The design of the Valley's current PM network is an outgrowth of the results and analysis from CRPAQS.

The Valley's PM monitoring network includes Federal Reference Method (FRM) monitors, Federal Equivalent Method (FEM) monitors, and Non–FRM/FEM monitors. FRM monitors for PM are manual filter–based monitors; samples are primarily collected on either a one–in–six day sampling schedule or a one–in–three day sampling schedule. FRM monitors meet the "Standards/Strategy" objective, helping agencies determine the Valley's attainment status and helping shape the strategies for reaching or maintaining PM attainment. FRM filters can also be analyzed for PM speciation, lending to their usage for "Research Support" objectives as well.

Beta Attenuation Monitors (BAM) and Tapered Element Oscillating Microbalance (TEOM) monitors are continuous, near real–time monitors that provide the hourly PM data used in AQI and Smoke Management System (SMS) burn allocations. Data from these monitors are also used in hazard reduction burning allocations and in residential wood burning declarations. As such, these monitors help meet the "Timely/Public" objective.

Not all real–time monitors meet the "Standards/Strategy" objective because they do not meet the rigorous engineering design, quality assurance, and quality control standards necessary for comparison to the NAAQS. An FEM monitor is often a real–time monitor that has been designated by EPA as being equivalent to FRM monitors. FEMs satisfy both the "Standards/Strategy" objective and the "Timely/Public" objective. All of the Valley's TEOMs are FEMs, and some of the Valley's BAMs are FEMs.

Tables 15, 16, 17, and 19 through 27 show the Valley's PM10 and PM2.5 monitoring sites, their monitor types, spatial scales, site types, basic monitoring objectives, and current sampling frequencies.

PM10 Monitoring Requirements

The San Joaquin Valley has been redesignated to attainment for PM10, and the District's ***2007 PM10 Maintenance Plan*** and ongoing PM10 monitoring will assure continued compliance with the federal standard. Table 8 shows the minimum number of PM10 sites required per MSA and Table 9 shows the PM10 monitoring requirements for the San Joaquin Valley.

Table 8: Minimum PM10 Monitoring Requirements
(Table D–4 of Appendix D to Part 58)
(A range is presented, and the actual number of stations per area is jointly determined by EPA, the State, and the local agency)

Population category	High concentration: Ambient concentrations exceed the PM10 NAAQS by 20% or more (≥180 μg/m³)	Medium concentration: Ambient concentrations exceed 80% of the PM10 NAAQS (>120 μg/m³)	Low concentration: Ambient concentrations less than 80% of the PM10 NAAQS (< 120 μg/m³), or no design value
> 1,000,000	6 – 10	4 – 8	2 – 4
500,000 – 1,000,000	4 – 8	2 – 4	1 – 2
250,000 – 500,000	3 – 4	1 – 2	0 – 1
100,000 – 250,000	1 – 2	0 – 1	0

Table 9: PM10 Monitoring requirements for the Valley

Metropolitan Statistical Area (MSA)	County	2013 Population	PM10			
			24–hour 2013 Highest concentration in MSA (µg/m³)[1]	Number of Monitors required	SLAMS monitors in MSA	SPM monitors in MSA
Stockton	San Joaquin	698,414	140	2 – 4	2	2
Modesto	Stanislaus	524,124	79	1 – 2	2	0
Merced	Merced	262,478	77	0 – 1	1	0
Madera	Madera	152,711	110	0	1	0
Fresno	Fresno	952,166	138	1 – 2	3	0
Hanford–Corcoran	Kings	152,007	224	1 – 2	2	1
Visalia–Porterville	Tulare	455,599	155	0 – 1	1	0
Bakersfield	Kern	729,200	134	2 – 4	2	0

[1] Pending Exceptional Events are included.

PM2.5 Monitoring Requirements

The San Joaquin Valley is designated nonattainment for PM2.5. Table 10 shows the minimum number of PM2.5 sites required per MSA and Table 11 shows the PM2.5 monitoring requirements for the San Joaquin Valley.

Table 10: Minimum PM2.5 Monitoring Requirements

MSA population	**Most recent 3–year design value ≥85% of any PM2.5 NAAQS** (equivalent to an annual design value ≥ 10.2 µg/m³ or a 24–hour design value ≥ 29.8 µg/m³)	**Most recent 3–year design value <85% of any PM2.5 NAAQS** (equivalent to an annual design value < 10.2 µg/m³ or a 24–hour design value < 29.8 µg/m³), or no design value
> 1,000,000	3	2
500,000 – 1,000,000	2	1
50,000 – < 500,000	1	0

Table 11: PM2.5 Monitoring Requirements for the Valley

Metropolitan Statistical Area (MSA)	County	2013 Population	PM2.5[1]				
			24–hour 2011–2013 Design Value in MSA (µg/m³)	Annual 2011–2013 Design Value in MSA (µg/m³)	Monitors required	SLAMS monitors in MSA	SPM monitors in MSA
Stockton	San Joaquin	698,414	45	13.9	2	2	1
Modesto	Stanislaus	524,124	53	15.6	2	3	0
Merced	Merced	262,478	47	13.3	1	1	1
Madera	Madera	152,711	52	18.1	1	1	0
Fresno	Fresno	952,166	58	16.4	2	3	3
Hanford–Corcoran	Kings	152,007	60	17.0	1	1	1
Visalia–Porterville	Tulare	455,599	56	16.6	1	1	3
Bakersfield	Kern	729,200	65	17.3	2	2	1

[1] Air quality data may include data influenced by exceptional events and/or data completeness and substitution requirements.

PM Collocation Requirements
(40 CFR 58 Appendix A, Sections 3.2.5 and 3.2.6)

The District's Particulate Matter collocation requirements are met by the Primary Quality Assurance Organization (PQAO). CARB is the PQAO for the District as well as several other air districts. See CARB's Air Monitoring Network Plans for details on how collocation requirements are met by the PQAO. Table 19 shows the collocated PM monitors currently operating in the District's monitoring network.

Public Review of Changes to the PM2.5 Monitoring Network

Public input is required whenever the District proposes to move an existing violating PM2.5 monitor (40 CFR 58.10(c)). The District uses the annual Air Monitoring Network Plan to notify and seek public comment on any planned changes to the existing PM2.5 network. The public is provided 30 days to comment on the Air Monitoring Network Plan and any PM2.5 network changes. The plan is regularly posted on the District website, after which the public is notified of the availability of the document for the 30 day review. In the event of unanticipated changes to the PM2.5 network that occur outside the Air Monitoring Network Plan process, the District will post the required documentation on its website and seek public comment.

Carbon Monoxide

On August 12, 2011 EPA issued the decision to retain the existing NAAQS for CO. The primary standards are 9 parts per million (ppm) measured over 8 hours, and 35 ppm measured over 1 hour. Monitoring requirements for CO are specified in 40 CFR Part 58 as follows:

- CO monitors are required at all NCore sites. At least one NCore site is required in every state.
- One CO monitor is required to be placed at a near–road NO_2 monitoring station in a CBSA with population of 1 million or more. Moving an existing monitor to a new location is acceptable.
- EPA is providing authority to EPA Regional Administrators to require additional monitoring in case–by–case circumstances, such as in areas impacted by major stationary CO sources, in urban downtown areas, or urban street canyons, or in areas adversely impacted by meteorological and/or topographical influences.
- CO must be monitored at PAMS Type 2 sites with a trace level CO monitor.

Currently, the CBSAs within the District are comprised of less than 1 million people, thus the District is not required to place a CO monitor at a near–road NO_2 monitoring station. Monitoring has shown that the Valley's CO concentrations have not exceeded the NAAQS for over a decade. As noted in Section 4.2 of Appendix D of 40 CFR Part 58, there are no minimum requirements of the number of CO monitoring sites. The District and CARB continue CO monitoring to meet the requirement at its PAMS Type 2 sites and NCore site, and to supplement related meteorological and criteria pollutant data.

Nitrogen Dioxide

In 2010, EPA retained the annual average NO_2 standard of 53 parts per billion (ppb), and established a new 1–hour NO_2 standard at the level of 100 ppb. Recognizing that the current NO_2 network is not adequate for fully assessing compliance with the new NAAQS, EPA finalized a Three–Tier Network design that will represent NO_2 concentrations that occur near freeways, urban areas, and locations aimed at protecting susceptible and vulnerable communities. Per 40 CFR Part 58, the Three–Tier Network design is comprised of:

(1) One monitor that represents highest NO_2 exposure with a neighborhood scale or larger in CBSAs with more than 1,000,000 people.
(2) Near–road monitoring at locations of expected maximum 1–hour NO_2 concentrations near heavily trafficked roads in urban areas.

(3) A NO_2 network consisting of 40 monitors designed by the Regional Administrators to protect susceptible and vulnerable communities.

Even though the District is not required to have an area–wide NO_2 monitor, the District operates an extensive NO_2 monitoring network. The District locates NO_2 analyzers as required at PAMS sites and generally collocates NO_2 analyzers wherever an ozone monitor is required. Currently, these 16 monitors indicate that the District has low NO_2 levels that would be in compliance with both the NO_2 standards if the site met NAAQS siting criteria. Because these measurements are low and traffic volumes are also low when compared to other areas of the state, the District anticipates meeting the hourly standard once the near–road monitors are built and begin collecting data.

The District is in the process of locating and building a near–road NO_2 monitoring site in each of the Stockton, Modesto, Fresno, and Bakersfield CBSAs (four in total). The District has found potential near–road NO_2 monitoring sites in the Bakersfield and Fresno CBSAs. The required documentation for the near–road NO_2 monitoring sites located in Fresno and Bakersfield are found in Appendix C and Appendix D, respectively. The siting process for the other two locations continues and will be presented to the public as required in a future network plan once siting is complete.

The third network, the Regional Administrator Required Monitoring Network (RA40) will consist of 40 NO_2 sites located throughout the United States and their locations will be determined by the Regional Administrators. These 40 sites would be in addition to the minimum NO_2 monitoring requirements. EPA Region 9 has asked the District to choose two sites for RA40 purposes. The sites will be Arvin-Di Giorgio (once it is rebuilt and fully operational) and Parlier, which are located in towns with susceptible and vulnerable populations. In addition, the Arvin-Di Giorgio and Parlier sites are downwind from urban areas.

Lead

EPA revised the lead NAAQS and monitoring requirements in the Federal Register on November 12, 2008 (40 CFR 58.10). The rule became effective on January 26, 2011. EPA requires monitoring agencies to install non–source oriented lead monitors at NCore sites in CBSAs with populations of 500,000 or greater. The Fresno–Garland air monitoring site (an NCore site) is the only site within the District's network that meets these criteria. In December 2011, CARB began measuring lead at the Fresno-Garland site to satisfy this requirement. EPA also requires state monitoring agencies to use the emission threshold of 0.5 tons per year (tpy) when determining if a monitor should be placed near an industrial facility that emits lead. The emission threshold for airport sources is 1.0 tpy, except for airports that are included in special studies. The District has not identified any lead sources above the aforementioned thresholds, thus it is not required to monitor for that threshold at this time.

Reactive Nitrogen Compounds (NOy)

Reactive Nitrogen Compounds (NOy) are among the precursors to ozone and PM2.5. As part of the National Ambient Air Monitoring Strategy (NAAMS), EPA requires NOy monitoring at 75 locations across the United States in support of a number of objectives. NCore site requirements and the PAMS program include monitoring NOy in order to meet that requirement. Measuring NOy at NCore and PAMS sites is important for understanding ozone photochemistry.

Sulfur Dioxide

In 2010, EPA revised the SO_2 NAAQS and monitoring requirements in the Federal Register (CFR, 40 CFR Part 58, Section 4.4). EPA established a new primary 1–hour standard of 75 ppb, and also revoked the previous 24–hour and annual primary standards. SO_2 monitoring requirements are determined by the Populations Weighted Emissions Index (PWEI) value in units of million persons–tons per year. The PWEI is calculated using each CBSA's updated census data and a combined total of the latest available county level SO_2 emissions data in the National Emissions Inventory for the counties in each CBSA. The population of a CBSA is multiplied with the total amount of SO_2 in tons per year emitted within a CBSA, and the resulting product is then divided by one million to produce the PWEI value. The Valley's PWEI values are shown in Table 12.

Table 12: San Joaquin Valley's Populations Weighted Emissions Index for 2011

County (CBSA)	Total County Population[1]	SO_2 Tons per Year [2]	PWEI
San Joaquin	698,414	1,198	837
Stanislaus	524,124	479	251
Merced	262,478	138	36
Madera	152,711	217	33
Fresno	952,166	655	624
Kings	152,007	98	15
Tulare	455,599	1,624	740
Kern	857,882	3,069	2,633

[1] Total County Population includes the entire county. Population data from California Department of Finance E–1 Population Estimates for Cities, Counties and the State, January 1, 2013.

[2] SO_2 Tons per Year includes the entire county. The SO_2 data is the most recent data for each county from the 2011 National Emission Inventory. The 2013 SO_2 emission inventory data is not yet available.

As per 40 CFR Part 58, Appendix D Section 4.4, at least three SO_2 monitors are required in CBSAs with a PWEI value equal to or greater than 1,000,000. CBSAs with a PWEI value equal to or greater than 100,000, but less than 1,000,000, are required to have at least two SO_2 monitors. A minimum of one SO_2 is required in CBSAs with a PWEI value equal to or greater than 5,000, but less than 100,000. There is no required number of SO_2 monitors for CBSAs that do not exceed the federal standard for SO_2. Although the Valley does not exceed the federal standard for $SO_{2,}$ there is one SO_2 monitor operating within the District's network. This monitor is located at the Fresno–Garland AMS as part of the NCore Network.

Toxics

The airborne toxics program is run by CARB. Toxics measurements are collected at Stockton–Hazelton, Fresno–Garland, and Bakersfield–California. Periodic, 24–hour samples are analyzed for the following gases: benzene, Carbon tetrachloride, chloroform, ethylene dibromide, ethylene dichloride, methyl chloroform, methylene chloride, perchloroethylene, toluene, trichloroethylene, and m–, p–, and o–xylene. The samples are also analyzed for the following particulate metals: Arsenic and Hexavalent Chromium–6. CARB's Integrated NMHC (NMH) sampling program and the District's PAMS NMH sampling program also identify and quantify several toxic hydrocarbon species.

NCore

EPA's October 2006 ambient air monitoring amendments established a requirement for NCore multi–pollutant monitoring stations to be operational by January 1, 2011. The Fresno–First site, which was operated by CARB, was selected by EPA to be an NCore site. CARB submitted an NCore plan to EPA in November 2009. The Fresno—First site already met the NCore requirements for filter–based and continuous PM2.5, speciated PM2.5, ozone, and meteorology. In December 2010, CARB installed trace level CO, trace level SO_2, trace level NOy, and continuous PM–Coarse monitors at this site. A gas dilution calibrator, a zero air generator, and digital data loggers were also installed to support NCore monitoring. In December 2011, CARB installed a TSP–lead sampler which completed all the pollutant monitoring requirements for the NCore program. Additionally, CARB moved the Fresno–First site two blocks north to Garland Avenue. The Fresno–Garland site continues to serve as an NCore site.

Meteorology

A variety of meteorological parameters are measured for various District programs affected by weather. Such programs include air quality forecasting, PAMS, exceptional events, long–term planning, and pollutant trend assessment. These activities help protect public health and have made the public and media more aware of air quality and what can be done to reduce air pollution. See Table 28 for the meteorological parameters measured in the Valley.

Monitoring Site Information

Table 13 lists detailed information about all of the ambient air monitoring sites in the San Joaquin Valley Air Basin.

Table 13: Ambient Air Monitoring Sites in the San Joaquin Valley Air Basin

.MSA, County	Site Name	Address	Parameters Monitored
Stockton, San Joaquin	Stockton–Hazelton	1593 E. Hazelton St., Stockton, CA 95205	Ozone, PM10 FRM, PM2.5 FRM, PM2.5 BAM/FEM, CO, NO_2, toxics, wind speed, wind direction, outdoor temperature, relative humidity
	Stockton–Wagner/Holt	8778 Brattle Pl., Stockton, CA 95209	PM10 FRM
	Manteca	530 Fishback Rd., Manteca, CA 95337	PM2.5 BAM/FEM, PM10 TEOM/FEM, wind speed, wind direction, outdoor temperature, barometric pressure
	Tracy–Airport	5749 S. Tracy Blvd., Tracy, CA 95376	Ozone, PM10 TEOM/FEM, PM2.5 BAM non–regulatory, NO_2, wind speed, wind direction, outdoor temperature, barometric pressure, radio acoustic sounding system (RASS)
Modesto, Stanislaus	Modesto–14th St	814 14th Street, Modesto, CA 95354	Ozone, PM10 FRM, PM10 FEM, PM2.5 FRM, PM2.5 BAM/FEM, CO, wind speed, wind direction, outdoor temperature, barometric pressure
	Turlock	1034 S. Minaret St., Turlock, CA 95380	Ozone, PM10 FRM, PM2.5 BAM FEM, CO, NO2, wind speed, wind direction, outdoor temperature, barometric pressure
Merced, Merced	Merced–Coffee	385 S. Coffee St., Merced, CA 95340	Ozone, PM2.5 BAM/FEM, NO_2, wind speed, wind direction, outdoor temperature
	Merced–M St	2334 M Street, Merced, CA 95340	PM10 FRM, PM2.5 FRM
Madera, Madera	Madera–City	28261 Avenue 14, Madera, CA 93638	Ozone, PM10 TEOM/FEM, PM2.5 BAM/FEM, wind speed, wind direction, outdoor temperature, barometric pressure, relative humidity, solar radiation
	Madera–Pump Yard	Avenue 8 and Road 29 1/2, Madera, CA 93637	Ozone, NO_2, NMH, Total– and Speciated–VOC, wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation for PAMS program

Table 13 Ambient Air Monitoring Sites in the San Joaquin Valley Air Basin (Continued)

MSA, County	Site Name	Address	Parameters Monitored
Fresno, Fresno	Clovis–Villa	908 N. Villa Ave., Clovis, CA 93612	Ozone, PM10 FRM, PM2.5 FRM, PM2.5 BAM/FEM, CO, NO_2, NMH, Total– and Speciated–VOC, wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation for PAMS program
	Fresno–Drummond	4706 E. Drummond St., Fresno, CA 93725	Ozone, PM10 FRM, CO, NO_2, wind speed, wind direction, outdoor temperature, barometric pressure
	Fresno–Garland	3727 N. First St, Ste. 104, Fresno CA 93726	Ozone, NO_2, NOy, CO, SO_2, PM10 FEM ($PM_{10\text{-}2.5}$), PM2.5 FRM, PM2.5 FEM/BAM, PM2.5 BAM/Non–FEM non–regulatory, Lead, toxics, wind direction, outdoor temperature, relative humidity, barometric pressure
	Fresno–Pacific	1716 Winery, Fresno, CA 93726	PM2.5 FRM
	Fresno–Sky Park	4508 Chennault Ave, Fresno, CA 93722	Ozone, CO, NO_2, wind speed, wind direction, outdoor temperature
	Huron	16875 4th St., Huron, CA 93234	PM2.5 BAM/Non–FEM non–regulatory, barometric pressure
	Parlier	9240 S. Riverbend Ave., Parlier, CA 93648	Ozone, NO_2, NMH, Total– and Speciated–VOC, wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation for PAMS program
	Tranquillity	32650 W. Adams, Tranquillity, CA 93668	Ozone, PM2.5 BAM/FEM, wind speed, wind direction, outdoor temperature, barometric pressure
Hanford–Corcoran, Kings	Corcoran–Patterson	1520 Patterson Ave, Corcoran, CA 93212	PM10 TEOM/FEM, PM2.5 FRM, wind speed, wind direction, outdoor temperature, barometric pressure
	Hanford–Irwin	807 S. Irwin St, Hanford, CA 93230	Ozone, PM10 FRM, PM10 TEOM/FEM, PM2.5 BAM/FEM, NO_2, wind speed, wind direction, outdoor temperature, barometric pressure

Table 13 Ambient Air Monitoring Sites in the San Joaquin Valley Air Basin (Continued)

MSA, County	Site Name	Address	Parameters Monitored
Visalia–Porterville, Tulare	Porterville	1839 S. Newcomb St., Porterville, CA 93257	Ozone, PM2.5 BAM non–regulatory, wind speed, wind direction, outdoor temperature, barometric pressure
	Sequoia–Ash Mountain	Ash Mountain, Sequoia National Park CA	Ozone, PM2.5 BAM non–regulatory, wind speed, wind direction, outdoor temperature, relative humidity, solar radiation
	Sequoia–Lower Kaweah	Lower Kaweah Campground, Sequoia National Park, CA	Ozone, wind speed, wind direction, outdoor temperature, relative humidity, solar radiation
	Visalia–Airport	9501 West Airport Drive, Visalia, CA 93277	Wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation, radio acoustic sounding system (RASS)
	Visalia–Church St	310 N. Church St St., Visalia, CA 93291	Ozone, PM10 FRM, PM2.5 FRM, PM2.5 BAM non–regulatory, NO_2, wind speed, wind direction, outdoor temperature, barometric pressure
Bakersfield, Kern	Arvin–Di Giorgio	19405 Buena Vista Blvd, Arvin, CA 93203	Ozone, outdoor temperature, wind speed, wind direction
	Bakersfield–Airport (Planz)	401 E. Planz Rd., Bakersfield CA 93307	PM2.5 FRM
	Bakersfield–Muni	2000 South Union Ave., Bakersfield, CA 93307	Ozone, CO, NO_2, NMH, Total– and Speciated–VOC wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation for PAMS program
	Bakersfield–California	5558 California Ave., Bakersfield, CA 93309	Ozone, PM10 FRM, PM2.5 FRM, PM2.5 BAM/Non–FEM non–regulatory, NO_2, Lead, toxics, wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation

Table 13 Ambient Air Monitoring Sites in the San Joaquin Valley Air Basin (Continued)

MSA, County	Site Name	Address	Parameters Monitored
Bakersfield, Kern	Edison	Johnson Farm–Shed Rd, Edison, CA 93320	Ozone, NO_2, wind speed, wind direction, outdoor temperature
	Lebec	1277 Beartrap Road, Lebec, CA 93243	PM2.5 BAM non–regulatory, wind speed, wind direction, outdoor temperature, barometric pressure
	Maricopa	755 Stanislaus St., Maricopa, CA 93352	Ozone, wind speed, wind direction, outdoor temperature, barometric pressure
	Oildale	3311 Manor St, Oildale, CA 93308	Ozone, PM10 FRM, wind speed, wind direction, outdoor temperature
	Shafter	578 Walker St, Shafter, CA 93263	Ozone, NO_2, NMH, Total– and Speciated–VOC, wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation for PAMS program

Table 14: Parameters Monitored

Site Name	Ozone	PM2.5	PM10	NO_2	CO	SO_2	NMH	NO_y	Lead	Toxics	Speciated VOC	Total VOC	RASS[1]	Meteorology
Stockton–Hazelton	✓	✓	✓	✓	✓					✓				✓
Stockton–Wagner/Holt			✓											
Manteca		✓	✓											✓
Tracy–Airport	✓	✓	✓	✓									✓	✓
Modesto–14th St	✓	✓	✓		✓									✓
Turlock	✓	✓	✓	✓	✓									✓
Merced–Coffee	✓	✓		✓										✓
Merced–M St		✓	✓											
Madera–City	✓	✓	✓											✓
Madera–Pump Yard	✓			✓			✓				✓	✓		✓
Tranquillity	✓	✓												✓
Fresno–Sky Park	✓			✓	✓									✓
Clovis–Villa	✓	✓	✓	✓	✓		✓				✓	✓		✓
Fresno–Garland	✓	✓	✓	✓	✓	✓		✓	✓	✓				✓
Fresno–Pacific		✓												
Fresno–Drummond	✓		✓	✓	✓									✓
Parlier	✓			✓			✓				✓	✓		✓
Huron		✓												
Hanford–Irwin	✓	✓	✓	✓										✓
Corcoran–Patterson		✓	✓											✓
Visalia–Airport													✓	✓
Visalia–Church St	✓	✓	✓	✓										✓
Sequoia–Lower Kaweah	✓													✓
Sequoia–Ash Mountain	✓	✓												✓
Porterville	✓	✓												✓
Shafter	✓			✓			✓				✓	✓		✓
Oildale	✓		✓											✓
Bakersfield–California	✓	✓	✓	✓					✓	✓				✓
Edison	✓			✓										✓
Bakersfield–Muni	✓			✓	✓		✓				✓	✓		✓
Bakersfield–Airport (Planz)		✓												
Arvin–Di Giorgio	✓													✓
Maricopa	✓													✓
Lebec		✓												✓

[1] Radio acoustic sounding system (RASS)

Table 15: Fresno-Garland NCore Site

Pollutant	Site Type	Spatial Scale	Basic Monitoring Objective	Current Sampling Frequency	QA Collocated
Ozone	HC,PE	U	NC, RS	Hourly	
PM2.5 (manual)	HC	N	NC, RS	1:1	2 FRMs
PM2.5 (continuous)	HC	N	NC, RS	Hourly	
PM10 (Lead TSP) (manual)	PE	N	NC, RS	1:6	
PM10 ($PM_{10-2.5}$) (continuous)	PE	N	NC, RS	Hourly	1 FEM
NO2	PE	U	NC, RS	Hourly	
CO	PE	U	NC, RS	Hourly	
SO2	PE	U	NC, RS	Hourly	
NOy	PE	U	NC, RS	Hourly	
Toxics	PE	N	RS, TP	Hourly	

PE – Population Exposure HC – Highest Concentration N – Neighborhood U – Urban
NC – NAAQS Comparison RS – Research Hourly = One sample every hour 1:1 = One sample per day
1:6 = 1 in 6 day sampling

Table 16: Non–EPA Federal Monitors

Sequoia–Ash Mountain				
Parameter	**Site Type**	**Spatial Scale**	**Basic Monitoring Objective**	**Current Sampling Frequency**
Ozone	HC, RT	R	NC, RS, TP	Hourly
PM2.5 (continuous)	RT	R	NC, RS, TP	Hourly
Meteorology	GB	R	RS, TP	Hourly
Sequoia–Lower Kaweah				
Parameter	**Site Type**	**Spatial Scale**	**Basic Monitoring Objective**	**Current Sampling Frequency**
Ozone	RT	R	NC, RS, TP	Hourly
Meteorology	GB	R	RS, TP	Hourly

RT = Regional Transport GB – General Background R = Regional NC – NAAQS Comparison RS – Research
TP – Timely/Public Hourly = One sample every hour

Table 17: Other PM2.5 Monitors

Site Name	PM2.5 Speciation	PM2.5
Modesto–14th St	Supplemental Speciation	
Fresno–Garland	Supplemental Speciation	Trend; IMPROVE
Visalia–Church St	Supplemental Speciation	
Bakersfield–California	Supplemental Speciation	

Table 18: Gaseous Monitors

Site Name	Monitor Type					
	Ozone	NO_2	CO	NMH	Spec. VOC	Total VOC
Stockton–Hazelton	SLAMS	SLAMS	SLAMS			
Tracy–Airport	SLAMS	SLAMS				
Modesto–14th St	SLAMS		SLAMS			
Turlock	SLAMS	SLAMS	SLAMS			
Merced–Coffee	SLAMS	SLAMS				
Madera–City	SLAMS					
Madera–Pump Yard	PAMS/SLAMS	PAMS		PAMS	PAMS	PAMS
Tranquillity	SPM					
Fresno–Sky Park	SLAMS	SLAMS	SLAMS			
Clovis–Villa	SLAMS	PAMS	SLAMS	PAMS	PAMS	PAMS
Fresno–Drummond	SLAMS	SLAMS	SLAMS			
Parlier	PAMS/SLAMS	PAMS		PAMS	PAMS	PAMS
Hanford–Irwin	SLAMS	SLAMS				
Visalia–Church St	SLAMS	SLAMS				
Porterville	SLAMS					
Shafter	PAMS/SLAMS	PAMS		PAMS	PAMS	PAMS
Oildale	SLAMS					
Bakersfield–California	SLAMS	SLAMS				
Edison	SLAMS	SLAMS				
Bakersfield–Muni	PAMS/SLAMS	PAMS	SLAMS	PAMS	PAMS	PAMS
Arvin–Di Giorgio	SLAMS					
Maricopa	SLAMS					

Table 19: PM Monitors

Site Name	Monitor Type				QA Collocated		
	PM2.5 (manual)	PM2.5 (cont.)	PM10 (manual)	PM10 (cont.)	PM2.5 (manual)	PM2.5 (cont.)	PM10 (manual)
Stockton–Hazelton		SLAMS	SLAMS				
Stockton–Wagner/Holt			SLAMS				
Manteca		SLAMS		SPM			
Tracy–Airport		SPM, Non–FEM		SPM			
Modesto–14th St	SLAMS	SLAMS	SLAMS				
Turlock		SLAMS	SLAMS				
Merced–Coffee		SPM					
Merced–M St	SLAMS		SLAMS				
Madera–City		SLAMS		SLAMS			
Tranquillity		SPM					
Clovis–Villa	SLAMS (primary)	SPM	SLAMS			1 FEM	
Fresno–Pacific	SLAMS						
Fresno–Drummond			SLAMS (primary)				1 FRM
Huron		SPM, Non–FEM					
Corcoran–Patterson	SLAMS			SLAMS			
Hanford–Irwin		SPM, Reg	SLAMS	SLAMS			
Visalia–Church St	SLAMS	SPM, Non-Reg, Non-FEM		SLAMS			
Porterville		SPM, Non-FEM					
Oildale			SLAMS				
Bakersfield–California	SLAMS (primary)	SPM, Non–FEM, Non–Reg (primary)	SLAMS (primary)		1 FRM	1 SPM, Non–FEM, Non–Reg	1 FRM
Bakersfield–Airport (Planz)	SLAMS						
Lebec		SPM, Non–FEM					

cont. = Continuous Reg = Regulatory Non-Reg = Non--Regulatory

Table 20: SLAMS – Site Type

Site Name	Ozone	PM2.5 (manual)	PM2.5 (cont.)	PM10 (manual)	PM10 (cont.)	NO_2	CO	NMH
Stockton–Hazelton	PE		HC, PE	PE		PE	PE	
Stockton-Wagner/Holt				PE				
Manteca			PE		HC			
Tracy–Airport	HC, RT					PE		
Modesto–14th St	PE		PE	PE			PE	
Turlock	HC,PE		HC, PE	HC, PE		PE	PE	
Merced–Coffee	PE		HC			PE		
Merced–M St		HC, PE		HC, PE				
Madera–City	HC, PE		HC, PE		HC, PE			
Madera–Pump Yard	GB					PE		PE
Fresno–Sky Park	PE, RT					PE	PE	
Clovis–Villa	HC, PE	HC		PE		HC	PE	PE
Fresno–Pacific		PE						
Fresno–Drummond	HC,PE, RT			HC, PE		HC	PE	
Parlier	RT					PE		PE
Corcoran–Patterson		HC			HC			
Hanford–Irwin	HC, PE			PE		PE		
Visalia–Church St	PE	HC, PE		HC, PE		PE		
Porterville	PE							
Shafter	GB					PE		PE
Oildale	RT			HC, PE				
Bakersfield–California	PE	HC, PE		PE	HC	PE		
Edison	RT					PE		
Bakersfield–Muni	HC					HC	PE	PE
Bakersfield–Airport (Planz)		HC, PE						
Arvin–Di Giorgio	HC, RT							
Maricopa	RT							

PE – Population Exposure HC – Highest Concentration RT – Regional Transport GB – General/Background
cont. = Continuous

Table 21: SLAMS – Spatial Scale

Site	Ozone	PM2.5 (manual)	PM2.5 (cont.)	PM10 (manual)	PM10 (cont.)	NO_2	CO	NMH
Stockton–Hazelton	N		N	N		N	N	
Stockton-Wagner/Holt				N				
Manteca			N					
Tracy–Airport	U					U		
Modesto–14th St	N	N	N	N			N	
Turlock	N		N	N		N	N	
Merced–Coffee	N		N			N		
Merced–M St		N		N				
Madera–City	N		N		N			
Madera–Pump Yard	N					N		N
Fresno–Sky Park	N					N	N	
Clovis–Villa	N	N		N		N	N	N
Fresno–Pacific		N						
Fresno–Drummond	N			N		N	N	
Parlier	N					N		N
Corcoran–Patterson		N			N			
Hanford–Irwin	N		N	N		N		
Visalia–Church St	N	N		N		N		
Porterville	N							
Shafter	N					N		N
Oildale	N			N				
Bakersfield–California	N	N	N	N		N		
Edison	N					U		
Bakersfield–Muni	N					N	N	N
Bakersfield–Airport (Planz)		N						
Arvin–Di Giorgio	N							
Maricopa	N							

cont. = Continuous N – Neighborhood U - Urban

Table 22: SLAMS – Basic Monitoring Objective

Site	Ozone	PM2.5 (manual)	PM2.5 (cont.)	PM10 (manual)	PM10 (cont.)	NO_2	CO	NMH
Stockton–Hazelton	NC		NC	NC		NC	NC	
Stockton-Wagner/Holt				NC,RS				
Manteca			NC,RS					
Tracy–Airport	NC,RS,TP							
Modesto–14th St	NC	NC	NC	NC	NC		NC	
Turlock	NC,RS,TP		NC,RS,TP	NC,RS			NC	
Merced–Coffee	NC,RS,TP							
Merced–M St		NC,RS,TP		NC,RS				
Madera–City	NC,RS,TP		NC,RS,TP		NC,RS,TP			
Madera–Pump Yard	NC,RS,TP							RS
Fresno–Sky Park	NC,RS,TP						NC	
Clovis–Villa	NC,RS,TP	NC,RS		NC,RS			NC	RS
Fresno–Pacific		NC,RS						
Fresno–Drummond	NC,RS,TP			NC,RS			NC	
Parlier	NC,RS,TP							RS
Corcoran–Patterson		NC,RS			NC,RS			
Hanford–Irwin	NC,RS,TP			NC,RS		NC,RS,TP		
Visalia–Church St	NC	NC	RS, TP	NC		NC		
Porterville	NC,RS,TP							
Shafter	NC					NC		RS
Oildale	NC			NC				
Bakersfield–California	NC	NC	RS, TP	NC		NC		
Edison	NC					NC		
Bakersfield–Muni	NC,RS,TP						NC	RS
Bakersfield–Airport (Planz)		NC						
Arvin–Di Giorgio	NC							
Maricopa	NC,RS,TP							

cont. = Continuous NC – NAAQS Comparison RS – Research TP – Timely/Public

Table 23: SLAMS – Current Sampling Frequency

Site Name	Ozone	PM2.5 (manual)	PM2.5 (cont.)	PM10 (manual)	PM10 (cont.)	NO_2	CO	NMH
Stockton–Hazelton	Hourly		Hourly	1:6		Hourly	Hourly	
Stockton-Wagner/Holt				1:6				
Manteca			Hourly					
Tracy–Airport	Hourly					Hourly		
Modesto–14th St	Hourly	1:3	Hourly	1:6			Hourly	
Turlock	Hourly		Hourly	1:6		Hourly	Hourly	
Merced–Coffee	Hourly		Hourly			Hourly		
Merced–M St		1:3		1:6				
Madera–City	Hourly		Hourly		Hourly			
Madera–Pump Yard	Hourly					Hourly		Hourly
Fresno–Sky Park	Hourly					Hourly	Hourly	
Clovis–Villa	Hourly	1:3		1:6		Hourly	Hourly	Hourly
Fresno–Pacific		1:3						
Fresno–Drummond	Hourly			1:6		Hourly	Hourly	
Parlier	Hourly					Hourly		Hourly
Corcoran–Patterson		1:3			Hourly			
Hanford–Irwin	Hourly		Hourly	1:6		Hourly		
Visalia–Church St	Hourly	1:3		1:6		Hourly		
Porterville	Hourly							
Shafter	Hourly					Hourly		Hourly
Oildale	Hourly			1:6				
Bakersfield–California	Hourly	1:1	Hourly	1:6		Hourly		
Edison	Hourly					Hourly		
Bakersfield–Muni	Hourly					Hourly	Hourly	Hourly
Bakersfield–Airport (Planz)		1:3						
Arvin–Di Giorgio	Hourly							
Maricopa	Hourly							

Hourly = One sample every hour 1:1 = One sample per day 1:3 = 1 in 3 day sampling 1:6 = 1 in 6 day sampling
cont. = Continuous

Table 24: SPM – Site Type

Site Name	Ozone	PM2.5 (continuous)	PM10 (continuous)
Manteca			PE
Tracy–Airport		RT	RT
Clovis–Villa		PE	
Tranquillity	PE		
Huron		PE	
Hanford–Irwin			PE
Visalia–Church St		PE	
Porterville		PE	
Bakersfield–California		PE	
Lebec		PE	

PE – Population Exposure HC – Highest Concentration RT – Regional Transport

Table 25: SPM – Spatial Scale

Site Name	Ozone	PM2.5 (continuous)	PM10 (continuous)
Manteca			N
Tracy–Airport		N	N
Clovis–Villa		N	
Tranquillity	U		
Huron		N	
Hanford–Irwin			N
Visalia–Church St		N	
Porterville		N	
Bakersfield–California		N	
Lebec		N	

N – Neighborhood U – Urban

Table 26: SPM – Basic Monitoring Objective

Site	Ozone	PM2.5 (continuous)	PM10 (continuous)
Manteca			NC, RS
Tracy–Airport		RS, TP	NC, RS, TP
Clovis–Villa		TP	
Tranquillity	TP	NC, RS, TP	
Huron		RS, TP	
Hanford–Irwin			RS, TP
Visalia–Church St		RS, TP	
Porterville		RS, TP	
Bakersfield–California		RS, TP	
Lebec		RS, TP	

NC – NAAQS Comparison RS – Research TP – Timely/Public

Table 27: SPM – Current Sampling Frequency

Site	Ozone	PM2.5 (continuous)	PM10 (continuous)
Manteca			Hourly
Tracy–Airport		Hourly	Hourly
Clovis–Villa		Hourly	
Tranquillity	Hourly		
Huron		Hourly	
Hanford–Irwin			Hourly
Visalia–Church St		Hourly	
Porterville		Hourly	
Bakersfield–California		Hourly	
Lebec		Hourly	

Hourly = One sample every hour

Table 28: San Joaquin Valley Stations Monitoring Meteorology

Site Name	Wind Speed	Wind Direction	Outdoor Temperature	Relative Humidity	Barometric Pressure	Solar Radiation
Stockton–Hazelton	✓	✓	✓	✓		
Manteca	✓	✓	✓		✓	
Tracy–Airport	✓	✓	✓		✓	
Modesto–14th St	✓	✓	✓		✓	
Turlock	✓	✓	✓		✓	
Merced–Coffee	✓	✓	✓			
Madera–City	✓	✓	✓	✓	✓	✓
Madera–Pump Yard	✓	✓	✓	✓	✓	✓
Tranquillity	✓	✓	✓		✓	
Fresno–Sky Park	✓	✓	✓			
Clovis–Villa	✓	✓	✓	✓	✓	✓
Fresno–Garland	✓	✓	✓	✓	✓	
Fresno–Drummond	✓	✓	✓		✓	
Parlier	✓	✓	✓	✓	✓	✓
Huron					✓	
Hanford–Irwin	✓	✓	✓		✓	
Corcoran–Patterson	✓	✓	✓		✓	
Visalia–Airport	✓	✓	✓	✓	✓	✓
Visalia–Church St	✓	✓	✓		✓	
Sequoia–Lower Kaweah	✓	✓	✓	✓		✓
Sequoia–Ash Mountain	✓	✓	✓	✓		✓
Porterville	✓	✓	✓		✓	
Shafter	✓	✓	✓	✓	✓	✓
Oildale	✓	✓	✓			
Bakersfield–California	✓	✓	✓	✓	✓	✓
Edison	✓	✓	✓			
Bakersfield–Muni	✓	✓	✓	✓	✓	✓
Arvin–Di Giorgio	✓	✓	✓			
Maricopa	✓	✓	✓		✓	
Lebec	✓	✓	✓		✓	

Improvements and Changes to the District's Air Monitoring Network

The Valley air monitoring network is continually being improved. MSA-specific changes are generally described below. Before any action is taken on the planned changes noted in this section, the District will work with ARB and EPA, as appropriate, to address necessary requirements for documentation.

Network Changes during 2013

As outlined in Appendix C of the District's ***2013 Air Monitoring Network Plan***, the PM2.5 and PM10 equipment previously operating at the Bakersfield-Municipal Airport site was moved to essentially the same location as the previous Bakersfield-Golden air monitoring site (approximately 45 meters from previous site). Moving the equipment to this location establishes PM monitoring back at the District's original location in the area before the District was forced to close down the Bakersfield-Golden site due to a potential road expansion. This site is located on the roof of the Kern County Parks and Recreation building and only supports standalone equipment. The current equipment at the site is a filter-based PM10 instrument and a filter based PM2.5 instrument, with both instruments being Federal Reference Methods (FRM). The District received approval from the CARB's Inorganic Laboratory to begin operating the instruments on July 1, 2014.

Planned Improvements and Other Changes Scheduled for 2014 and 2015

Near-Road NO_2 Air Monitoring Sites

The District is required to have four (4) near-road NO_2 air monitoring sites operating by January 1, 2017. These sites are located in the Stockton, Modesto, Fresno, and Bakersfield CBSAs. Preliminary sites have been selected for the Fresno and Bakersfield CBSAs and the District is working with EPA to get final approval. Documentation and workshops were conducted for both of these sites in early 2013. In this network plan, the District is providing siting plan documentation for the Fresno and Bakersfield sites, found in Appendix C and Appendix D, respectively, in order for EPA to grant final approval. The Stockton and Modesto CBSAs site selection and documentation efforts are continuing. The District will meet the public inspection requirements required by 40 CFR 58.10 for the Fresno and Bakersfield sites with the public inspection of the 2014 Air Monitoring Network Plan. The other proposed near-road NO_2 sites will have a public inspection when their siting plans are finalized.

Changes to Manual PM10 Analyzers

The existing manual PM10 monitors have reached the end of their useful lives and need to be replaced. These monitors will be replaced by the Ecotech 3000 high volume air sampler. These manual PM10 monitors have advanced programing functionality, advanced communications including remote control, electronic volumetric flow control, and extremely quiet motors. All existing FRM PM10 monitors will eventually be replaced by these new FRM monitors. However before the District may begin operating these new monitors, the District must have a Standard Operating Procedure (SOP) written and approved by the PQAO. This SOP will contain instructions on how to maintain, operate, and handle data from this instrument.

Termination of Carbon Monoxide Monitoring at Selected Sites

As recommended by EPA to reduce redundancy, to increase efficiency, effectiveness, and to minimize costs, the District is proposing to remove from operation the carbon monoxide (CO) monitors at the Turlock (06-099-0006), Fresno-Sierra Sky Park (06-019-0242), and Fresno-Drummond (06-019-0007) air monitoring sites. This will help the District to “right-size” the monitoring network and reduce costs. In addition, these monitors will soon be in need of replacement which will require extensive funding. Therefore removing a portion of the CO network will help reduce these future costs. The District and ARB will continue to operate the remaining CO monitors in the network. Complete documentation for this change is found in Appendix E.

PAMS Type 3

The District is required to have a Type 3 PAMS site in the Bakersfield MSA. The site was formerly located at the no longer operating Arvin-Bear Mountain site. The District will install Type 3 PAMS equipment when ARB establishes a permanent replacement site in the Arvin area that is capable of housing the PAMS equipment.

Closure of Stockton-Wagner/Holt Site

Currently, the District operates 4 PM10 monitors in the Stockton MSA. Two of the monitors are part of the SLAMS network and the other two are SPMs. The District is proposing to change the classification of the PM10 SPM to SLAMS at the Manteca site (06-077-2010) and close the Stockton-Wagner/Holt site (06-077-3010). This would leave the Stockton MSA with three (3) PM10 monitors, two (2) of which would be SLAMS, still meeting the minimum monitoring requirements for the MSA.

The Stockton Wagner/Holt site consists of a single roof top mounted manual PM10 monitor. This site has the lowest PM10 measurements in the MSA and has not exceeded the PM10 standard since the site was established in 1996. The PM10 monitor at the Manteca air monitoring site is currently a real-time FEM SPM which provides hourly PM10 values. 24-hour average PM10 measurements at Manteca are consistently higher than the measurements at Stockton-Wagner/Holt. Full documentation for this change is found in Appendix F.

Fresno-Sierra Sky Park Site

Vegetation to the south and southwest of the Fresno-Sierra Sky Park site (06-019-0242) has grown to the point of disrupting wind flow from the south, southwest and the southeast. Based on this, the site may no longer be meeting the EPA's siting requirements for SLAMS monitors. The District has made efforts in past years to resolve the siting issues with adjacent owners, and will continue to make additional efforts into the future. In the short term, one potential option for resolving the siting issues could include the submission of a waiver request to EPA to continue to operate and report the data from the monitors, despite the site potentially no longer meeting siting criteria.

Consolidation of the Madera-Pump Site into Madera-City Site

The Madera-Pump site (06-039-0004) was established as a PAMS Type 1 site for the Fresno MSA. The District recently established the Madera-City site (06-039-2010) as a multi-pollutant site and was sited in an area that would represent the maximum exposure of the people living in the City of Madera. Comparisons show that the Madera-City monitor records higher ozone levels than Madera-Pump.

Since the location of the Madera-City air monitoring site is more directly upwind of the Fresno/Clovis area than the Madera-Pump site, the District is considering the relocation of the PAMS equipment (Ozone, NO_2, speciated VOC, etc.) to the Madera-City site and subsequently closing the Madera-Pump site. The necessary documentation will be submitted to EPA at a later date and the District is not requesting EPA to take action on this item in this plan.

Consolidation of Merced-M St Site into Merced-Coffee Site

As mentioned in previous Air Monitoring Network Plans, the District would like to consolidate the Merced-M site (06-047-2510) and the Merced-Coffee site (06-047-0003) into a single new site. While closing these two sites and opening a new site is the long term plan in this MSA, the District will in the interim consolidate Merced-M St site into the Merced-Coffee site. The necessary documentation will be submitted to EPA at a later date and the District is not requesting EPA to take action on this item in this plan.

Installation of a Temporary PM2.5 FRM Monitor at Madera-City Site to Compare Data between FRM and Existing FEM

The District will be temporarily installing a manual PM2.5 filter-based monitor at the Madera City site (06-039-2010) to expressly compare the FRM data with the existing PM2.5 real-time FEM monitor measurements at that site. This site is currently among the highest PM2.5 annual average design value sites for the District, and is among the highest annual average PM2.5 sites in the nation. Due to this, the accuracy of the FEM needs to be assured. The filter-based monitor became operational on July 1, 2014, and it will become the primary monitor while the real-time monitor will become the collocated monitor. After a suitable time period (a year or more), the District will conduct an analysis and evaluate the performance of the FEM and the long term monitoring plans for the site.

All Other Sites

No other changes are proposed at this time to any other sites in the District.

Table 29: Summary of Proposed Changes to the Air Monitoring Network

CBSA: Stockton	**County: San Joaquin**	
Site Name	**Operating Agency**	**Planned Changes**
Stockton–Hazelton	CARB	None
Stockton–Wagner/Holt	SJVAPCD	Close site
Manteca	SJVAPCD	SLAMS PM10
Tracy–Airport	SJVAPCD	None

Table 29: Summary of Proposed Changes to the Air Monitoring Network (continued)

CBSA: Modesto	County: Stanislaus	
Site Name	**Operating Agency**	**Planned Changes**
Modesto–14th St	CARB	None
Turlock	SJVAPCD	PM_{10}, CO
CBSA: Merced	**County: Merced**	
Site Name	**Operating Agency**	**Planned Changes**
Merced–Coffee	SJVAPCD	Move in Merced-M equipment
Merced–M St	SJVAPCD	PM_{10}, Move equipment to Merced-Coffee
CBSA: Madera	**County: Madera**	
Site Name	**Operating Agency**	**Planned Changes**
Madera–City	SJVAPCD	PM_{10}, Move in Madera-Pump equipment
Madera–Pump Yard	SJVAPCD	Move to Madera-City and close site
CBSA: Fresno	**County: Fresno**	
Site Name	**Operating Agency**	**Planned Changes**
Tranquillity	SJVAPCD	None
Fresno–Sky Park	SJVAPCD	CO, SPM
Clovis–Villa	SJVAPCD	PM_{10}
Fresno–Garland	CARB	None
Fresno Near-Road NO_2 Site	SJVAPCD	New
Fresno–Drummond	SJVAPCD	PM_{10}, CO
Fresno–Pacific	SJVAPCD	None
Parlier	SJVAPCD	None
Huron	SJVAPCD	None
CBSA: Hanford–Corcoran	**County: Kings**	
Site Name	**Operating Agency**	**Planned Changes**
Hanford–Irwin	SJVAPCD	PM_{10}
Corcoran–Patterson	SJVAPCD	None

Table 29: Summary of Proposed Changes to the Air Monitoring Network (continued)

CBSA: Visalia–Porterville	County: Tulare	
Site Name	**Operating Agency**	**Planned Changes**
Visalia–Airport	SJVAPCD	None
Visalia–Church St	CARB	None
Sequoia–Lower Kaweah	NPS	None
Sequoia–Ash Mountain	NPS	None
Porterville	SJVAPCD	None
CBSA: Bakersfield	**County: Kern (Valley Portion Only)**	
Site Name	**Operating Agency**	**Planned Changes**
Shafter	Shared	None
Oildale	CARB	None
Arvin–Di Giorgio	CARB	None
Bakersfield–California	CARB	None
Bakersfield-Golden State/M St	SJVAPCD	PM_{10}, $PM_{2.5}$, New Site
Bakersfield–Muni	SJVAPCD	None
Bakersfield–Airport (Planz)	CARB	None
Edison	CARB	None
Maricopa	SJVAPCD	None
Lebec	SJVAPCD	None

Data Submission Requirements

Air Quality and Precision data are required to be submitted to EPA 90 days after the end of the calendar quarter once all air quality assurance checks are completed. Accuracy data is submitted to EPA by CARB as part of their scheduled audits. CARB is responsible for certifying data from all CARB-operated air monitoring sites, as well as weighing and certifying filter-based measurements from District operated sites. The measurements are weighed at CARB's laboratory in Sacramento, CA. For information on CARB's data certification, see CARB's air monitoring network plan at http://www.arb.ca.gov/aqd/amnr/amnr.htm . The District is responsible for certifying data from all District-operated air monitoring sites. The District certified the 2013 data on May 5, 2014.

Acronyms and Abbreviations

AIRS:	Aerometric Information Retrieval System
AQI:	Air Quality Index
AQS:	Air Quality System
CARB:	California Air Resources Board
ARM:	Approved Regional Method
BAM:	Beta Attenuation Monitor
CAA:	Clean Air Act
CBSA:	Core–Based Statistical Area
CCOS:	Central California Ozone Study
CFR:	Code of Federal Regulations
CRPAQS:	California Regional Particulate Air Quality Study
CO:	Carbon Monoxide
CO_2:	Carbon Dioxide
CSA:	Combined statistical area
District:	San Joaquin Valley Air Pollution Control District
EBAM:	Environmental Beta Attenuation Monitor
EPA:	U.S. Environmental Protection Agency
FEM:	Federal Equivalent Method
FIPS:	Federal information processing standard
FR:	Federal Register
FRM:	Federal Reference Method
GHG:	Green House Gases
MSA:	Metropolitan statistical area
NAAQS:	National Ambient Air Quality Standard
NCore:	National Core
NMOC:	Non–Methane Organic Compounds
NO_2:	Nitrogen Dioxide
NOAA:	National Oceanic and Atmospheric Administration
NOx:	Oxides of Nitrogen
NO_y:	Reactive Nitrogen
NPS:	National Park Service
O_3:	Ozone
PAMS:	Photochemical Assessment Monitoring Station
Pb:	Lead
PM:	Particulate Matter
PM2.5:	Particulate Matter 2.5 microns or less in diameter
PM10:	Particulate Matter 10 microns or less in diameter
SLAMS:	State and Local Air Monitoring Station
SJV:	San Joaquin Valley
SJVAPCD:	San Joaquin Valley Air Pollution Control District
SMS:	Smoke Management System
SO_2:	Sulfur Dioxide
SPM:	Special Purpose Monitor
STN:	Speciated Trends Network
TEOM:	Tapered Element Oscillating Microbalance
TSP:	Total Suspended Particles
Valley:	San Joaquin Valley
VOC:	Volatile Organic Compounds

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APPENDIX A:

Air Monitoring Site Descriptions

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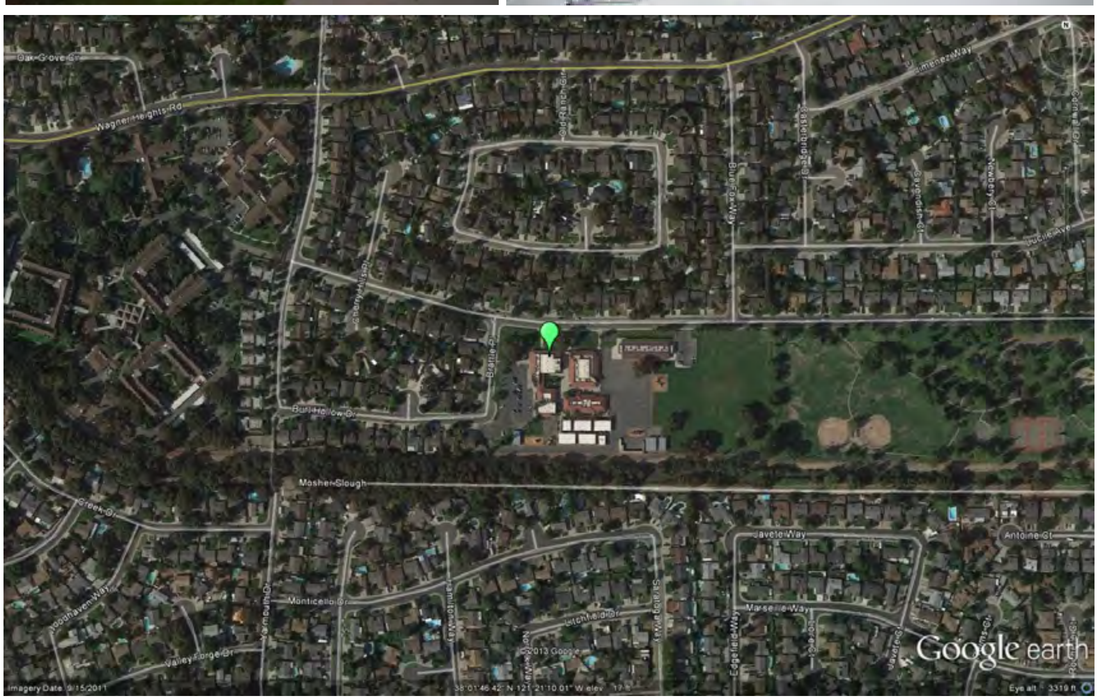
Stockton-Wagner/Holt

The Stockton-Wagner/Holt monitoring site is operated by SJVAPCD and is located in the Stockton, CA metropolitan area. It began operating in October 1996. The purpose of the site is to monitor representative concentrations of PM10 in an urban area.

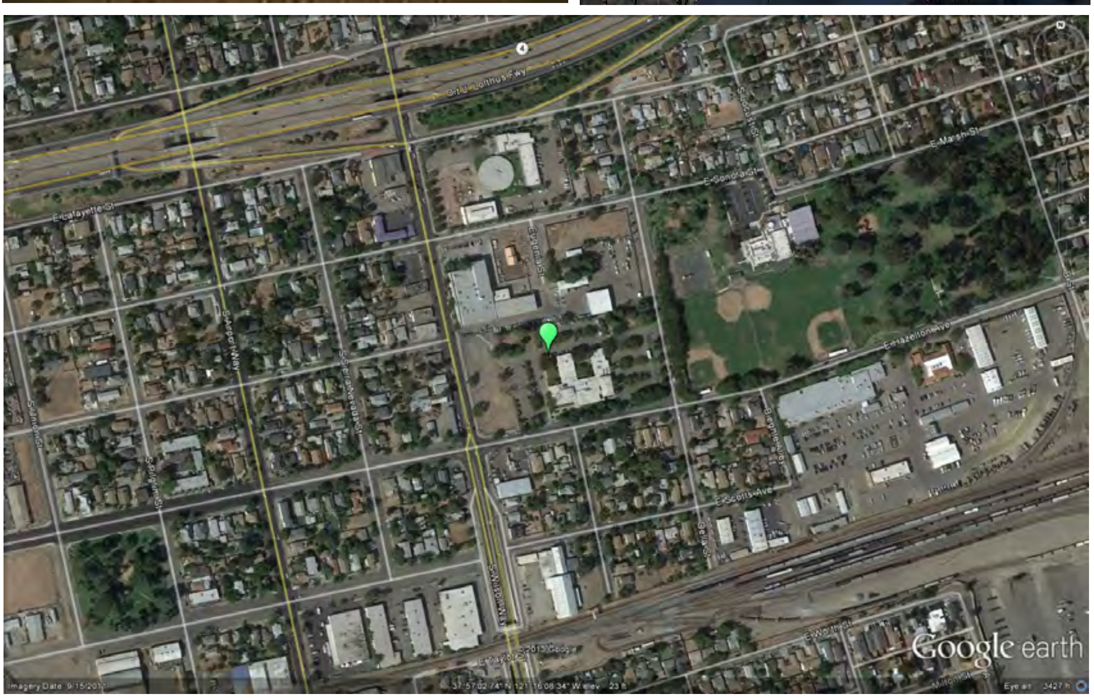
Site name:	Stockton-Wagner/Holt
AQS ID:	060773010
County:	San Joaquin
Street Address:	8778 Brattle Pl., Stockton CA 95209
Geographic Coordinates:	38.0297 N, -121.3530 W
Distance to road (meters):	30 m (north)
Traffic Count (AADT, Year):	500
Ground Cover:	Felt/rubber
Representative Statistical Area (CBSA):	Stockton



Stockton-Hazelton

The Stockton-Hazelton monitoring site is operated by CARB and is located in the Stockton, CA metropolitan area. It began operating in June 1976. The purpose of the site is to monitor representative concentrations of ozone, PM2.5, and PM10 in an urban area. The site also monitors CO, NO_2, toxics, and meteorology.

Site name:	Stockton–Hazelton
AQS ID:	060771002
County:	San Joaquin
Street Address:	1593 E. Hazelton St., Stockton CA 95205
Geographic Coordinates:	37.9507 N, -121.2689 W
Distance to road (meters):	62 m (north)
Traffic Count (AADT, Year):	1,000
Ground Cover:	Asphalt
Representative Statistical Area (CBSA):	Stockton

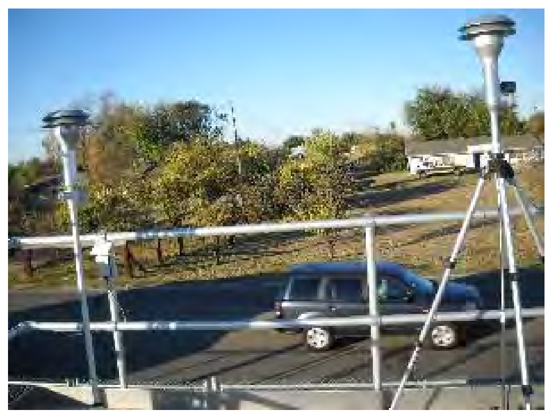


Manteca

The Manteca monitoring site is located in Manteca, CA and operated by SJVAPCD. It became operational in November 2010. The purpose of the site is to monitor transport and representative concentrations of PM2.5 and PM10 from upwind and nearby urban areas. The site also monitors meteorology.

Site name:	Manteca
AQS ID:	060772010
County:	San Joaquin
Street Address:	530 Fishback Rd., Manteca CA 95337
Geographic Coordinates:	37.7933 N, -121.2477 W
Distance to road (meters):	12 m (west)
Traffic Count (AADT, Year):	1,050*, 2008
Ground Cover:	Sidewalk, dirt, grass
Representative Statistical Area (CBSA):	Stockton

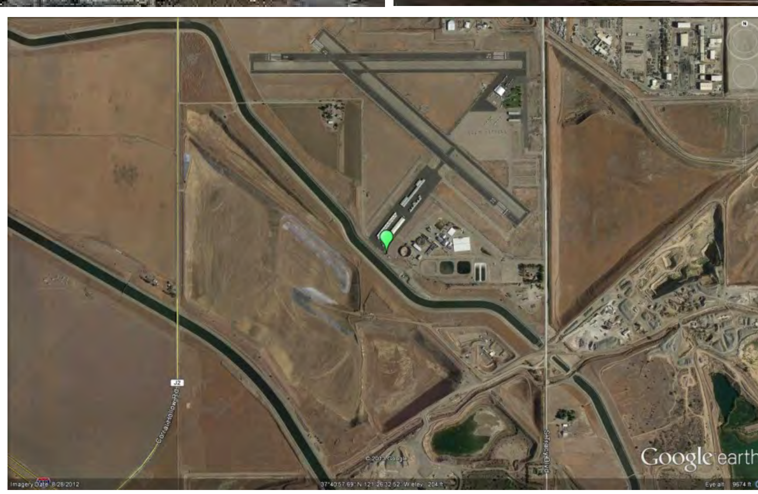
* - Average Daily Traffic. Nearest cross street to the count: Tuscany Dr. Direction from the count to the cross street: South Distance to the nearest cross street: 0.05 miles.



Tracy-Airport

The Tracy-Airport monitoring site, located in Tracy, CA, was part of a settlement from a lawsuit between the District and CARB that took place in 1995. This air monitoring station was installed for the purpose of monitoring transport of air pollution from the Bay Area to the San Joaquin Valley. The site became operational in 1994 and was operated by CARB until June 1995. The District began operating the site in 1996. The site has been moved several times over the years and became operational at its current location in 2006. The site monitors transport of ozone, PM2.5, and PM10 from upwind and nearby urban areas and is not a NAAQS comparison site. The site also monitors NO_2 and meteorology.

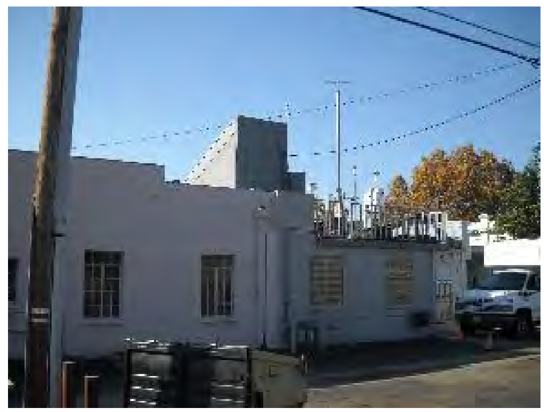
Site name:	Tracy–Airport
AQS ID:	060773005
County:	San Joaquin
Street Address:	5749 S. Tracy Blvd., Tracy CA 95376
Geographic Coordinates:	37.6826 N, -121.4423 W
Distance to road (meters):	700 m (east)
Traffic Count (AADT, Year):	868
Ground Cover:	Gravel
Representative Statistical Area (CBSA):	Stockton

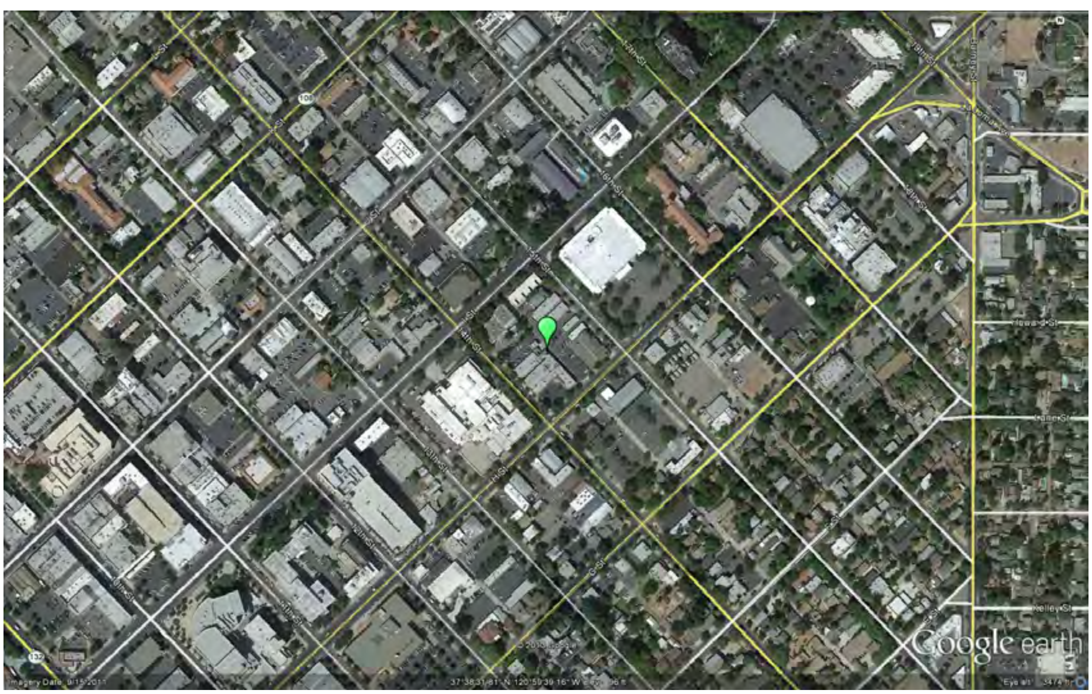


Modesto-14th Street

The Modesto-14th Street monitoring site is operated by CARB and is located in the Modesto, CA metropolitan area. It began operating in January 1981. The purpose of the site is to monitor representative concentrations of hourly ozone, PM2.5, and PM10 in local and upwind urban areas. The site also monitors CO and meteorology.

Site name:	Modesto–14th Street
AQS ID:	060990005
County:	Stanislaus
Street Address:	814 14th Street, Modesto CA 95354
Geographic Coordinates:	37.6421 N, -120.9942 W
Distance to road (meters):	50 m (southwest)
Traffic Count (AADT, Year):	10,000
Ground Cover:	Asphalt
Representative Statistical Area (CBSA):	Modesto

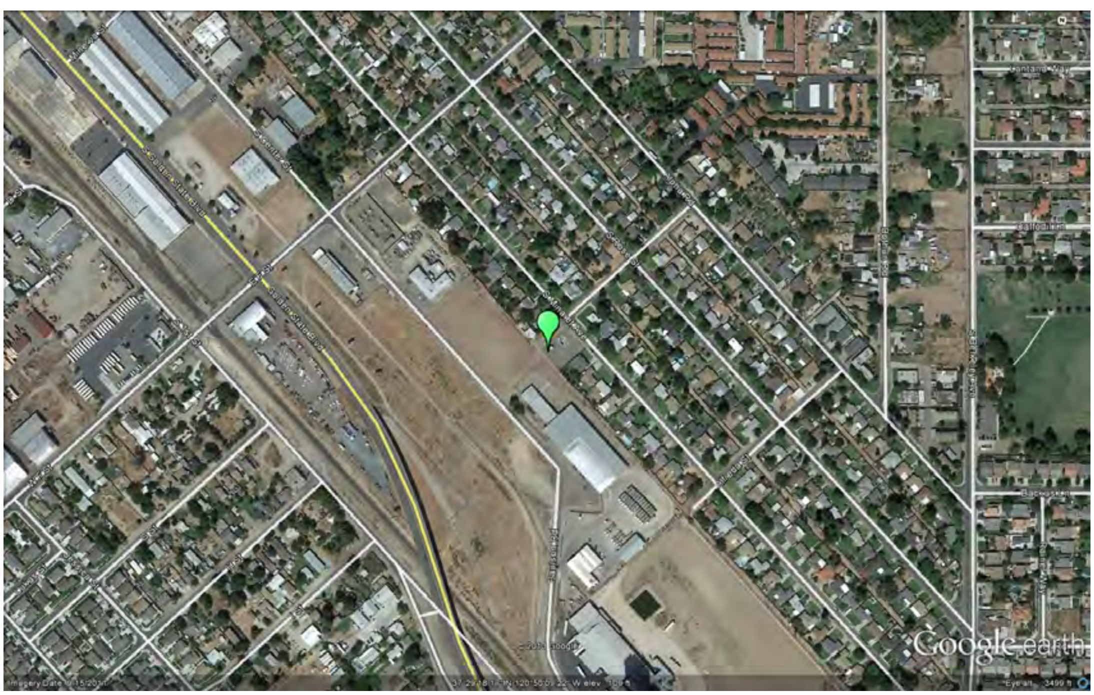




Turlock

The Turlock monitoring site is operated by SJVAPCD and is located in Turlock, CA. It began operating in April 1992. The purpose of the site is to monitor representative concentrations of hourly ozone, PM2.5, and PM10 from upwind urban areas. The site also monitors CO, NO_2, and meteorology.

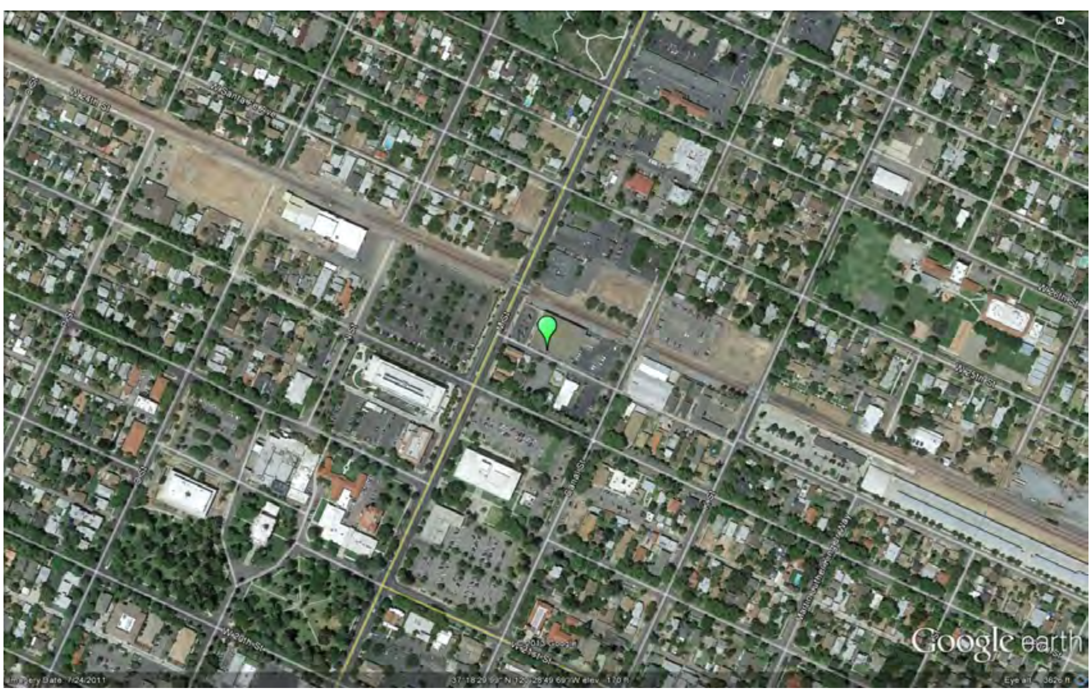
Site name:	Turlock
AQS ID:	060990006
County:	Stanislaus
Street Address:	1034 S. Minaret St., Turlock CA 95380
Geographic Coordinates:	37.4880 N, -120.8360 W
Distance to road (meters):	40 m (northeast)
Traffic Count (AADT, Year):	670
Ground Cover:	Gravel
Representative Statistical Area (CBSA):	Modesto



Merced-M Street

The Merced-M Street monitoring site is operated by SJVAPCD and is located in Merced, CA. It began operating in April 1999. The purpose of the site is to monitor representative concentrations of PM2.5 and PM10 responses from upwind urban areas.

Site name:	Merced—M Street
AQS ID:	060472510
County:	Merced
Street Address:	2334 M Street, Merced CA 95340
Geographic Coordinates:	37.3086 N, -120.4800 W
Distance to road (meters):	55 m (northwest)
Traffic Count (AADT, Year):	22,400
Ground Cover:	Gravel
Representative Statistical Area (CBSA):	Merced



Merced-Coffee

The Merced-Coffee monitoring site is operated by SJVAPCD and is located in the Merced, CA. It began operating in October 1991. The purpose of the site is to monitor representative concentrations of hourly ozone responses from upwind urban areas. The site also monitors PM2.5, NO_2, and meteorology.

Site name:	Merced–Coffee
AQS ID:	060470003
County:	Merced
Street Address:	385 S. Coffee St., Merced CA 95340
Geographic Coordinates:	37.2816 N, -120.4340 W
Distance to road (meters):	15 m (east)
Traffic Count (AADT, Year):	300
Ground Cover:	Dirt, vegetated
Representative Statistical Area (CBSA):	Merced

Madera-City

The Madera-City monitoring site is operated by the SJVAPCD and is located in the city of Madera. It began operating in June 2010. The purpose of the site is to monitor ozone, PM2.5, PM10, and meteorology.

Site name:	Madera–City
AQS ID:	060392010
County:	Madera
Street Address:	28261 Avenue 14, Madera CA 93638
Geographic Coordinates:	36.9532 N, -120.0342 W
Distance to road (meters):	70 m (south)
Traffic Count (AADT, Year):	1,004*, 2012
Ground Cover:	Asphalt
Representative Statistical Area (CBSA):	Madera

*** -** Current Year Estimate. Nearest cross street to the count: Rd 28. Direction from the count to the cross street: West. Distance to the nearest cross street: 0.04 miles.

Madera-Pump Yard

The Madera-Pump Yard Street monitoring site is operated by SJVAPCD and is located in southern Madera County. It began operating in August 1997. This site was established as a PAMS Type 1 site, located in an area upwind of Fresno and not to be influenced by upwind or local ozone precursor emissions. In addition to ozone, this site also monitors CO, total- and speciated-VOC, and meteorology for the PAMS program.

Site name:	Madera–Pump Yard
AQS ID:	060390004
County:	Madera
Street Address:	Ave. 8 and Road 29 1/2, Madera CA 93637
Geographic Coordinates:	36.8672 N, -120.0100 W
Distance to road (meters):	20 m (west)
Traffic Count (AADT, Year):	100
Ground Cover:	Dirt, paved
Representative Statistical Area (CBSA):	Madera

Fresno-Sky Park

The Fresno-Sky Park monitoring site is operated by SJVAPCD and is located in the Fresno, CA metropolitan area. It began operating in July 1986. The purpose of the site is to monitor representative concentrations of hourly ozone responses in an urban area. In addition to ozone, the site also monitors CO, NO_2, and meteorology.

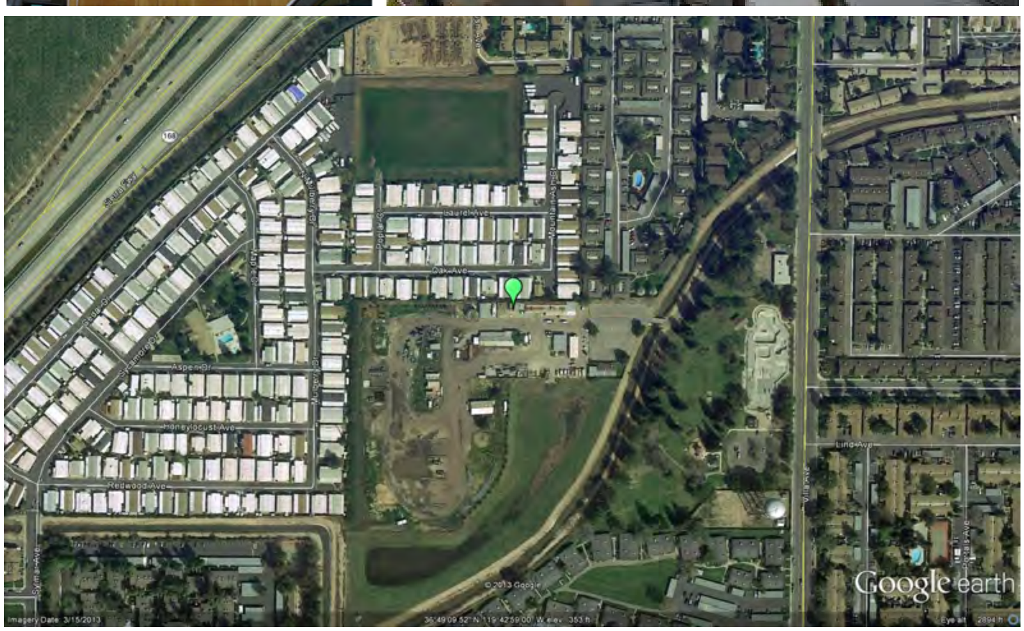
Site name:	Fresno–Sky Park
AQS ID:	060190242
County:	Fresno
Street Address:	4508 Chennault Ave, Fresno CA 93722
Geographic Coordinates:	36.8405 N, -119.8740 W
Distance to road (meters):	12 m (west)
Traffic Count (AADT, Year):	100
Ground Cover:	Gravel
Representative Statistical Area (CBSA):	Fresno

Clovis-Villa

The Clovis-Villa monitoring site is operated by SJVAPCD and is located in the northeastern portion of the Fresno, CA metropolitan area. It began operating in September 1990. This site is a PAMS Type 2 site, a site intended to measure maximum ozone precursor emissions. In addition to ozone, the site also monitors PM2.5, PM10, PM2.5, CO, NO_2, total- and speciated-VOC, and meteorology for the PAMS program.

Site name:	Clovis–Villa
AQS ID:	060195001
County:	Fresno
Street Address:	908 N. Villa Ave., Clovis CA 93612
Geographic Coordinates:	36.8194 N, -119.7160 W
Distance to road (meters):	260 m (east)
Traffic Count (AADT, Year):	4,876
Ground Cover:	Paved
Representative Statistical Area (CBSA):	Fresno





Fresno-Garland

The Fresno-Garland monitoring site is a National Core (NCore) site operated by CARB and is located in the Fresno, CA metropolitan area. The purpose of the site is to monitor representative concentrations of hourly ozone, PM2.5, and PM10 in an urban area. The site also monitors CO, NO_2, NOy, SO_2, Lead, NMH, toxics, and meteorology.

Site name:	Fresno–Garland
AQS ID:	060190011
County:	Fresno
Street Address:	3727 N. First St., Ste.104, Fresno CA 93726
Geographic Coordinates:	36.7853 N, -119.7732 W
Distance to road (meters):	30 m (south)
Traffic Count (AADT, Year):	3,000
Ground Cover:	Gravel covered tar paper with wooden deck walkways
Representative Statistical Area (CBSA):	Fresno

Fresno-Pacific

The Fresno-Pacific monitoring site is operated by SJVAPCD and is located in the Fresno, CA metropolitan area. It began operating in January 2000. The purpose of the site is to monitor representative PM2.5 concentrations in an urban area.

Site name:	Fresno–Pacific
AQS ID:	060195025
County:	Fresno
Street Address:	1716 Winery, Fresno CA 93726
Geographic Coordinates:	36.7263 N, -119.7330 W
Distance to road (meters):	40 m (east)
Traffic Count (AADT, Year):	2,539
Ground Cover:	Roof material
Representative Statistical Area (CBSA):	Fresno

Fresno-Drummond

The Fresno-Drummond monitoring site is operated by SJVAPCD and is located in the Fresno, CA metropolitan area. It began operating in July 1984. The purpose of the site is to monitor representative concentrations of hourly ozone responses in an urban area. In addition to ozone, the site also monitors PM10, CO, NO_2, and meteorology.

Site name:	Fresno–Drummond
AQS ID:	060190007
County:	Fresno
Street Address:	4706 E. Drummond Street, Fresno CA 93725
Geographic Coordinates:	36.7055 N, -119.7410 W
Distance to road (meters):	50 m (north)
Traffic Count (AADT, Year):	600
Ground Cover:	Paved
Representative Statistical Area (CBSA):	Fresno

Tranquillity

The Tranquillity monitoring site is located in western Fresno County. It began operating in November 2009 and is operated by the SVAPCD. The site monitors representative background and rural pollutant concentrations of ozone and PM2.5 for research purposes and is not a NAAQS comparison site. The site also monitors meteorology.

Site name:	Tranquillity
AQS ID:	060192009
County:	Fresno
Street Address:	32650 W. Adams, Tranquillity CA 93668
Geographic Coordinates:	36.6008 N, -120.3822 W
Distance to road (meters):	200 m (south)
Traffic Count (AADT, Year):	100
Ground Cover:	Gravel/vegetation
Representative Statistical Area (CBSA):	Fresno

Parlier

The Parlier monitoring site is operated by SJVAPCD and is located 20 miles southeast of the Fresno, CA metropolitan area. It began operating in March 1983. The purpose of the site, as a PAMS Type 3 site, is to monitor maximum ozone concentrations and ozone responses from upwind urban areas. The site also monitors NO_2, total- and speciated-VOC, and meteorology for the PAMS program.

Site name:	Parlier
AQS ID:	060194001
County:	Fresno
Street Address:	9240 S. Riverbend Ave., Parlier CA 93648
Geographic Coordinates:	36.5972 N, -119.5040 W
Distance to road (meters):	100 m (east)
Traffic Count (AADT, Year):	8,700
Ground Cover:	Dirt/vegetated
Representative Statistical Area (CBSA):	Fresno

Huron

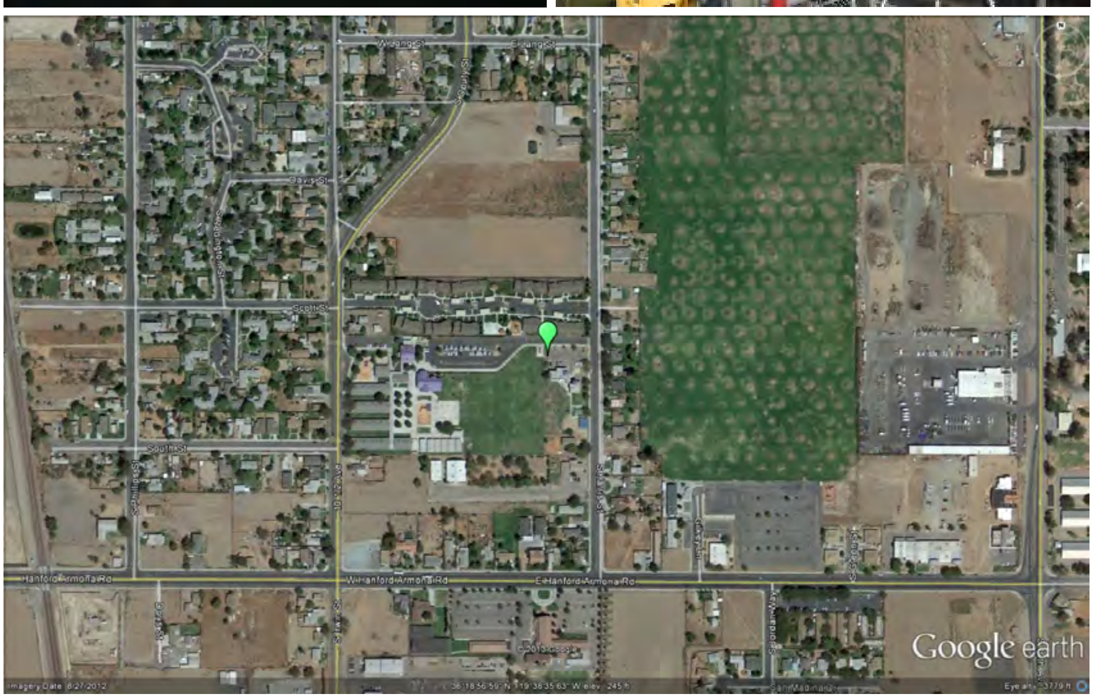
Huron, CA is located in southwestern Fresno County, and is about 40 miles southwest of Fresno, CA, with the coastal mountain range just to the west. North-south air flow is virtually unobstructed. This monitoring site was established in January 2007 in order to comply with Assembly Bill (AB) 841. Currently, this site monitors PM2.5 (Non-FEM, SPM non-regulatory), as required by AB 841, and also monitors meteorology.

Site name:	Huron
AQS ID:	060192008
County:	Fresno
Street Address:	16875 4th St., Huron, CA 93234
Geographic Coordinates:	36.2363 N, -119.7656 W
Distance to road (meters):	100 m (north)
Traffic Count (AADT, Year):	1,205
Ground Cover:	Paved/vegetated
Representative Statistical Area (CBSA):	Fresno

Hanford-Irwin

The Hanford-Irwin monitoring site is operated by SJVAPCD and is located 51 miles south of the Fresno, CA metropolitan area. The site began operating in October 1993. The purpose of the site is to monitor representative concentrations of hourly ozone, PM2.5, PM10, and NO_2 responses from upwind and nearby urban areas. The site also monitors meteorology.

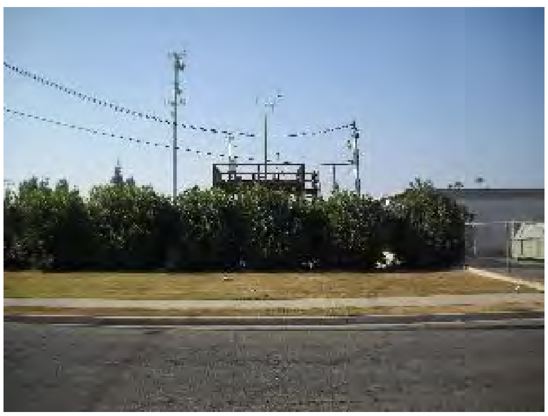
Site name:	Hanford–Irwin
AQS ID:	060311004
County:	Kings
Street Address:	807 S Irwin St, Hanford CA 93230
Geographic Coordinates:	36.3147 N, -119.6440 W
Distance to road (meters):	60 m (east)
Traffic Count (AADT, Year):	5,000
Ground Cover:	Rubber/plastic roof material
Representative Statistical Area (CBSA):	Hanford – Corcoran

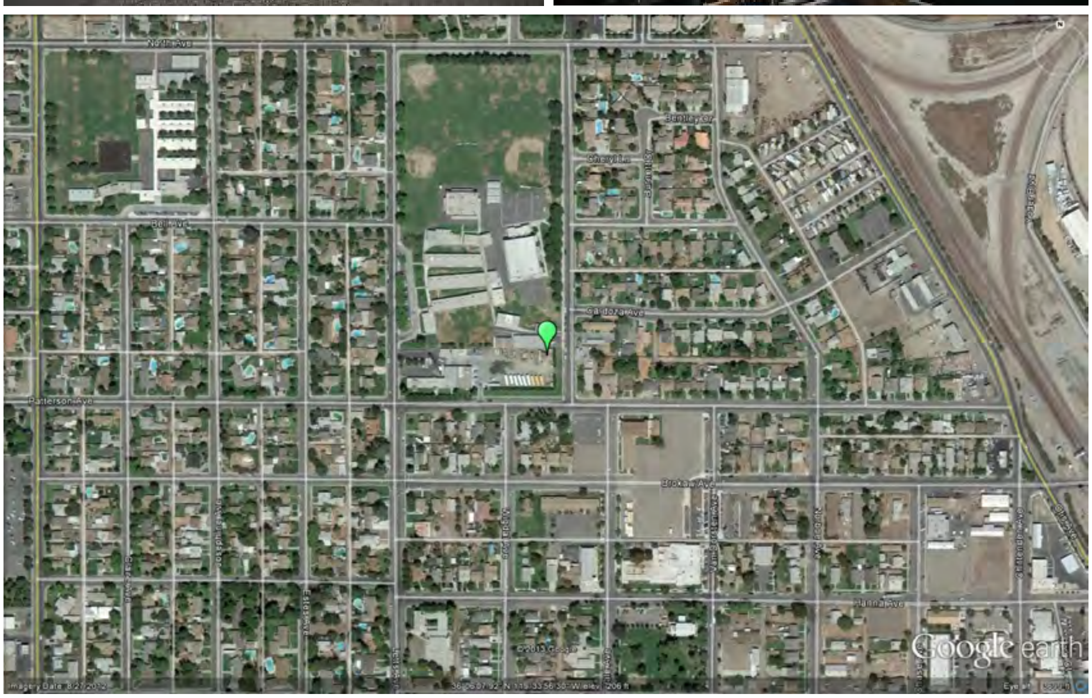


Corcoran-Patterson

The Corcoran-Patterson monitoring site is operated by SJVAPCD and is located 67 miles south of the Fresno, CA metropolitan area. It began operating in October 1996. The site measures representative concentrations of PM10 and PM2.5. This site also monitors meteorology.

Site name:	Corcoran–Patterson
AQS ID:	060310004
County:	Kings
Street Address:	1520 Patterson Ave, Corcoran CA 93212
Geographic Coordinates:	36.1022 N, -119.5660 W
Distance to road (meters):	30 m (east)
Traffic Count (AADT, Year):	1,035
Ground Cover:	Gravel
Representative Statistical Area (CBSA):	Hanford – Corcoran



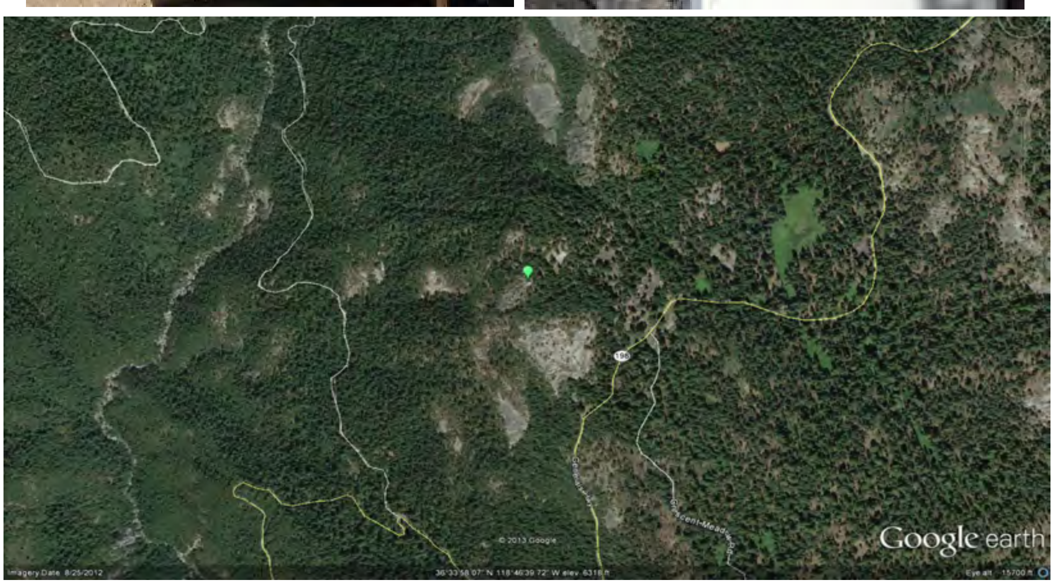


Sequoia-Lower Kaweah

The Lower Kaweah monitoring station is operated by Sequoia National Forest and is located at the southern entrance of Sequoia National Park at a 6,200-foot elevation. It began operating in April 1987. The site demonstrates the hourly ozone concentrations in a rural area. The site also monitors meteorology.

Site name:	Sequoia–Lower Kaweah
AQS ID:	061070006
County:	Tulare
Street Address:	Giant Forest, Sequoia National Park, 47050 Generals Highway, Three Rivers, CA 93271
Geographic Coordinates:	36.5661 N, -118.7776 W
Distance to road (meters):	380 m (southeast)
Traffic Count (AADT, Year):	1,358*, 2012
Ground Cover:	Dirt
Representative Statistical Area (CBSA):	Visalia – Porterville

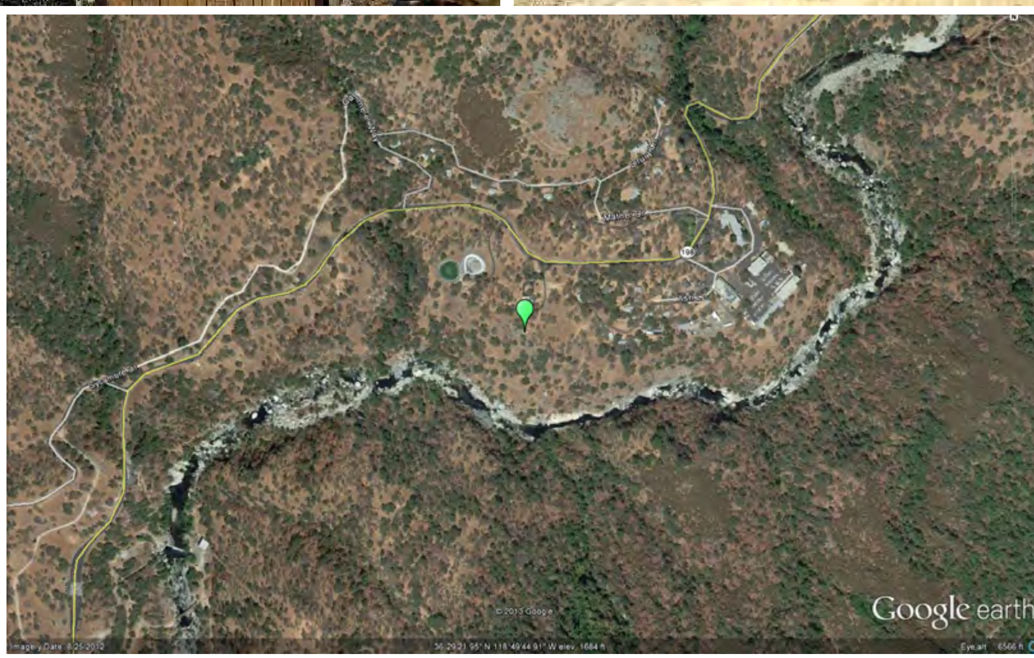
* - Closest to Sequoia–Lower Kaweah site. Traffic Counts Sierra Dr /165 (36.480039°, -118.838407°) 46000 Sierra Dr, Three Rivers, CA 93271. Nearest cross street to the count: Generals Hwy Direction from the count to the cross street: North Distance to the nearest cross street: 0.3 miles.



Sequoia-Ash Mountain

The Ash Mountain monitoring station is operated by Sequoia National Forest and is located at the southern entrance of Sequoia National Park at a 1,500-foot elevation. It originally began operating in 1985, though the site has been relocated several times over the years. The site demonstrates the hourly ozone concentrations in the foothills. The site also monitors PM2.5 and meteorology.

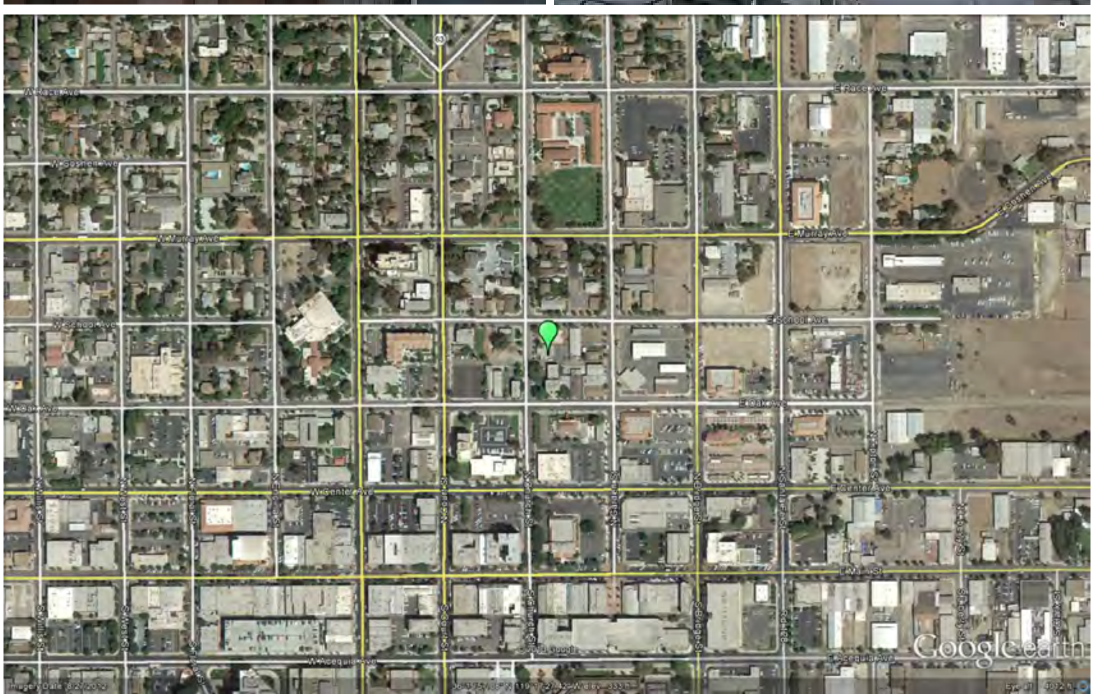
Site name:	Sequoia–Ash Mountain
AQS ID:	061070009
County:	Tulare
Street Address:	Ash Mountain, Sequoia National Park 47050 Generals Hwy, Three Rivers, CA 93271
Geographic Coordinates:	36.4894 N, -118.8290 W
Distance to road (meters):	120 m (north)
Traffic Count (AADT, Year):	1,000
Ground Cover:	Dirt
Representative Statistical Area (CBSA):	Visalia – Porterville



Visalia-Church

The Visalia-Church monitoring site is operated by CARB. It began operating in July 1979. The purpose of the site is to monitor representative concentrations of hourly ozone, PM2.5, and PM10 from upwind and nearby urban areas. The site also monitors NO_2 and meteorology.

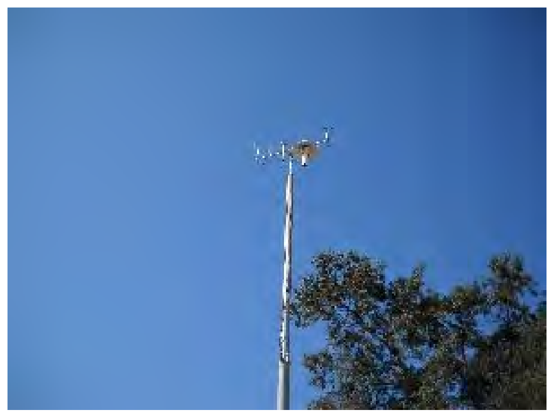
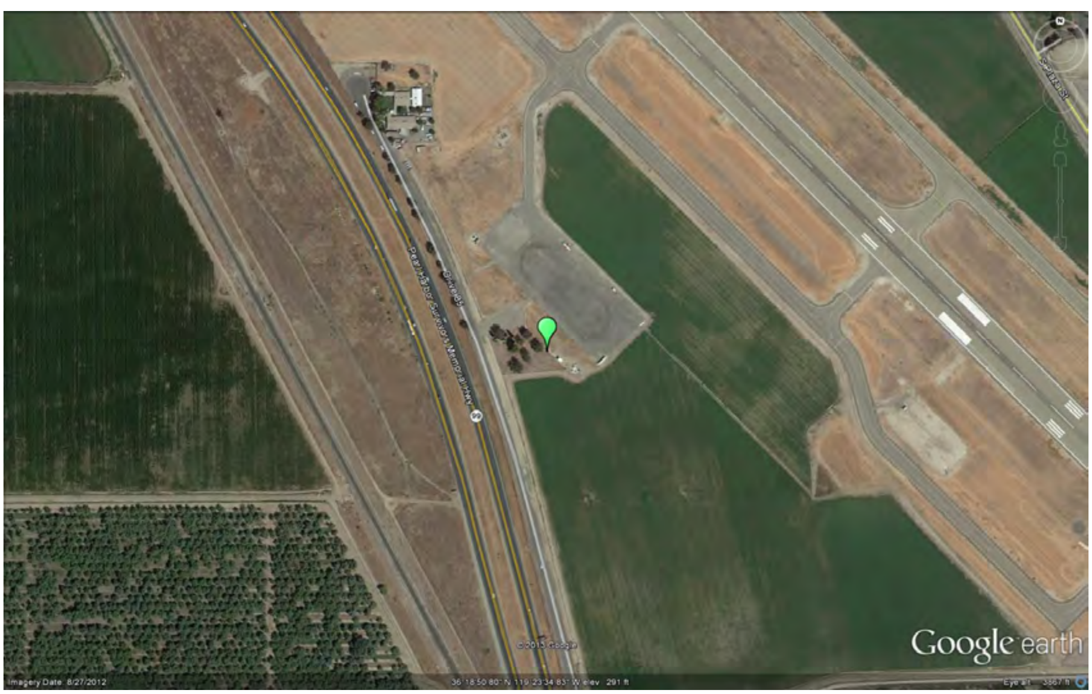
Site name:	Visalia—Church
AQS ID:	061072002
County:	Tulare
Street Address:	310 N. Church St., Visalia CA 93291
Geographic Coordinates:	36.3325 N, -119.2909 W
Distance to road (meters):	25 m (west)
Traffic Count (AADT, Year):	10,000
Ground Cover:	Asphalt
Representative Statistical Area (CBSA):	Visalia – Porterville



Visalia-Airport

The Visalia-Airport monitoring site is operated by SJVAPCD and serves as a wind profiler monitoring surface wind speed and wind direction. It began reporting official meteorological data in January 2001. It also monitors air temperature, and relative humidity at the surface.

Site name:	Visalia–Airport
AQS ID:	061073000
County:	Tulare
Street Address:	9501 West Airport Drive, Visalia, CA 93277
Geographic Coordinates:	39.3266 N, -119.3984 W
Distance to road (meters):	100 m (west)
Traffic Count (AADT, Year):	32,000
Ground Cover:	Vegetated
Representative Statistical Area (CBSA):	Visalia – Porterville

Porterville

The Porterville air monitoring site became operational in March 2010 and is operated by the SJVAPCD. The purpose of this site is to monitor ozone, PM2.5, and meteorology, and represent air quality levels present near the foothills of the southeastern portion of the Valley.

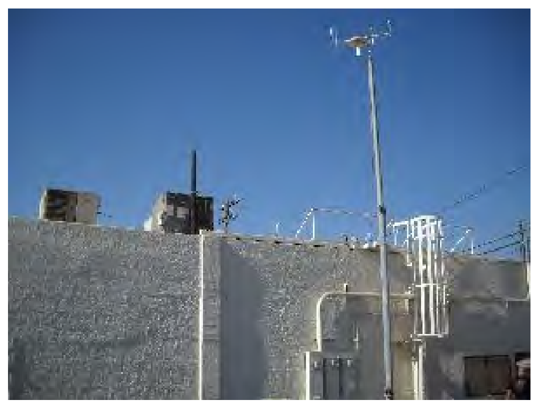
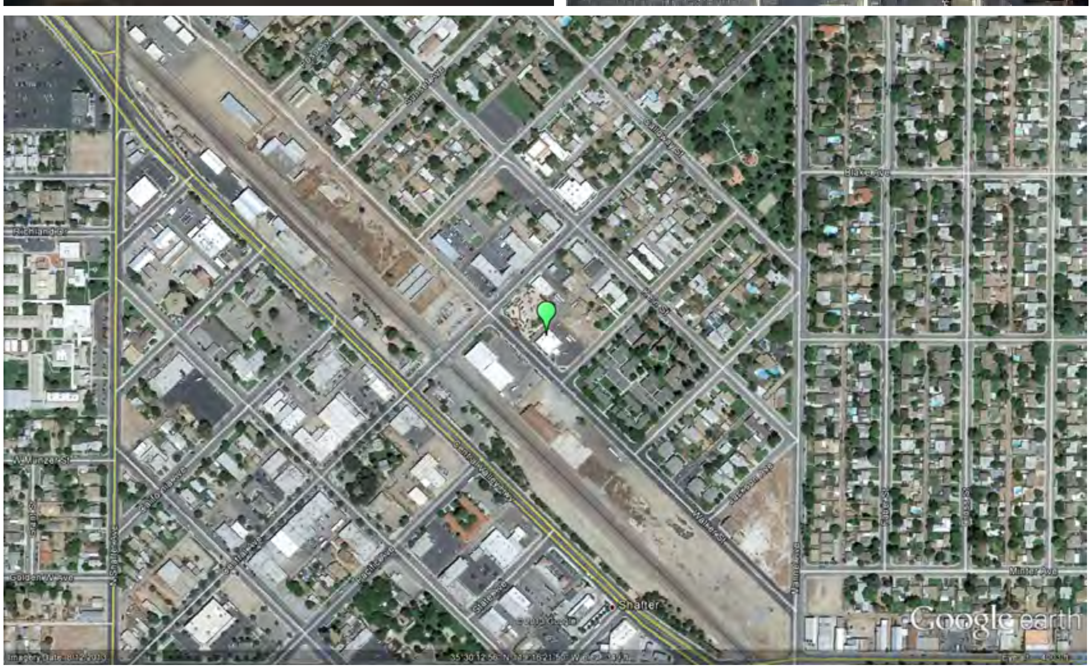
Site name:	Porterville
AQS ID:	061072010
County:	Tulare
Street Address:	1839 S. Newcomb St., Porterville CA 93257
Geographic Coordinates:	36.0310 N, -119.0550 W
Distance to road (meters):	100 m (south)
Traffic Count (AADT, Year):	1,010*, 2007
Ground Cover:	Paved
Representative Statistical Area (CBSA):	Visalia-Porterville

* - Closest to Porterville site. Traffic Counts Ave 136 (36.036714°, -119.042117°). Nearest cross street to the count: S 236 Prospect Rd. Direction from the count to the cross street: West Distance to the nearest cross street: 0.12 miles.

Shafter

The Shafter monitoring site is a shared site operated by CARB and the SJVAPCD and is located 18 miles northwest of the Bakersfield, CA metropolitan area. It began operating in January 1989. This site was established as a PAMS Type 1 site, located in an area upwind of Bakersfield and not to be influenced by upwind or local ozone precursor emissions. In addition to ozone, the site also monitors NO_2, total- and speciated-VOC and meteorology for the PAMS program.

Site name:	Shafter
AQS ID:	060296001
County:	Kern
Street Address:	578 Walker St, Shafter CA 93263
Geographic Coordinates:	35.5034 N, -119.2726 W
Distance to road (meters):	10 m (southwest)
Traffic Count (AADT, Year):	1,200
Ground Cover:	Asphalt
Representative Statistical Area (CBSA):	Bakersfield

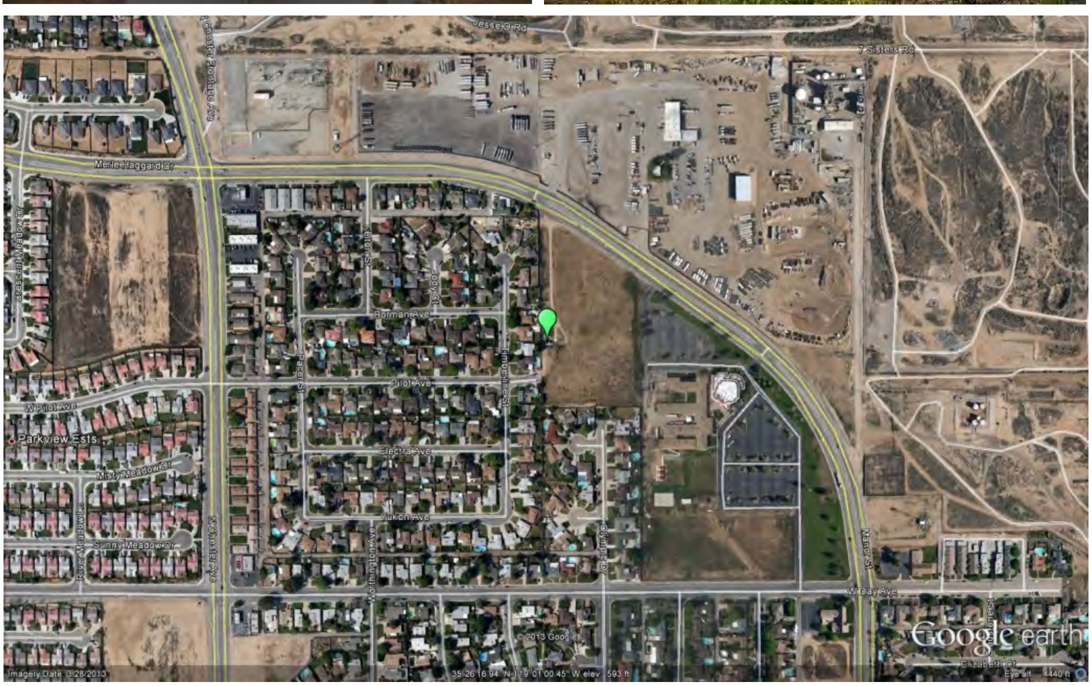




Oildale

The Oildale monitoring site is operated by CARB and is located 6 miles north of Bakersfield, CA within the metropolitan area. It began operating in January 1980. The purpose of the site is to monitor representative concentrations of hourly ozone concentrations, and PM10 every 6 days in an urban area. The site also monitors meteorology.

Site name:	Oildale
AQS ID:	060290232
County:	Kern
Street Address:	3311 Manor St, Oildale CA 93308
Geographic Coordinates:	35.4380 N, -119.0167 W
Distance to road (meters):	150 m (northwest)
Traffic Count (AADT, Year):	10,000
Ground Cover:	Dirt
Representative Statistical Area (CBSA):	Bakersfield

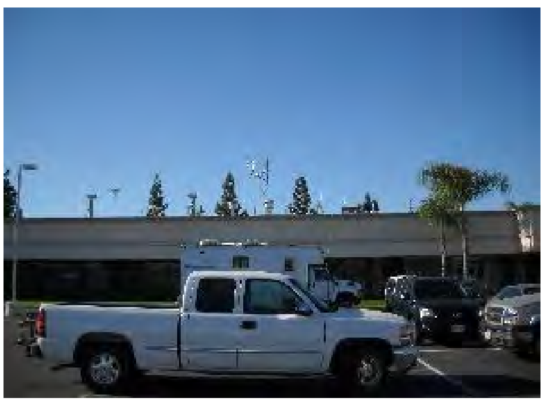


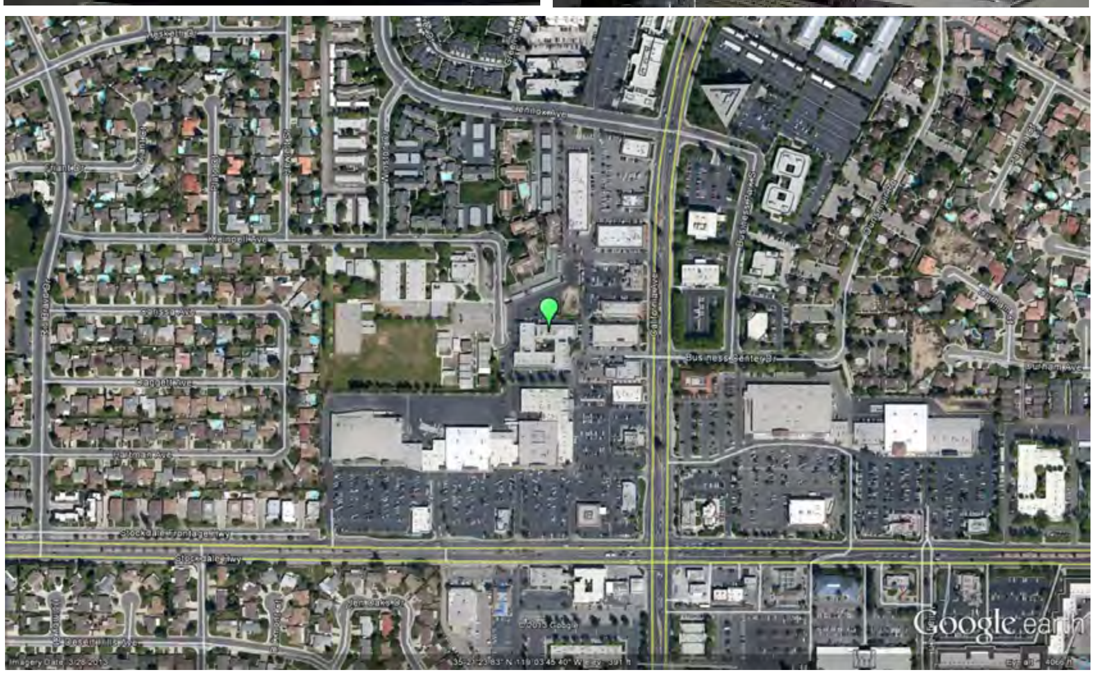


Bakersfield-California

The Bakersfield-California monitoring site is operated by CARB and is located in the Bakersfield, CA metropolitan area. It began operating in March 1994. The purpose of the site is to monitor representative concentrations of hourly and daily ozone, PM10, and PM2.5 in an urban area. The Bakersfield-California site also monitors NO_2, lead, and meteorology.

Site name:	Bakersfield–California
AQS ID:	060290014
County:	Kern
Street Address:	5558 California Ave., Bakersfield CA 93309
Geographic Coordinates:	35.3566 N, -119.0626 W
Distance to road (meters):	300 m (south)
Traffic Count (AADT, Year):	10,000
Ground Cover:	Asphalt
Representative Statistical Area (CBSA):	Bakersfield





Bakersfield-Muni

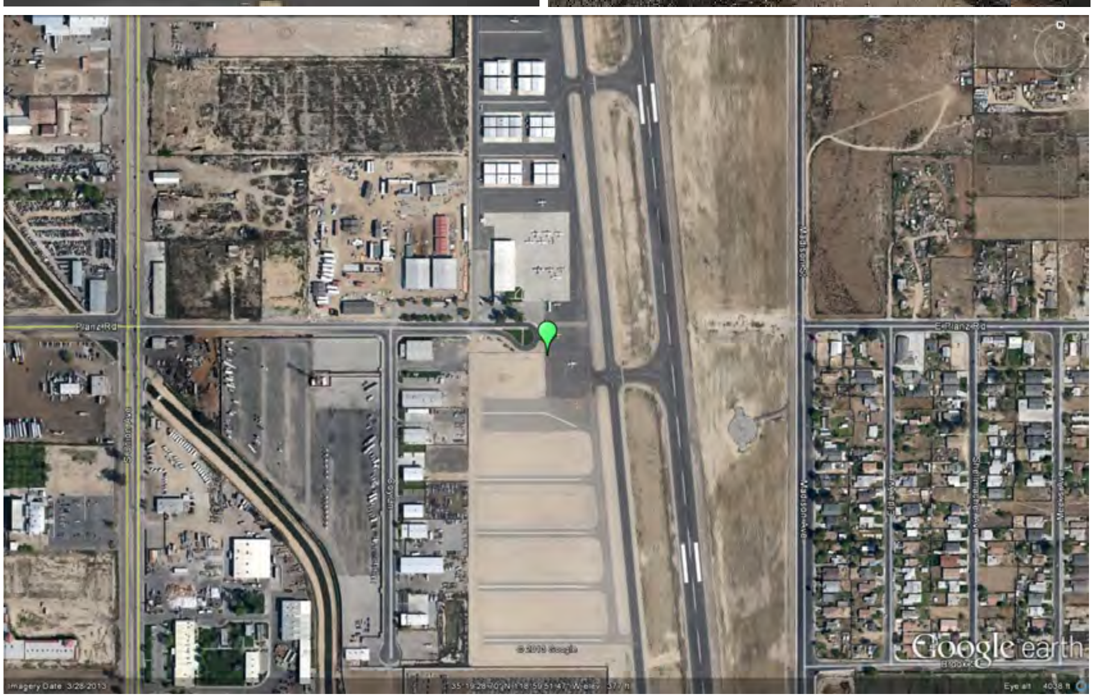
The Bakersfield-Muni site is located in the Bakersfield, CA metropolitan area and is operated by the SJVAPCD. It became operational in 2012. The site serves as a PAMS Type 2 site, and its purpose is to measure maximum ozone precursor emissions. The site monitors ozone, CO, NO_2, total- and speciated-VOC, and meteorology for the PAMS program.

Site name:	Bakersfield-Muni
AQS ID:	060292012
County:	Kern
Street Address:	2000 South Union Ave., Bakersfield, CA 93307
Geographic Coordinates:	35.3313 N, -119.0000 W
Distance to road (meters):	280 m (west)
Traffic Count (AADT, Year):	1,000
Ground Cover:	Paved
Representative Statistical Area (CBSA):	Bakersfield

Bakersfield-Airport (Planz)

The Bakersfield-Planz monitoring site is located in the Bakersfield, CA metropolitan area and is operated by CARB. It began operating in September 2000. The purpose of the site is to monitor representative concentrations of PM2.5 from upwind and nearby urban areas.

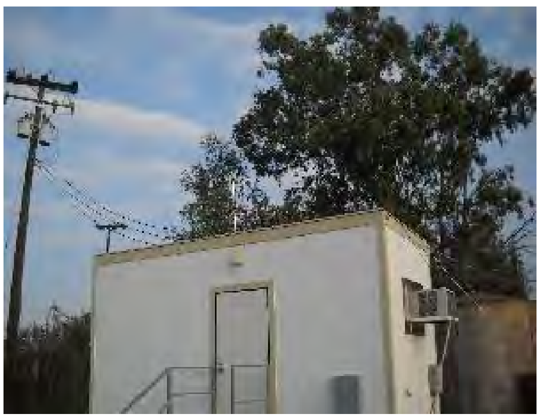
Site name:	Bakersfield–Airport (Planz)
AQS ID:	060290016
County:	Kern
Street Address:	401 E. Planz Rd., Bakersfield CA 93307
Geographic Coordinates:	35.3246 N, -118.9976 W
Distance to road (meters):	500 m (west)
Traffic Count (AADT, Year):	1,000
Ground Cover:	Asphalt
Representative Statistical Area (CBSA):	Bakersfield

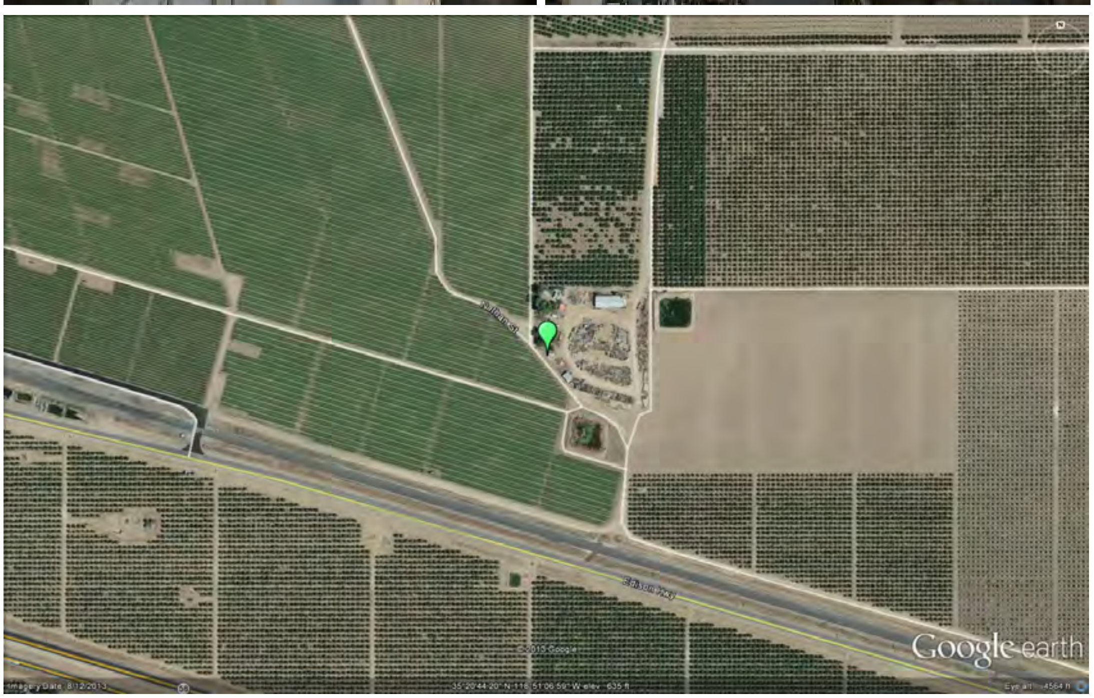


Edison

The Edison monitoring site is operated by CARB and is located 9 miles east of the Bakersfield, CA metropolitan area. It began operating in January 1980. The purpose of the site is to monitor representative concentrations of hourly ozone from upwind and nearby urban areas. The site also monitors NO_2 and meteorology.

Site name:	Edison
AQS ID:	060290007
County:	Kern
Street Address:	Johnson Farm-Shed Rd, Edison CA 93320
Geographic Coordinates:	35.3456 N, -118.8518 W
Distance to road (meters):	450 m (south)
Traffic Count (AADT, Year):	50,000
Ground Cover:	Dirt
Representative Statistical Area (CBSA):	Bakersfield

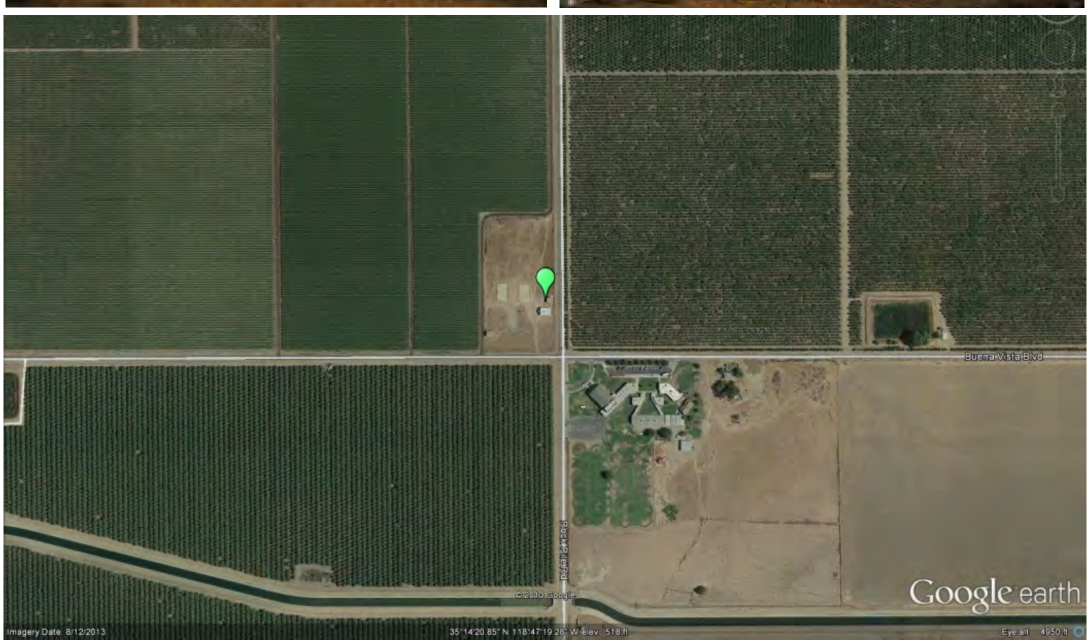




Arvin-Di Giorgio

The Di Giorgio site is located 18 miles southeast of the Bakersfield, CA metropolitan area. The purpose of this site will be to serve as a PAMS Type 3 site which will monitor maximum ozone concentrations and transport from upwind urban areas. PAMS equipment for the Type 3 site at the new Arvin–Di Giorgio site will be installed when space becomes available. The site currently monitors ozone and meteorology.

Site name:	Arvin–Di Giorgio
AQS ID:	060295002
County:	Kern
Street Address:	19405 Buena Vista Blvd, Arvin CA 93203
Geographic Coordinates:	35.2391 N, -118.7886 W
Distance to road (meters):	10 m (east)
Traffic Count (AADT, Year):	500
Ground Cover:	Dirt
Representative Statistical Area (CBSA):	Bakersfield

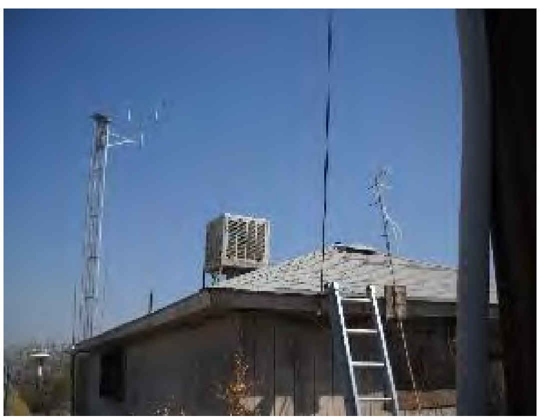


Maricopa

The Maricopa monitoring site is operated by the SJVAPCD and is located 45 miles southwest of the Bakersfield, CA metropolitan area. It began operating in July 1987. The purpose of the site is to monitor representative concentrations of hourly ozone in a rural area. The site also monitors meteorology.

Site name:	Maricopa
AQS ID:	060290008
County:	Kern
Street Address:	755 Stanislaus St., Maricopa CA 93352
Geographic Coordinates:	35.0515 N, -119.4026 W
Distance to road (meters):	500 m (northwest)
Traffic Count (AADT, Year):	3,977*, 2012
Ground Cover:	Dirt
Representative Statistical Area (CBSA):	Bakersfield

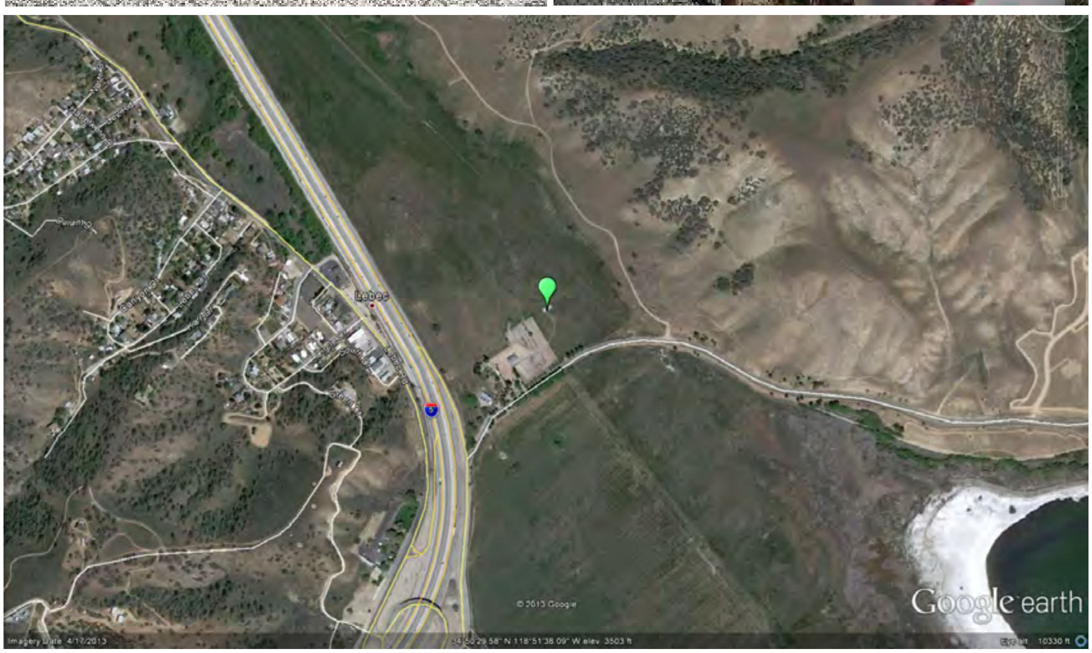
*** -** No data for 755 Stanislaus St., Maricopa CA 93352. The closest street with data is Route 166/33. Traffic Counts Klipstein St (Route 166/33). Nearest cross street to the count: Alameda St. Direction from the count to the cross street: Northeast. Distance to the nearest cross street: 0.03 miles.



Lebec

The Lebec monitoring station was initiated by the Tejon Ranch in 2004, and the District assumed responsibility for this site as of January 2009. This site allows the District to better understand pollution impacts in the southern San Emigdio Mountains. The site measures PM2.5 and meteorological parameters. This site is used for general residential wood-burning declarations for the Greater Frazier Park Area.

Site name:	Lebec
AQS ID:	060292009
County:	Kern
Street Address:	1277 Beartrap Road, Lebec, CA 93243
Geographic Coordinates:	34.8415 N, -118.8610 W
Distance to road (meters):	300 m (west)
Traffic Count (AADT, Year):	69,000
Ground Cover:	Dirt, vegetated
Representative Statistical Area (CBSA):	Bakersfield

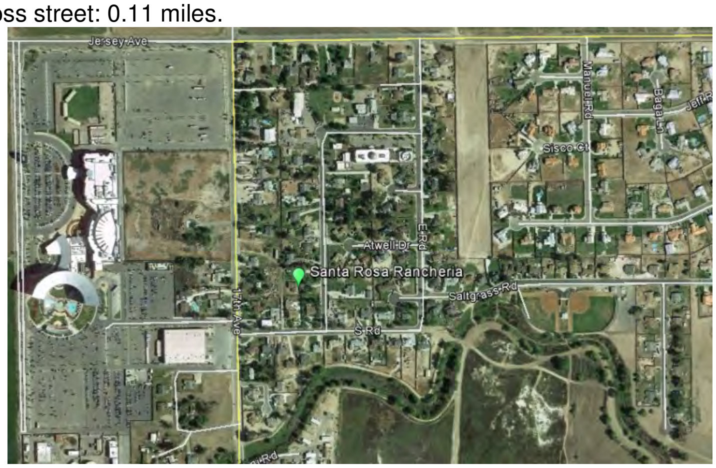
Tribal Sites

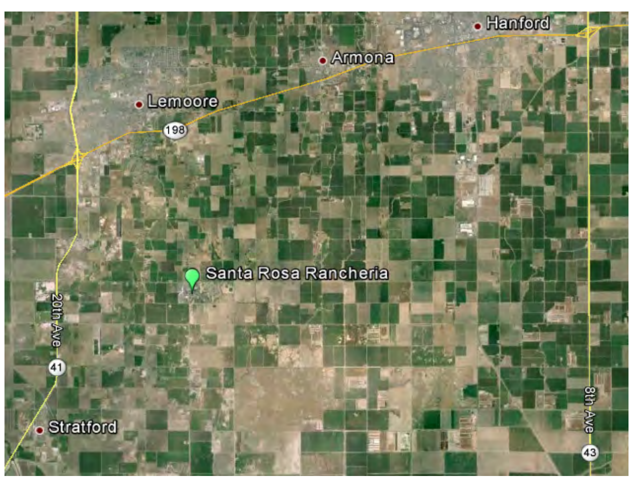
Santa Rosa Rancheria

The Santa Rosa Rancheria monitoring site is located on Tribal land in Lemoore, CA in Kings County and is operated by the Tachi-Yokut tribe. The site began operating in August 2006. The purpose of the site is to monitor representative concentrations of hourly ozone and PM10 responses from upwind and nearby urban areas. The site also monitors meteorology.

Site name:	Santa Rosa Rancheria
AQS ID:	060310500
County:	Kings
Street Address:	17225 Jersey Avenue, Lemoore, CA 93245
Geographic Coordinates:	36.2332 N, -119.7662 W
Distance to road (meters):	40 m (south)
Traffic Count (AADT, Year):	2,666*, 2000
Ground Cover:	Dirt, asphalt
Representative Statistical Area (CBSA):	Hanford-Corcoran

*** -** Closest to Santa Rosa Rancheria site Traffic Counts 17th Ave (36.238429°, -119.762784°). Nearest cross street to the count: Jersey Ave. Direction from the count to the cross street: North Distance to the nearest cross street: 0.11 miles.





Picayune Rancheria

The Picayune Rancheria monitoring site is located on Tribal land in Coarsegold, CA in Madera County and is operated by the Chukchansi Indians. The site began operating in August 2011. The purpose of the site is to monitor representative concentrations of ozone, PM10, and PM2.5 on the reservation. The site also monitors meteorology.

Site name:	Picayune Rancheria
AQS ID:	060370500
County:	Madera
Street Address:	46575 Road 417, Coarsegold, CA 93614
Geographic Coordinates:	37.2136 N, -119.6990 W
Distance to road (meters):	50 m (west)
Traffic Count (AADT, Year):	12,600, 2012
Ground Cover:	Dirt, asphalt
Representative Statistical Area (CBSA):	Madera

APPENDIX B:

Detailed Air Monitoring Site Information

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Appendix B: Detailed Air Monitoring Site Information

Sites organized by County, alphabetical therein:

Site name	**Clovis–Villa**			
AIRS #	060195001			
County	Fresno			
Collecting (Operating) Agency	All equipment operated by SJVAPCD			
Reporting Agency	Data reported by SJVAPCD: PM2.5 FEM, CO, NO_2, NMHC, Speciated VOC, Meteorology	Data reported by CARB: PM10 FRM	Data reported by CARB: PM2.5 FRM	
Site Start Date	9/1/1990			
Pollutant Parameters	Ozone, PM10 FRM, PM2.5 FEM, PM2.5 FRM, CO, NO_2, NMHC, Speciated VOC			
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation			
Address	908 N. Villa Ave., Clovis CA 93612			
Latitude	36.8194 N			
Longitude	-119.7160 W			
Elevation (m)	86			
Location	Portable building in lot			
Distance to road	260 m (east)			
Traffic Count	4,876			
Ground Cover	Paved			

Clovis–Villa (1 of 3)				
Pollutant	**Ozone**	**PM10 FRM**	**PM2.5 FEM**	**PM2.5 FRM**
Parameter Code	44201	81102	88101	88101
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	Population	Population	Population	High concentration
Monitor objective	Timely/public, standards/strategy, research support	Standards/strategy, research support	Timely/public	Standards/strategy, research support
Monitor type	SLAMS	SLAMS	SLAMS (Secondary)	SLAMS (Primary)
POC (or primary monitor for PM2.5 and PM10)	1	1	3	1
Method code	087	063	170	145
Sampling method (List Instrument)	Teledyne 400 E	Sierra Andersen SSI	Met One BAM 1020	Thermo Partisol 2025i
Analysis method	UV	Gravimetric	Beta attenuation	Gravimetric
Start date	1/1/1990	1/1/1990	11/25/2008	9/6/2012
Operation schedule (e.g. Hourly, 1:3)	Hourly	1:6	Hourly	1:3
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	7.5 m	7.0 m	7.0 m	5.3 m
Distance from supporting structure (meters)	4.5 m	0.25 m	4.0 m	
Distance from obstructions on roof	_____	______	______	
Distance from obstructions not on roof (meters)	32.0 m	31.5 m	31.0 m	
Distance from trees (meters)	24.5 m	27.5 m	25.0 m	
Distance to furnace or incinerator flue (meters)	16.0 m	15.5 m	17.0 m	
Distance between collocated monitors (meters)	______	3.7 m	2.5 m	
Unrestricted airflow (degrees)	355	355	355	360
Probe material (Teflon, etc.)	TEFLON	______	ALUMINUM	
Residence time (seconds)	9.3	______	______	
Frequency of flow rate verification for manual PM samplers audit	______	Quarterly	______	
Frequency of flow rate verification for automated PM analyzers audit	______	______	Bi-weekly	MONTHLY

Clovis–Villa (1 of 3) continued				
Pollutant	**Ozone**	**PM10 FRM**	**PM2.5 FEM**	**PM2.5 FRM**
Frequency of one-point QC check (gaseous)	Daily	_____	_____	
Last Annual Performance Evaluation (gaseous)	10/23/13	_____	_____	
Last two semi-annual flow rate audits for PM monitors	_____	4/23/14	10/23/13	
Changes planned within the next 18 months (Y/N))	N	N	N	N

Clovis–Villa (2 of 3)

Pollutant	CO	NO_2	Speciated VOC (PAMS)	NMHC (PAMS)
Parameter code	42101	42602	Many	43102
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	Population	High concentration	Population	Population
Monitor objective	Standards/strategy	Standards/strategy, research	Research	Research
Monitor type	SLAMS	PAMS	PAMS	PAMS
POC	1	1	1	1
Sampling method (List Instrument)	Themo 48i	Thermo 42i	Xontech 910A Xontech 925	Synpec Alpha 115
Method code	054	074	164	177
Analysis method	IR	CL	GC	GC
Start date	1/1/1990	1/1/1990	1/1/1990	1/1/1990
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	1:3	Hourly
Sampling season	ALL YEAR	ALL YEAR	JUN-JUL-AUG	ALL YEAR
Probe height (meters)	7.5 m	7.5 m	6.5 m	7.5 m
Distance from supporting structure (meters)	4.5 m	4.5 m	0.25 m	4.5 m
Distance from obstructions on roof	_____	_____	_____	_____
Distance from obstructions not on roof (meters)	32.0 m	32.0 m	33.5 m	32.0 m
Distance from trees (meters)	24.5 m	24.5 m	28.0 m	24.5 m

Clovis–Villa (2 of 3) continued				
Pollutant	**CO**	**NO_2**	**Speciated VOC (PAMS)**	**NMHC (PAMS)**
Distance to furnace or incinerator flue (meters)	16.0 m	16.0 m	13.5 m	16.0 m
Distance between collocated monitors (meters)	______	______	_____	_____
Unrestricted airflow (degrees)	355	355	350	355
Probe material (Teflon, etc.)	TEFLON	TEFLON	S. STEEL	TEFLON
Residence time (seconds)	8.8	9.5	______	______
Frequency of flow rate verification for manual PM samplers audit	______	______	______	______
Frequency of flow rate verification for automated PM analyzers audit	______	______	______	______
Frequency of one-point QC check (gaseous)	Daily	Daily	______	Daily
Last Annual Performance Evaluation (gaseous)	10/23/13	10/23/13	5/10/2010	______
Last two semi-annual flow rate audits for PM monitors	______	______	______	______
Changes planned within the next 18 months (Y/N))	N	N	N	N

Clovis–Villa (3 of 3)	
Pollutant	**Met Parameters**
Parameter code	Many
Spatial scale	Regional
Site type	General
Monitor objective	Research, Timely/public
Monitor type	PAMS
POC	1
Method code	Many
Sampling method (List Instrument)	ITP- HY-CAL BA 512-A-A-3-B, OT- Met-One 060A-2, BP- Met-One 092, RH- VAISALA HMP45D, SRD- EPPLY Mod.8-48, WD- Met-One 020C, WS- Met One 010C, BP- Met One 092
Analysis method	______
Start date	1/1/1990

Clovis–Villa (3 of 3) continued	
Pollutant	**Met Parameters**
Operation schedule (e.g. Hourly, 1:3)	Hourly
Sampling season	ALL YEAR
Probe height (meters)	9.6 m
Distance from supporting structure (meters)	2.7 m
Distance from obstructions on roof	______
Distance from obstructions not on roof (meters)	29.5 m
Distance from trees (meters)	25.5 m
Distance to furnace or incinerator flue (meters)	______
Distance between collocated monitors (meters)	______
Unrestricted airflow (degrees)	360
Probe material (Teflon, etc.)	______
Residence time (seconds)	______
Frequency of flow rate verification for manual PM samplers audit	______
Frequency of flow rate verification for automated PM analyzers audit	______
Frequency of one-point QC check (gaseous)	______
Last Annual Performance Evaluation (gaseous)	______
Last two semi-annual flow rate audits for PM monitors	______
Changes planned within the next 18 months (Y/N))	N

Site name	Fresno–Drummond	
AIRS #	060190007	
County	Fresno	
Collecting (Operating) Agency	All equipment operated by SJVAPCD	
Reporting Agency	Data reported by SJVAPCD: Ozone, CO, NO_2, PM2.5	Data reported by CARB: PM10 FRM
Site Start Date	7/1/84	
Pollutant Parameters	Ozone, PM10 FRM, CO, NO_2	
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure	
Address	4706 E. Drummond Street, Fresno CA 93725	
Latitude	36.7055 N	
Longitude	-119.7410 W	
Elevation (m)	89	
Location	Portable building in parking lot	
Distance to road	50 m (north)	
Traffic Count	600	
Ground Cover	Paved	

Fresno–Drummond (1 of 2)					
Pollutant	**Ozone**	**PM10 FRM**	**PM10 FRM**	**CO**	**NO_2**
Parameter code	44201	81102	81102	42101	42602
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	Population, High Concentration , Regional transport	Population	Population, Quality Assurance	Population	High concentration
Monitor objective	Timely/public, standards/strategy, research support	Standards/strategy, research support		Standards/strategy	Standards/strategy
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
POC	1	1	2 (QA Collocated)	1	1
Method code	087	063	063	054	074
Sampling method (List Instrument)	Teledyne 400 E	Sierra Andersen SSI	Sierra Andersen SSI	Themo 48	Thermo 42Ci
Analysis method	UV	Gravimetric	Gravimetric	IR	CL
Start date	7/1/1984	7/1/1989	10/6/2012	7/1/1984	7/1/1984
Operation schedule (e.g. Hourly, 1:3)	Hourly	1:6	1:6	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	8.5 m	6 m	6 m	8.5 m	8.5 m
Distance from supporting structure (meters)	3.6 m	10.5 m	10.5 m	3.6 m	3.6 m
Distance from obstructions on roof	_____	0.5 m from safety barrier	0.5 m from safety barrier	_____	_____
Distance from obstructions not on roof (meters)	_____	5 m	5 m	_____	_____
Distance from trees (meters)	25 m	24 m	24 m	25 m	25 m

Fresno–Drummond (1 of 2) continued					
Pollutant	**Ozone**	**PM10 FRM**	**PM10 FRM**	**CO**	**NO_2**
Distance to furnace or incinerator flue (meters)	23.5 m	23 m	23 m	23.5 m	23.5 m
Distance between collocated monitors (meters)	_____	4.6 m	4.6 m	_____	_____
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material (Teflon, etc.)	TEFLON	_____	_____	TEFLON	TEFLON
Residence time (seconds)	9.03	_____	_____	10.88	9.59
Frequency of flow rate verification for manual PM samplers audit	_____	Quarterly	Quarterly	_____	_____
Frequency of flow rate verification for automated PM analyzers audit	_____	Semi-annual	Semi-annual	_____	_____
Frequency of one-point QC check (gaseous)	Daily	_____	_____	Daily	Daily
Last Annual Performance Evaluation (gaseous)	03/04/2014	_____	_____	03/04/2014	03/04/2014
Last two semi-annual flow rate audits for PM monitors	_____	01/31/2014, 11/27/2013	01/31/2014, 11/27/2013	_____	_____
Changes planned within the next 18 months (Y/N)	No	No	No	Yes	No

Fresno–Drummond (2 of 2)	
Pollutant	**Met Parameters**
Parameter code	Many
Spatial scale	Regional
Site type	General
Monitor objective	Research, Timely/public
Monitor type	SLAMS
POC	1
Method code	Many
Sampling method (List Instrument)	ITP- HY-CAL BAAA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS- Met One 010C
Analysis method	_____
Start date	10/7/2004
Operation schedule (e.g. Hourly, 1:3)	Hourly
Sampling season	ALL YEAR
Probe height (meters)	10 m
Distance from supporting structure (meters)	_____
Distance from obstructions on roof	_____
Distance from obstructions not on roof (meters)	_____
Distance from trees (meters)	25 m
Distance to furnace or incinerator flue (meters)	23 m
Distance between collocated monitors (meters)	_____
Unrestricted airflow (degrees)	360
Probe material (Teflon, etc.)	_____
Residence time (seconds)	_____
Frequency of flow rate verification for manual PM samplers audit	_____
Frequency of flow rate verification for automated PM analyzers audit	_____
Frequency of one-point QC check (gaseous)	_____
Last Annual Performance Evaluation (gaseous)	03/04/2014
Last two semi-annual flow rate audits for PM monitors	_____
Changes planned within the next 18 months (Y/N)	N

Site name	Fresno–Garland
AIRS #	060190011
County	Fresno
Collecting (Operating) Agency	All equipment operated by CARB
Reporting Agency	Data reported by CARB: Ozone, PM10 FRM, PM10 FEM, PM2.5 FRM (2), PM2.5FEM, CO, NO_2, Toxics
Site Start Date	12/31/2011
Pollutant Parameters	Ozone,PM10 FRM, PM10 FEM, PM2.5 FRM, PM2.5 FEM, CO, NO_2, SO_2, Toxics
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	3727 N. First St., Ste.104, Fresno CA 93726
Latitude	36.7853 N
Longitude	-119.7732 W
Elevation (m)	97
Location	
Distance to road	30 m (south)
Traffic Count	3000
Ground Cover	Gravel covered tar paper with wooden deck walkways

Fresno–Garland (1 of 3)				
Pollutant	**Ozone**	**PM10 FEM ($PM_{10-2.5}$)**	**PM2.5 FRM**	**PM2.5 FRM**
Parameter code	44201	86101	88101	88101
Spatial scale	Urban	Neighborhood	Neighborhood	Neighborhood
Site type	Population Exposure	Population Exposure, Quality Assurance	High concentration	High concentration, Population Exposure, Quality Assurance
Basic monitoring objective(s)	Standards/strategy	Standards/strategy	Standards/strategy	Standards/strategy
Monitor type	NCore	NCore	NCore	NCore
POC	1	3 (QA Collocated serving as Primary)	1 (Primary)	2 (QA Collocated)
Method code	087	185	118	118
Sampling method (List Instrument)	API/Teledyne 400	Met One BAM 1020	R&P 2025	R&P 2025
Analysis method	UV	Beta Attenuation	Sequential	Sequential
Start date	12/23/2011	10/14/2013	1/1/2012	1/25/2012
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	1:1	1:6
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	7.0	6.3	5.9	5.9
Distance from supporting structure (meters)	None	None	None	None
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof (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 collocated monitors (meters)	--	--	2.0	2.0
Unrestricted airflow (degrees)	360	360	360	360
Probe material (Teflon, etc.)	Teflon	--	--	--
Residence time (seconds)	2.5	--	--	--
Frequency of flow rate verification for manual PM samplers audit	--	--	Once a Month	Once a Month

Fresno–Garland (1 of 3) continued				
Pollutant	**Ozone**	**PM10 FEM ($PM_{10-2.5}$)**	**PM2.5 FRM**	**PM2.5 FRM**
Frequency of flow rate verification for automated PM analyzers audit	--	Once a month	--	--
Frequency of one-point QC check (gaseous)	Twice a month	--	--	
Last Annual Performance Evaluation (gaseous)	10/22/2013	--	--	
Last two semi-annual flow rate audits for PM monitors	--	4/10/2014 10/22/2013	4/10/2014 10/22/2013	4/10/2014 10/22/2013
Changes planned within the next 18 months (Y/N)	N	N	N	N

Fresno–Garland (2 of 3)				
Pollutant	**PM2.5 FEM**	**PM10 FRM (Lead)**	**CO**	**NO_2**
Parameter code	88101	12128	42101	42602
Spatial scale	Neighborhood	Neighborhood	Urban	Neighborhood
Site type	High concentration	High concentration	Population Exposure	Max Precursor Emissions Impact
Basic monitoring objective(s)	Standards/strategy	Standards/strategy	Standards/strategy	Standards/strategy
Monitor type	NCore	NCore	NCore	NCore
POC	3	1	3	1
Method code	170		731	074
Sampling method (List Instrument)	MetOne 1020	Tisch	API 300 EU	API 200E
Analysis method		Gravimetric		
Start date	1/1/2012	2/1/12	1/18/2012	2/1/2012
Operation schedule (e.g. 1:3, Hourly, etc.)	Hourly	1:6	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	6.4	5.0	7.0 m	7.0 m
Distance from supporting structure (meters)	None	None	None	None
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof (meters)	None	None	None	None
Distance from trees (meters)	None	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	None	None

Fresno–Garland (2 of 3)				
Pollutant	**PM2.5 FEM**	**PM10 FRM**	**CO**	**NO_2**
Distance between collocated monitors (meters)	N/A	N/A	--	--
Unrestricted airflow (degrees)	360	360	360	360
Probe material (Teflon, etc.)	N/A	N/A	Teflon	Teflon
Residence time (seconds)		--		2.6
Frequency of flow rate verification for manual PM samplers audit	Once a Month	Once a Month	--	--
Frequency of flow rate verification for automated PM analyzers audit		--	--	--
Frequency of one-point QC check (gaseous)		--	Twice a month	Twice a month
Last Annual Performance Evaluation (gaseous)		--	10/22/2013	10/22/2013
Last two semi-annual flow rate audits for PM monitors	4/10/2014 10/22/2013	4/10/2014 10/22/2013	--	--
Changes planned within the next 18 months (Y/N)	N	N	N	N

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Fresno–Garland (3 of 3)			
Pollutant	**SO_2**	**Toxics**	**Met Parameters**
Parameter code	42401	Many	Many
Spatial scale	Urban,	Neighborhood	Neighborhood
Site type	Population Exposure	Population	General, Population Exposure
Basic monitoring objective(s)	Standards/strategy	Research, Timely/public	Research, Timely/public
Monitor type	NCore	Many	Many
POC	1	Many	Many
Method code	009	Many	Many
Sampling method (List Instrument)	Thermo 43	Xontech 924	--
Analysis method	--	--	
Start date	1/18/2012		1/1/2012
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	7.0 m	5.8 m	9.5

Fresno–Garland (3 of 3)			
Pollutant	**SO_2**	**Toxics**	**Met Parameters**
Distance from supporting structure (meters)	None	None	None
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof (meters)	None	None	None
Distance from trees (meters)	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	None
Distance between collocated monitors (meters)	None	--	--
Unrestricted airflow (degrees)	360	360	360
Probe material (Teflon, etc.)	Teflon	Teflon	Teflon
Residence time (seconds)	5.9		
Frequency of flow rate verification for manual PM samplers audit		--	--
Frequency of flow rate verification for automated PM analyzers audit	--	--	--
Frequency of one-point QC check (gaseous)	Twice a month	Twice a month	--
Last Annual Performance Evaluation (gaseous)	10/22/2013	10/22/2013	Ultrasonic, not audited.--
Last two semi-annual flow rate audits for PM monitors	--	--	--
Changes planned within the next 18 months (Y/N)	N	N	N

Site name	Fresno–Pacific
AIRS #	060195025
County	Fresno
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by CARB
Site Start Date	1/1/00
Pollutant Parameters	PM2.5 FRM
Meteorological Parameters	None
Address	1716 Winery, Fresno CA 93726
Latitude	36.7263 N
Longitude	-119.7330 W
Elevation (m)	100
Location	On school roof
Distance to road	40 m (east)
Traffic Count	2539
Ground Cover	Roof material

Fresno–Pacific	
Pollutant	**PM2.5 FRM**
Parameter code	88101
Spatial scale	Neighborhood
Site type	Population
Monitor objective	Standards/strategy, research support
Monitor type	SLAMS
POC	1
Method code	120
Sampling method (List Instrument)	Thermo Partisol 2025
Analysis method	GRAVI-METRIC
Start date	1/1/2000
Operation schedule (e.g. Hourly, 1:3)	1:3
Sampling season	ALL YEAR
Probe height (meters)	8.0 m
Distance from supporting structure (meters)	6.0 m
Distance from obstructions on roof	54.5 m
Distance from obstructions not on roof (meters)	______
Distance from trees (meters)	76.0 m
Distance to furnace or incinerator flue (meters)	______
Distance between collocated monitors (meters)	______
Unrestricted airflow (degrees)	360
Probe material (Teflon, etc.)	______
Residence time (seconds)	______
Frequency of flow rate verification for manual PM samplers audit	Bi-weekly
Frequency of flow rate verification for automated PM analyzers audit	______
Frequency of one-point QC check (gaseous)	______
Last Annual Performance Evaluation (gaseous)	______
Last two semi-annual flow rate audits for PM monitors	03/04/2014, 09/23/2013
Changes planned within the next 18 months (Y/N)	No

Site name	Fresno–Sky Park
AIRS #	060190242
County	Fresno
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	7/1/86
Pollutant Parameters	Ozone, CO, NO_2
Meteorological Parameters	Wind speed, wind direction, outdoor temperature
Address	4508 Chennault Ave, Fresno CA 93722
Latitude	36.8405 N
Longitude	-119.8740 W
Elevation (m)	65
Location	Portable building
Distance to road	12 m (west)
Traffic Count	100
Ground Cover	Gravel

Fresno–Sky Park				
Pollutant	**Ozone**	**CO**	**NO_2**	**Met Parameters**
Parameter code	44201	42101	42602	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Regional
Site type	Population, regional transport	Population	Population	General
Monitor objective	Timely/public, standards/strategy, research support	Standards/ strategy	Standards/ strategy	Research, Timely/public
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
POC	1	1	1	1
Method code	087	054	074	Many
Sampling method (List Instrument)	Teledyne 400E	Thermo 48	Thermo 42I	ITP- BA-512-A-A-3-B, OT- Met One 060A-2, WD- Met One 020C, WS- Met One 010C
Analysis method	UV	IR	CL	____
Start date	7/1/1986	7/1/1986	7/1/1986	7/1/1986
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	4 m	4 m	4 m	5 m
Distance from supporting structure (meters)	____	____	____	____
Distance from obstructions on roof	____	____	____	____
Distance from obstructions not on roof (meters)	5 m / 16 m	5 m / 16 m	5 m / 16 m	5 m / 16 m
Distance from trees (meters)	4 m	4 m	4 m	3 m
Distance to furnace or incinerator flue (meters)	____	____	____	____
Distance between collocated monitors (meters)	____	____	____	____
Unrestricted airflow (degrees)	280	280	280	280
Probe material (Teflon, etc.)	TEFLON	TEFLON	TEFLON	____
Residence time (seconds)	7.39	6.50	8.39	____
Frequency of flow rate verification for manual PM samplers audit	____	____	____	____
Frequency of flow rate verification for automated PM analyzers audit	____	____	____	____
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily	____

Fresno–Sky Park (continued)				
Pollutant	**Ozone**	**CO**	**NO_2**	**Met Parameters**
Last Annual Performance Evaluation (gaseous)	03/05/2014	03/05/2014	03/05/2014	03/05/2014
Last two semi-annual flow rate audits for PM monitors	_____	_____	_____	_____
Changes planned within the next 18 months (Y/N)	N	Y	N	N

Site name	Huron
AIRS #	060192008
County	Fresno
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	10/12/09
Pollutant Parameters	PM2.5 Non-FEM
Meteorological Parameters	Barometric pressure
Address	16875 4th St., Huron, CA 93234
Latitude	36.2363 N
Longitude	-119.7656 W
Elevation (m)	112
Location	In school room
Distance to road	100 m (north)
Traffic Count	1205
Ground Cover	Paved/vegetated

Huron		
Pollutant	**PM2.5 Non-FEM**	**Met Parameters**
Parameter code	88502	64101
Spatial scale	Neighborhood	Neighborhood
Site type	Population	Population
Monitor objective	Timely/public	Timely/public
Monitor type	SPM	-
POC	3	1
Method code	731	
Sampling method (List Instrument)	Met One BAM 1020	ITP- Hy-Cal BA-512-A-A-3-B, BP- Met One 092
Analysis method	BETA-ATTENUATION	
Start date	9/2/2009	2/1/2010
Operation schedule (e.g. Hourly, 1:3, Hourly)	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR
Probe height (meters)	4.5 m	
Distance from supporting structure (meters)	1.5 m	
Distance from obstructions on roof	______	
Distance from obstructions not on roof (meters)	______	
Distance from trees (meters)	41.5 m	
Distance to furnace or incinerator flue (meters)	______	
Distance between collocated monitors (meters)	______	
Unrestricted airflow (degrees)	270	
Probe material (Teflon, etc.)	ALUMINUM	
Residence time (seconds)	N/A	
Frequency of flow rate verification for manual PM samplers audit	______	
Frequency of flow rate verification for automated PM analyzers audit	BI-WEEKLY	
Frequency of one-point QC check (gaseous)	______	
Last Annual Performance Evaluation (gaseous)	--	
Last two semi-annual flow rate audits for PM monitors	11/28/2011, 5/8/2012	
Changes planned within the next 18 months (Y/N)	N	N

Site name	Parlier
AIRS #	060194001
County	Fresno
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	6/1/1983
Pollutant Parameters	Ozone, NO_2, Speciated VOC, NMHC
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation
Address	9240 S. Riverbend Ave., Parlier CA 93648
Latitude	36.5972 N
Longitude	-119.5040 W
Elevation (m)	78
Location	Portable building in university field
Distance to road	100 m (east)
Traffic Count	8700
Ground Cover	Dirt/vegetated

Parlier (1 of 2)				
Pollutant	**Ozone**	**NO_2**	**Speciated VOC**	**NMHC**
Parameter code	44201	42602	Many	43102
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	High concentration, regional transport	Population	Population	Population
Monitor objective	Timely/public, standards/strategy, research support	Standards/strategy, research	Research	Research
Monitor type	PAMS	PAMS	PAMS	PAMS
POC	1	1	1	1
Method code	087	074	Multiple	164
Sampling method (List Instrument)	Teledyne 400 E	Teledyne 200E	Xontech 910A	Baseline 8900
Analysis method	UV	CL	GC	GC
Start date	1/1/1984	4/1/1994	6/7/1995	12/1/1997
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	1:3	Hourly
Sampling season	ALL YEAR	ALL YEAR	JUN-JUL-AUG	ALL YEAR
Probe height (meters)	7.0 m	7.0 m	7.0 m	7.0 m
Distance from supporting structure (meters)	_______	_______	_______	_______
Distance from obstructions on roof	_______	_______	_______	_______
Distance from obstructions not on roof (meters)	_______	_______	_______	_______
Distance from trees (meters)	11 m	11 m	11 m	11 m
Distance to furnace or incinerator flue (meters)	_______	_______	_______	_______
Distance between collocated monitors (meters)	_______	_______	_______	_______
Unrestricted airflow (degrees)	360	360	360	360
Probe material (Teflon, etc.)	TEFLON	TEFLON	S. STEEL	TEFLON
Residence time (seconds)	7.24	11.0	_______	12.9
Frequency of flow rate verification for manual PM samplers audit	_______	_______	_______	_______
Frequency of flow rate verification for automated PM analyzers audit	_______	_______	_______	_______
Frequency of one-point QC check (gaseous)	Daily	Daily	_______	Daily
Last Annual Performance Evaluation (gaseous)	04/30/2014	04/30/2014		_______

Parlier (1 of 2) continued				
Pollutant	**Ozone**	**NO_2**	**Speciated VOC**	**NMHC**
Last 2 semi-annual flow rate audits, PM monitors	_______	_______	_______	_______
Changes planned within the next 18 months (Y/N)	N	N	N	Y

Parlier (2 of 2)	
Pollutant	**Met Parameters**
Parameter code	Many
Spatial scale	Regional
Site type	General
Monitor objective	Research, Timely/public
Monitor type	PAMS
POC	1
Method code	Many
Sampling method (List Instrument)	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, RH- Vaisala HMP45D, SRD- Epply Mod.8-48, WD- Met One 020C, WS- Met One 010C
Analysis method	_______
Start date	7/21/1987
Operation schedule (e.g. Hourly, 1:3)	Hourly
Sampling season	ALL YEAR
Probe height (meters)	9.5 m
Distance from supporting structure (meters)	_______
Distance from obstructions on roof	_______
Distance from obstructions not on roof (meters)	_______
Distance from trees (meters)	_______
Distance to furnace or incinerator flue (meters)	_______
Distance between collocated monitors (meters)	_______
Unrestricted airflow (degrees)	360
Probe material (Teflon, etc.)	_______
Residence time (seconds)	_______
Frequency of flow rate verification for manual PM samplers audit	_______
Frequency of flow rate verification for automated PM analyzers audit	_______

Parlier (2 of 2) continued

Pollutant	Met Parameters
Frequency of one-point QC check (gaseous)	monthly
Last Annual Performance Evaluation (gaseous)	04/30/2014
Last two semi-annual flow rate audits for PM monitors	_______
Changes planned within the next 18 months (Y/N)	N

Site name	Tranquillity
AIRS #	060192009
County	Fresno
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	11/9/2009
Pollutant Parameters	Ozone, PM2.5 FEM
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	32650 W. Adams, Tranquillity CA 93668
Latitude	36.6008 N
Longitude	-120.3822 W
Elevation (m)	59
Location	Portable shed
Distance to road	200 m (south)
Traffic Count	100
Ground Cover	Gravel/vegetation

Tranquillity			
Pollutant	**Ozone**	**PM2.5 FEM**	**Met Parameters**
Parameter code	44201	88101	Many
Spatial scale	Urban	Urban	Urban
Site type	Population	Population	Population
Monitor objective	Timely/public	Timely/public	Timely/public
Monitor type	SPM	SPM	
POC	1	3	1
Method code	087	170	Many
Sampling method (List Instrument)	Teledyne 400 E(IZS)	Met One BAM 1020	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS- Met One 010C
Analysis method	UV	BETA-ATTENUATION	
Start date	10/30/2009	10/30/2009	10/30/2009
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	4 m	4 m	10 m
Distance from supporting structure (meters)			
Distance from obstructions on roof			
Distance from obstructions not on roof (meters)			
Distance from trees (meters)	101 m	101 m	101 m
Distance to furnace or incinerator flue (meters)	97.5 m	97.5 m	97.5 m
Distance between collocated monitors (meters)			
Unrestricted airflow (degrees)	360	360	360
Probe material (Teflon, etc.)	TEFLON	ALUMINUM	
Residence time (seconds)	6.0	N/A	
Frequency of flow rate verification for manual PM samplers audit			
Frequency of flow rate verification for automated PM analyzers audit		Semi-annual	
Frequency of one-point QC check (gaseous)	Daily		
Last Annual Performance Evaluation (gaseous)	5/8/2012		
Last 2 semi-annual flow rate audits, PM monitors		11/30/2011, 5/8/2012	
Changes planned within the next 18 months (Y/N)	No	No	No

Site name	**Arvin–Di Giorgio**
AIRS #	060295002
County	Kern
Collecting (Operating) Agency	All equipment operated by CARB
Reporting Agency	All data reported by CARB
Site Start Date	11/16/2009
Pollutant Parameters	Ozone
Meteorological Parameters	Outdoor temperature
Address	19405 Buena Vista Blvd, Arvin CA 93203
Latitude	35.2391 N
Longitude	-118.7886 W
Elevation (m)	158
Location	
Distance to road	10 m (east)
Traffic Count	500
Ground Cover	Dirt

Arvin–Di Giorgio		
Pollutant	**Ozone**	**Met Parameters**
Parameter code	44201	Many
Spatial scale	Neighborhood	Regional
Site type	Maximum concentration, Population Exposure	General
Monitor objective	Standards/strategy	Research, Timely/public
Monitor type	SLAMS	Other
POC	1	1
Method code	087	Many
Sampling method (List Instrument)		
Analysis method	UV	
Start date	11/16/2009	11/16/2009
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR
Probe height (meters)	4.5	
Distance from supporting structure (meters)	None	
Distance from obstructions on roof	None	
Distance from obstructions not on roof (meters)	None	None
Distance from trees (meters)	None	18.5
Distance to furnace or incinerator flue (meters)	None	None
Distance between collocated monitors (meters)	None	--
Unrestricted airflow (degrees)	360	360
Probe material (Teflon, etc.)	TEFLON	Teflon
Residence time (seconds)	7.9	--
Frequency of flow rate verification for manual PM samplers audit	N/A	--
Frequency of flow rate verification for automated PM analyzers audit	N/A	--
Frequency of one-point QC check (gaseous)	Twice a month	--
Last Annual Performance Evaluation (gaseous)	10/9/2013	--
Last two semi-annual flow rate audits for PM monitors	N/A	--
Changes planned within the next 18 months (Y/N)	N	N

Site name	Bakersfield–Airport (Planz)
AIRS #	060290016
County	Kern
Collecting (Operating) Agency	All equipment operated by CARB
Reporting Agency	CARB
Site Start Date	9/19/00
Pollutant Parameters	PM2.5 FRM
Meteorological Parameters	None
Address	401 E. Planz Rd., Bakersfield CA 93307
Latitude	35.3246 N
Longitude	-118.9976 W
Elevation (m)	115
Location	
Distance to road	500 m (west)
Traffic Count	1000
Ground Cover	Asphalt

Bakersfield–Airport (Planz)	
Pollutant	**PM2.5 FRM**
Parameter code	88101
Spatial scale	Neighborhood
Site type	Population Exposure, High Concentration
Basic monitoring objective(s)	Standards/strategy
Monitor type	SLAMS
POC	1
Method code	120
Sampling method (List Instrument)	R&P 2025
Analysis method	Gravimetric
Start date	9/19/00
Operation schedule (e.g. Hourly, 1:3)	1:3
Sampling season	ALL YEAR
Probe Inlet height above ground (meters)	2.0
Distance from supporting structure (meters)	None
Distance from obstructions on roof	None
Distance from obstructions not on roof (meters)	None
Distance from trees (meters)	None
Distance to furnace or incinerator flue (meters)	None
Distance between collocated monitors (meters)	None
Unrestricted airflow (degrees)	360
Probe material (Teflon, etc.)	N/A
Residence time (seconds)	N/A
Frequency of flow rate verification for manual PM samplers audit	Once a month
Frequency of flow rate verification for automated PM analyzers audit	--
Frequency of one-point QC check (gaseous)	--
Last Annual Performance Evaluation (gaseous)	--
Last two semi-annual flow rate audits for PM monitors	4/15/2014, 9/24/2013
Changes planned within the next 18 months (Y/N)	N

Site name	Bakersfield–California
AIRS #	060290014
County	Kern
Collecting (Operating) Agency	All equipment operated by CARB
Reporting Agency	Data reported by CARB: PM10 FRM, PM2.5 FRM, NO_2, Ozone, Toxics, Meteorology
Site Start Date	3/1/94
Pollutant Parameters	Ozone, PM10 FRM, PM2.5 FRM, PM2.5 Non-FEM, NO_2, Toxics
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	5558 California Ave., Bakersfield CA 93309
Latitude	35.3566 N
Longitude	-119.0626 W
Elevation (m)	119
Location	
Distance to road	300 m (south)
Traffic Count	10000
Ground Cover	Asphalt

Bakersfield–California (1 of 2)					
Pollutant	**Ozone**	**PM10 FRM**	**PM10 FRM**	**PM2.5 FRM**	**PM2.5 FRM**
Parameter code	44201	81102	81102	88101	88101
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	General/Background	Population	Population Exposure, Quality Assurance	Population Exposure, High Concentration	Population, High Concentration, Quality Assurance
Basic monitoring objective(s)	Standards/strategy	Standards/strategy	Standards/strategy	Standards/strategy	Standards/strategy
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
POC	1	1	2 (QA Collocated)	1	2 (QA Collocated)
Method code	087	063	063	118	118
Sampling method (List Instrument)	API/Teledyne 400	SA/GMW 1200	SA/GMW 1200	R&P 2025	R&P 2025
Analysis method	UV	Gravimetric	Gravimetric	Sequential	Sequential
Start date	3/1/1994	4/1/1994	1/3/2003	1/1/1999	1/1/1999
Operation schedule (e.g. 1:6, Daily, etc.)	Hourly	1:6	1:6	1:6	1:6
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	6.9	6.1	6.1	6.0	6.0
Distance from supporting structure (meters)	None	None	None	None	None
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof (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 collocated monitors (meters)	N/A	2.3	2.3	2.3	2.3
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material (Teflon, etc.)	Teflon	N/A	N/A	N/A	N/A
Residence time (seconds)	10.0	N/A	N/A	N/A	N/A

Bakersfield–California (1 of 2) continued					
Pollutant	**Ozone**	**PM10 FRM**	**PM10 FRM**	**PM2.5 FRM**	**PM2.5 FRM**
Frequency of flow rate verification for manual PM samplers audit	N/A	Once per month	Once per month	Once per month	Once per month
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Twice per month	N/A	N/A	N/A	N/A
Last Annual Performance Evaluation (gaseous)	4/17/2013	N/A	N/A	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	9/24/2013, 4/17/2013	9/24/2013, 4/17/2013	9/24/2013, 4/17/2013	9/24/2013, 4/17/2013
Changes planned within the next 18 months (Y/N)	N	N	N	N	N

Bakersfield–California (2 of 2)							
Pollutant	**PM2.5 Non-FEM**	**PM2.5 Non-FEM**	**NO_2**	**PM10 FRM (Lead)**	**PM10 FRM (Lead)**	**Toxics**	**Met Parameters**
Parameter code	88501	88501	42602	12128	12128	Many	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Regional
Site type	Population	Population, Quality Assurance	Population	Population	Population, Quality Assurance	Population	General
Basic monitoring objective(s)	Research, Timely/public	Research, Timely/public	Standards/ strategy	Standards/ strategy	Standards/ strategy	Research, Timely/public	Research, Timely/public
Monitor type	SPM Non-Regulatory	SPM Non-Regulatory	SLAMS	SLAMS	SLAMS	Many	Many
POC	3 (Primary)	4 (QA Collocated)	1	7 (Primary)	8 (QA Collocated)	Many	Many
Method code	731	731	074	305	305	Many	Many
Sampling method (List Instrument)	Met One BAM 1020	Met One BAM 1020	API 200A	Lo-Vol Xontech	Lo-Vol Xontech	Xontech 924	
Analysis method	PM2.5 SCC Beta	PM2.5 SCC Beta	CL	ICP/Mass Spectometer	ICP/Mass Spectometer		
Start date	12/1/2001	12/1/2001	4/1/1994	10/10/2007	10/10/2007	1/1/2007	4/1/1994
Operation schedule (e.g. Hourly, Hourly)	Hourly	Hourly	Hourly	1:6	1:6	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	6.0	6.0	6.9	5.9	5.9	5.9	13.8
Distance from supporting structure (meters)	None	None	None	2.1	2.1	None	None

Bakersfield–California (2 of 2) continued							
Pollutant	**PM2.5 Non-FEM**	**PM2.5 Non-FEM**	**NO_2**	**PM10 FRM (Lead)**	**PM10 FRM (Lead)**	**Toxics**	**Met Parameters**
Distance from obstructions not on roof (meters)	None	None	None	None	None	None	None
Distance from trees (meters)	None	None	None	None	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	None	None	None	None	None
Distance between collocated monitors (meters)	2.1	2.1	N/A	2.4	2.4	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	360	360
Probe material (Teflon, etc.)	N/A	N/A	Teflon	Teflon	Teflon	N/A	N/A
Residence time (seconds)	N/A	N/A	14.7	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers audit	Twice per month	Twice per month	N/A	N/A	N/A	N/A	N/A

Bakersfield–California (2 of 2) continued							
Pollutant	**PM2.5 Non-FEM**	**PM2.5 Non-FEM**	**NO_2**	**PM10 FRM (Lead)**	**PM10 FRM (Lead)**	**Toxics**	**Met Parameters**
Frequency of one-point QC check (gaseous)	N/A	N/A	Twice per month	N/A	N/A	Twice per month	N/A
Last Annual Performance Evaluation (gaseous)	N/A	N/A	4/17/2013	N/A	N/A	4/17/2013	N/A
Last two semi-annual flow rate audits for PM monitors	9/24/2013, 4/17/2013	9/24/2013, 4/17/2013	N/A	Audited annual: 4/17/2013	Audited annual: 4/17/2013	N/A	N/A
Changes planned within the next 18 months (Y/N)	N	N	N	Y	Y	N	N

Site name	Bakersfield-Muni
AIRS #	060292012
County	Kern
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	Speciated VOC PAMS equipment 6/2012; Met Parameters 7/2012; NMHC PAMS 10/2012
Pollutant Parameters	Ozone, CO, NO_2, Speciated-VOC for PAMS program, NMHC (PAMS)
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation
Address	2000 South Union Ave., Bakersfield, CA 93307
Latitude	35.3313 N
Longitude	-119.0000 W
Elevation (m)	116 m
Location	Portable building in lot
Distance to road	280 m (west)
Traffic Count	1000
Ground Cover	Paved

Bakersfield-Muni (1 of 2)					
Pollutant	**Ozone**	**CO**	**NO_2**	**Speciated-VOC (PAMS)**	**NMHC (PAMS)**
Parameter code	44201	42101	42602	Many	43102
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	High Concentration	Population	High concentration	High Concentration	Population
Monitor objective	Standards/Strategy, Research Support, Timely/public	Standards/strategy	Standards/strategy, research	Research	Research
Monitor type	SLAMS	SLAMS	PAMS	PAMS	PAMS
POC	1	1	1	1	1
Sampling method (List Instrument)	087	Thermo 48i TLE	Teledyne 200E	Xontech 910 Xontech 925	Thermo 48i TLE
Method code	Teledyne 400 E	054	074	011	164
Analysis method					
Start date	6/2012	7/2012	7/2012	6/2012	Scheduled for 10/2012
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	Hourly	1:3	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	JUN-JUL-AUG	ALL YEAR
Probe/Inlet height above ground (meters)	6.0 m	6.0 m	6.0 m	6.0 m	6.0 m
Distance from supporting structure (meters)					
Distance from obstructions on roof					
Distance from obstructions not on roof (meters)					
Distance from trees (meters)					
Distance to furnace or incinerator flue (meters)					
Unrestricted airflow (degrees)					
Probe material (Teflon, etc.)					
Residence time (seconds)	11.4	12.6	13.0	_____	_____

Bakersfield-Muni (1 of 2)					
Pollutant	**Ozone**	**CO**	**NO_2**	**Speciated-VOC (PAMS)**	**NMHC (PAMS)**
Frequency of flow rate verification for manual PM samplers audit	______	______	______	______	______
Frequency of flow rate verification for automated PM analyzers audit	______	______	______	______	______
Frequency of one-point QC check (gaseous)	Daily	Daily	Daily		Daily
Last Annual Performance Evaluation (gaseous)	6/6/13, 7/29/14	6/6/13, 7/8/14	6/6/13, 7/30/14		
Last two semi-annual flow rate audits for PM monitors	______				
Changes planned within the next 18 months (Y/N)	N	N	N	N	N

Bakersfield-Muni (2 of 2)	
Pollutant	**Met Parameters**
Parameter code	Many
Spatial scale	Regional
Site type	General
Monitor objective	Research, Timely/public
Monitor type	PAMS
POC	1
Method code	Many
Sampling method (List Instrument)	
Analysis method	
Start date	7/2012
Operation schedule (e.g. Hourly, 1:3)	Hourly
Sampling season	ALL YEAR
Probe/Inlet height above ground (meters)	10 m
Distance from supporting structure (meters)	
Distance from obstructions on roof	
Distance from obstructions not on roof (meters)	
Distance from trees (meters)	
Distance to furnace or incinerator flue (meters)	
Distance between collocated monitors (meters)	
Unrestricted airflow (degrees)	
Probe material (Teflon, etc.)	
Residence time (seconds)	
Frequency of flow rate verification for manual PM samplers audit	
Frequency of flow rate verification for automated PM analyzers audit	
Frequency of one-point QC check (gaseous)	
Last Annual Performance Evaluation (gaseous)	
Last two semi-annual flow rate audits for PM monitors	
Changes planned within the next 18 months (Y/N)	N

Site name	Edison
AIRS #	060290007
County	Kern
Collecting (Operating) Agency	All equipment operated by CARB
Reporting Agency	All data reported by CARB
Site Start Date	1/1/80
Pollutant Parameters	Ozone, NO_2
Meteorological Parameters	Wind speed, wind direction, outdoor temperature
Address	Johnson Farm-Shed Rd, Edison CA 93320
Latitude	35.3456 N
Longitude	-118.8518 W
Elevation (m)	194
Location	
Distance to road	450 m (south)
Traffic Count	50000
Ground Cover	Dirt

Edison			
Pollutant	**Ozone**	**NO_2**	**Met Parameters**
Parameter code	44201	42602	Many
Spatial scale	Neighborhood	Neighborhood	Regional
Site type	High concentration, regional transport	Population	General
Basic monitoring objective(s)	Standards/strategy	Standards/strategy	Research, Timely/public
Monitor type	SLAMS	SLAMS	Other
POC	1	1	1
Method code	087	074	Many
Sampling method (List Instrument)	API/Teledyne 400	API 200 A	
Analysis method	UV	CL	
Start date	1/1/1983	1/1/1980	1/1/1995
Operation schedule (e.g. Hourly, 1:3)	1 Hour	1 Hour	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	5.9 m	5.9 m	10 m (OT 2.1 m)
Distance from supporting structure (meters)	None	None	None
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof (meters)	None	None	None
Distance from trees (meters)	16.1 m (11.0 m to dripline)	16.1 m (11.0 m to dripline)	18.5
Distance to furnace or incinerator flue (meters)	None	None	None
Distance between collocated monitors (meters)	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material (Teflon, etc.)	Teflon	Teflon	N/A
Residence time (seconds)	9.7	11.2	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Twice a month	Twice a month	--
Last Annual Performance Evaluation (gaseous)	10/9/2013	10/9/2013	10/9/2013
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A
Changes planned within the next 18 months (Y/N)	N	N	N

Site name	Lebec
AIRS #	060292009
County	Kern
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	1/20/2009
Pollutant Parameters	PM2.5 Non-FEM
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	1277 Beartrap Road, Lebec, CA 93243
Latitude	34.8415 N
Longitude	-118.8610 W
Elevation (m)	1063
Location	
Distance to road	300 m (west)
Traffic Count	69000
Ground Cover	Dirt, vegetated

Lebec

Pollutant	**PM2.5 Non-FEM**	**Met Parameters**	
Parameter code	88502	Many	
Spatial scale	Neighborhood	Regional	
Site type	Population	General	
Monitor objective	Timely/public	Research, Timely/public	
Monitor type	SPM	SPM	
POC	3	1	
Method code	731	Many	
Sampling method (List Instrument)	Met One BAM 1020	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS-Met One 010C	
Analysis method	BETA-ATTENUATION		
Start date	1/27/2009	Outdoor temperature, wind speed, wind direction 12/9/2009	Barometric pressure 1/28/2010
Operation schedule (e.g. Hourly, Hourly)	Hourly	Hourly	
Sampling season	ALL YEAR	ALL YEAR	
Probe height (meters)	5.5 m	9.6 m	
Distance from supporting structure (meters)			
Distance from obstructions on roof			
Distance from obstructions not on roof (meters)			
Distance from trees (meters)			
Distance to furnace or incinerator flue (meters)			
Distance between collocated monitors (meters)			
Unrestricted airflow (degrees)	360	360	
Probe material (Teflon, etc.)	ALUMINUM		
Residence time (seconds)	N/A		
Frequency of flow rate verification for manual PM samplers audit			
Frequency of flow rate verification for automated PM analyzers audit	BI-WEEKLY		
Frequency of one-point QC check (gaseous)	--		
Last Annual Performance Evaluation (gaseous)	10/25/2011, 4/10/2012		
Last two semi-annual flow rate audits for PM monitors			
Changes planned within the next 18 months (Y/N))	N		

Site name	Maricopa	
AIRS #	060290008	
County	Kern	
Collecting (Operating) Agency	Met equipment operated by SJVAPCD	Ozone equipment operated by CARB.
Reporting Agency	All data reported by SJVAPCD	
Site Start Date	7/1/87	
Pollutant Parameters	Ozone	
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure	
Address	755 Stanislaus St., Maricopa CA 93352	
Latitude	35.0515 N	
Longitude	-119.4026 W	
Elevation (m)	282	
Location	In old school building	
Distance to road	500 (northwest)	
Traffic Count	3,977*, 2012 * - No data for 755 Stanislaus St., Maricopa CA 93352. The closest street with data is Route 166/33. Traffic Counts Klipstein St (Route 166/33). Nearest cross street to the count: Alameda St. Direction from the count to the cross street: Northeast. Distance to the nearest cross street: 0.03 miles.	
Ground Cover	Gravel	

Maricopa		
Pollutant	**Ozone**	**Met Parameters**
Parameter code	44201	Many
Spatial scale	Neighborhood	Neighborhood
Site type	Regional transport	General
Basic monitoring objective(s)	Standards/strategy, Research, TIMELY/PUBLIC	Research, Timely/public
Monitor type	SLAMS	SLAMS
POC	1	1
Method code	087	Many
Sampling method (List Instrument)	Teledyne 400 E	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS-Met One 010C
Analysis method	UV	--
Start date	7/1/1987	7/1/1987
Operation schedule (e.g. Hourly, 1:3)	1 hour	Hourly
Sampling season	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	4.1	10.0
Distance from supporting structure (meters)	None	None
Distance from obstructions on roof	None	None
Distance from obstructions not on roof (meters)	None	None
Distance from trees (meters)	None	None
Distance to furnace or incinerator flue (meters)	None	None
Distance between collocated monitors (meters)	None	None
Unrestricted airflow (degrees)	360	360 (WD,WS, BP), 270 (OT)
Probe material (Teflon, etc.)	TEFLON	N/A
Residence time (seconds)	7.9	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A
Frequency of one-point QC check (gaseous)	Twice a month	N/A
Last Annual Performance Evaluation (gaseous)	6/3/13,5/20/14, 7/15/14	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	N/A

Changes planned within the next 18 months (Y/N)	N	N

Site name	**Oildale**
AIRS #	060290232
County	Kern
Collecting (Operating) Agency	All equipment operated by CARB
Reporting Agency	All data reported by CARB
Site Start Date	1/1/80
Pollutant Parameters	Ozone, PM10 FRM
Meteorological Parameters	Wind speed, wind direction, outdoor temperature
Address	3311 Manor St, Oildale CA 93308
Latitude	35.4380 N
Longitude	-119.0167 W
Elevation (m)	181
Location	
Distance to road	150 m (northwest)
Traffic Count	10000
Ground Cover	Dirt

Oildale		
Pollutant	**Ozone**	**PM10 FRM**
Parameter code	44201	81102
Spatial scale	Urban	Middle
Site type	Regional transport, Highest Concentration	Source Oriented
Basic monitoring objective(s)	Standards/strategy	Standards/strategy
Monitor type	SLAMS	SLAMS
POC	1	2
Method code	087	063
Sampling method (List Instrument)	API/Teledyne 400	Sierra Anderson 1200
Analysis method	UV	Gravimetric
Start date	1/1/1984	1/1/1987
Operation schedule (e.g. Hourly, 1:3)	1 Hour	1:6
Sampling season	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	6.7 m	2.2 m
Distance from supporting structure (meters)	None	None
Distance from obstructions on roof	None`	None
Distance from obstructions not on roof (meters)	None	None
Distance from trees (meters)	10.1 to dripline	None
Distance to furnace or incinerator flue (meters)	None	None
Distance between collocated monitors (meters)	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material (Teflon, etc.)	Teflon	N/A
Residence time (seconds)	10.1	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	Once a month
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A
Frequency of one-point QC check (gaseous)	Twice a month	N/A
Last Annual Performance Evaluation (gaseous)	4/17/2014	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	4/17/2014, 9/24/2013
Changes planned within the next 18 months (Y/N)	N	Y

Site name	Shafter	
AIRS #	060296001	
County	Kern	
Collecting (Operating) Agency	Equipment operated by CARB: Ozone, NO_2	Equipment operated by SJVAPCD: Meteorology, Speciated VOC, NMHC
Reporting Agency	Data reported by CARB: Ozone, NO_2	Data reported by SJVAPCD: Speciated VOC, NMHC, Meteorology
Site Start Date	1/1/89	
Pollutant Parameters	Ozone, NO_2, Speciated VOC, NMHC	
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, solar radiation	
Address	578 Walker St, Shafter CA 93263	
Latitude	35.5034 N	
Longitude	-119.2726 W	
Elevation (m)	106	
Location	DMV building	
Distance to road	10 m (southwest)	
Traffic Count	1200	
Ground Cover	Asphalt	

Shafter (1 of 2)				
Pollutant	**Ozone**	**NO_2**	**Total Speciated VOC**	**NMHC**
Parameter code	44201	42602	43102	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	General/background, Population Exposure	Population Exposure	Population	Population
Basic monitoring objective(s)	Standards/strategy	Standards/strategy	Research	Research
Monitor type	SLAMS	SLAMS	PAMS	PAMS
POC	1	1	1	1
Method code	087	074	164	177
Sampling method (List Instrument)	Teledyne 400E (ARB)	API 200E	Xontech 910A	Thermo TECO 55C
Analysis method	UV	CL	GC	GC
Start date	1/1/1989	1/1/1989	7/1/1994	7/1/1994
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	1:3	Hourly
Sampling season	ALL YEAR	ALL YEAR	JUN-JUL-AUG	ALL YEAR
Probe/Inlet height above ground (meters)	7.3	7.3	7.0	7.0
Distance from supporting structure (meters)	None	None	None	None
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof (meters)	None	None	None	None
Distance from trees (meters)	None	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	10.5 m	11.0 m
Distance between collocated monitors (meters)	None	None	None	None
Unrestricted airflow (degrees)	360	360	360	360
Probe material (Teflon, etc.)	TEFLON	TEFLON	S. STEEL	TEFLON
Residence time (seconds)	7.1	10.2	N/A	9.6
Frequency of flow rate verification for manual PM samplers audit	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Twice a month	Twice a month	N/A	Twice a month
Last Annual Performance Evaluation (gaseous)	10/8/2013	10/8/2013	5/10/2010	Not audited
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A
Changes planned within the next 18 months (Y/N)	N	N	N	N

Shafter (2 of 2)	
Pollutant	**Met Parameters**
Parameter code	Many
Spatial scale	Regional
Site type	General
Basic monitoring objective(s)	Research, Timely/public
Monitor type	Other
POC	1
Method code	Many
Sampling method (List Instrument)	ITP- Hy-Cal BA512AA3BB, OT- Met One 060A-2, SRD- Epply Mod. 8-48, WD- Met One 020B, WS- Met One 010C, BP- Met One 092
Analysis method	N/A
Start date	1/1/1989
Operation schedule (e.g. Hourly, 1:3)	Hourly
Sampling season	ALL YEAR
Probe height (meters)	10.0 m
Distance from supporting structure (meters)	None
Distance from obstructions on roof	None
Distance from obstructions not on roof (meters)	None
Distance from trees (meters)	None
Distance to furnace or incinerator flue (meters)	None
Distance between collocated monitors (meters)	None
Unrestricted airflow (degrees)	360
Probe material (Teflon, etc.)	None
Residence time (seconds)	None
Frequency of flow rate verification for manual PM samplers audit	None
Frequency of flow rate verification for automated PM analyzers audit	None
Frequency of one-point QC check (gaseous)	None
Last Annual Performance Evaluation (gaseous)	None
Last two semi-annual flow rate audits for PM monitors	None
Changes planned within the next 18 months (Y/N)	N

Site name	Corcoran–Patterson	
AIRS #	060310004	
County	Kings	
Collecting (Operating) Agency	All equipment operated by SJVAPCD	
Reporting Agency	Data reported by SJVAPCD: PM2.5 FEM, PM10 FEM, Meteorology	Data reported by CARB: PM2.5 FRM
Site Start Date	10/1/96	
Pollutant Parameters	PM10 FEM, PM2.5 FRM	
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure	
Address	1520 Patterson Ave, Corcoran CA 93212	
Latitude	36.1022 N	
Longitude	-119.5660 W	
Elevation (m)	62	
Location	Portable building	
Distance to road	30 m (east)	
Traffic Count	1035	
Ground Cover	Gravel	

Corcoran–Patterson (1 of 2)		
Pollutant	**PM10 FEM**	**PM2.5 FRM**
Parameter code	81102	88101
Spatial scale	Neighborhood	Neighborhood
Site type	High concentration	High concentration
Monitor objective	Timely/public	Standards/strategy, research support
Monitor type	SLAMS	SLAMS
POC	7	1
Method code	079	145
Sampling method (List Instrument)	Thermo TEOM 1400	Thermo Partisol 2025i
Analysis method	TAPERED ELEMENT	Gravimetric
Start date	10/1/2006	10/1/2012
Operation schedule (e.g. Hourly, 1:3, Hourly)	Hourly	1:3
Sampling season	ALL YEAR	ALL YEAR
Probe height (meters)	6 m	6 m
Distance from supporting structure (meters)	_______	_______
Distance from obstructions on roof	_______	_______
Distance from obstructions not on roof (meters)	_______	_______
Distance from trees (meters)	48.0 m	50.0 m
Distance to furnace or incinerator flue (meters)	_______	_______
Distance between collocated monitors (meters)		
Unrestricted airflow (degrees)	360	360
Probe material (Teflon, etc.)	______	Aluminum
Residence time (seconds)	_______	_______
Frequency of flow rate verification for manual PM samplers audit	_______	
Frequency of flow rate verification for automated PM analyzers audit	BI-WEEKLY	_______
Frequency of one-point QC check (gaseous)	_______	_______
Last Annual Performance Evaluation (gaseous)	_______	_______
Last two semi-annual flow rate audits for PM monitors	12/02/2013, 05/20/2013	12/02/2013, 05/20/2013
Changes planned within the next 18 months (Y/N)	N	N

Corcoran–Patterson (2 of 2)	
Pollutant	**Met Parameters**
Parameter code	Many
Spatial scale	Regional
Site type	General
Monitor objective	Research, Timely/public
Monitor type	Many
POC	Many
Method code	Many
Sampling method (List Instrument)	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 090D2, WD- Met One 020C, WS-Met One 010C ITP - 110-50HV, OT-06A-2, BP-090D, WD-020C, WS-010B
Analysis method	______
Start date	10/1/1996
Operation schedule (e.g. Hourly, Hourly)	Hourly
Sampling season	ALL YEAR
Probe height (meters)	9.6 m
Distance from supporting structure (meters)	______
Distance from obstructions on roof	______
Distance from obstructions not on roof (meters)	______
Distance from trees (meters)	51.5 m
Distance to furnace or incinerator flue (meters)	______
Distance between collocated monitors (meters)	______
Unrestricted airflow (degrees)	360
Probe material (Teflon, etc.)	______
Residence time (seconds)	______
Frequency of flow rate verification for manual PM samplers audit	______
Frequency of flow rate verification for automated PM analyzers audit	______
Frequency of one-point QC check (gaseous)	______
Last Annual Performance Evaluation (gaseous)	______
Last two semi-annual flow rate audits for PM monitors	______
Changes planned within the next 18 months (Y/N)	N

Site name	Hanford–Irwin	
AIRS #	060311004	
County	Kings	
Collecting (Operating) Agency	All equipment operated by SJVAPCD	
Reporting Agency	Data reported by SJVAPCD: Ozone, PM10 FEM, PM2.5 FEM, NO_2, Meteorology	Data reported by CARB: PM10 FRM
Site Start Date	10/11/93	
Pollutant Parameters	Ozone, PM10 FRM, PM10 FEM, PM2.5 FEM, NO_2	
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure	
Address	807 S Irwin St, Hanford CA 93230	
Latitude	36.3147 N	
Longitude	-119.6440 W	
Elevation (m)	82	
Location	School roof	
Distance to road	60 m (east)	
Traffic Count	5000	
Ground Cover	Rubber/plastic roof material	

Hanford–Irwin (1 of 2)			
Pollutant	**Ozone**	**PM10 FRM**	**PM10 FEM**
Parameter code	44201	81102	81102
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Site type	Population	Population	Population
Monitor objective	Timely/public, standards/strategy, research support	Standards/strategy, research support	Standards/strategy, research support
Monitor type	SLAMS	SLAMS	SLAMS
POC	1	1	3
Method code	087	063	079
Sampling method (List Instrument)	Teledyne 400 E	Sierra Andersen SSI	Thermo TEOM 1400
Analysis method	UV	Gravimetric	Tapered Element
Start date	2/25/2010	10/11/1993	7/14/2010
Operation schedule (e.g. Hourly, 1:3, Hourly)	Hourly	1:6	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	5.5 m	5.5 m	5.5 m
Distance from supporting structure (meters)			
Distance from obstructions on roof			
Distance from obstructions not on roof (meters)			
Distance from trees (meters)	26 m	28 m	21.5 m
Distance to furnace or incinerator flue (meters)			
Distance between collocated monitors (meters)			
Unrestricted airflow (degrees)	360	360	360
Probe material (Teflon, etc.)	TEFLON	ALUMINUM	
Residence time (seconds)	13.13		
Frequency of flow rate verification for manual PM samplers audit		QUARTERLY	
Frequency of flow rate verification for automated PM analyzers audit			BI-WEEKLY
Frequency of one-point QC check (gaseous)	Daily		
Last Annual Performance Evaluation (gaseous)	10/30/2013		
Last two semi-annual flow rate audits for PM monitors		10/30/2013, 4/23/2014	10/30/2013, 4/23/2014
Changes planned within the next 18 months (Y/N)	N	N	N

Hanford–Irwin (2 of 2)			
Pollutant	**PM2.5 FEM (Regulatory)**	**NO_2**	**Met Parameters**
Parameter code	88101	42602	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Site type	Population	Population	Population
Monitor objective	Research Support Timely/public	Timely/public, standards/strategy, research support	Timely/public, Sandards/strategy, research support
Monitor type	SPM	SLAMS	Many
POC	3	1	Many
Method code	170	074	Many
Sampling method (List Instrument)	Met One BAM 1020	Teledyne 200 E	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS-Met One 010C
Analysis method	BETA	CL	
Start date	2/25/2010	2/25/2010	2/25/2010
Operation schedule (e.g. Hourly, Hourly)	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	5.5 m	5.5 m	9.6 m
Distance from supporting structure (meters)			
Distance from obstructions on roof			
Distance from obstructions not on roof (meters)			
Distance from trees (meters)	20 m	26 m	28 m
Distance to furnace or incinerator flue (meters)			
Distance between collocated monitors (meters)			
Unrestricted airflow (degrees)	360	360	360
Probe material (Teflon, etc.)	ALUMINUM	TEFLON	
Residence time (seconds)		14.44	
Frequency of flow rate verification for manual PM samplers audit			
Frequency of flow rate verification for automated PM analyzers audit	BI-WEEKLY		
Frequency of one-point QC check (gaseous)		Daily	

Hanford–Irwin (2 of 2) continued			
Pollutant	**PM2.5 FEM (Regulatory)**	**NO_2**	**Met Parameters**
Last Annual Performance Evaluation (gaseous)		10/30/2013	
Last two semi-annual flow rate audits for PM monitors	10/30/2013 4/23/2014		
Changes planned within the next 18 months (Y/N)	N	N	N

Site name	Madera–City
AIRS #	060392010
County	Madera
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	6/1/2010
Pollutant Parameters	Ozone, PM10 FEM, PM2.5 FEM
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation
Address	28261 Avenue 14, Madera CA 93638
Latitude	36.9532 N
Longitude	-120.0342 W
Elevation (m)	84
Location	Portable building
Distance to road	70 m (south)
Traffic Count	1,004*, 2012 (*** -** Current Year Estimate. Nearest cross street to the count: Rd 28. Direction from the count to the cross street: West. Distance to the nearest cross street: 0.04 miles.)
Ground Cover	Asphalt

Madera—City				
Pollutant	**Ozone**	**PM10 FEM**	**PM2.5 FEM**	**Met Parameters**
Parameter code	44201	81102	88101	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	General/background	Population	Population	General/background
Monitor objective	Timely/public, standards/strategy, research support	Timely/public	Timely/public	Timely/public, standards/strategy, research support
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
POC	1	3	3	1
Method code	087	079	170	Many
Sampling method (List Instrument)	Teledyne 400 E (IZS)	Thermo TEOM 1400	Met One BAM 1020	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS- Met One 010C
Analysis method	UV	TAPERED ELEMENT	BETA	
Start date	6/1/2010	6/1/2010	6/1/2010	6/1/2010
Operation schedule (e.g. Hourly, Hourly)	Hourly	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	5.5 m	5.5 m	5.5 m	10m
Distance from supporting structure (meters)	0.1 m	0.5 m	0.5 m	
Distance from obstructions on roof				
Distance from obstructions not on roof (meters)				
Distance from trees (meters)	35m	35 m	39.5 m	
Distance to furnace or incinerator flue (meters)	48 m	45 m	43.5 m	
Distance between collocated monitors (meters)				
Unrestricted airflow (degrees)	360	360	360	360
Probe material (Teflon, etc.)	TEFLON	STAINLESS STEEL	ALUMINUM	

Madera—City (continued)				
Pollutant	**Ozone**	**PM10 FEM**	**PM2.5 FEM**	**Met Parameters**
Residence time (seconds)	11.29			
Frequency of flow rate verification for manual PM samplers audit				
Frequency of flow rate verification for automated PM analyzers audit		BI-WEEKLY	BI-WEEKLY	
Frequency of one-point QC check (gaseous)	Daily			
Last Annual Performance Evaluation (gaseous)	12/5/2013, 6/18/2014			11/18/2013, 12/5/2013
Last two semi-annual flow rate audits for PM monitors		12/5/2013, 5/8/2013	12/5/2013, 5/8/2013	
Changes planned within the next 18 months (Y/N)	N	N	N	N

Site name	Madera–Pump Yard
AIRS #	060390004
County	Madera
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	10/1/99
Pollutant Parameters	Ozone, NO_2, Speciated VOC, NMHC, Carbonyls
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation
Address	Av 8 and Road 29 1/2, Madera CA 93637
Latitude	36.8672 N
Longitude	-120.0100 W
Elevation (m)	85
Location	Portable building, outside school
Distance to road	20 m (west)
Traffic Count	100
Ground Cover	Dirt, paved

Madera–Pump Yard (1 of 2)				
Pollutant	**Ozone**	**NO_2**	**Speciated VOC**	**NMHC**
Parameter code	44201	42602	43102	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	General/background	Population	Population	Population
Monitor objective	Timely/public, standards/strategy, research support	Standards/strategy, research	Research	Research
Monitor type	PAMS	PAMS	PAMS	PAMS
POC	1	1	1	1
Method code	087	074	164	177
Sampling method (List Instrument)	Teledyne 400E	Thermo 42i	Xontech 910A	Thermo TECO 55C
Analysis method	UV	CL	GC	GC
Start date	10/1/1999	10/1/1999	10/1/1999	10/1/1999
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	1:3	Hourly
Sampling season	ALL YEAR	ALL YEAR	JUN-JUL-AUG	ALL YEAR
Probe height (meters)	7.0 m	7.0 m	7.0 m	7.0 m
Distance from supporting structure (meters)	______	______	______	______
Distance from obstructions on roof	______	______	______	______
Distance from obstructions not on roof (meters)	______	______	______	______
Distance from trees (meters)	20.7 m	20.7 m	20.7 m	20.7 m
Distance to furnace or incinerator flue (meters)	______	______	______	______
Distance between collocated monitors (meters)	______	______	______	______
Unrestricted airflow (degrees)	360	360	360	360
Probe material (Teflon, etc.)	TEFLON	TEFLON	S. STEEL	TEFLON
Residence time (seconds)	10.4	10.12		16.9
Frequency of flow rate verification for manual PM samplers audit	______	______	______	______
Frequency of flow rate verification for automated PM analyzers audit	______	______	______	______
Frequency of one-point QC check (gaseous)	Daily	Daily	______	Daily
Last Annual Performance Evaluation (gaseous)	3/25/2014	3/13/2014	______	______
Last two semi-annual flow rate audits for PM monitors	______	______	______	______
Changes planned within the next 18 months (Y/N)	Yes	Yes	Yes	Yes

Madera–Pump Yard (2 of 2)	
Pollutant	**Met Parameters**
Parameter code	Many
Spatial scale	Regional
Site type	General
Monitor objective	Research, Timely/public
Monitor type	Many
POC	Many
Method code	Many
Sampling method (List Instrument)	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, RH- Vaisala HMP45D, SRD- Epply Mod. 8-48, WD- Met One 020C, WS-Met One 010C
Analysis method	______
Start date	10/1/1999
Operation schedule (e.g. Hourly, 1:3)	Hourly
Sampling season	ALL YEAR
Probe height (meters)	10.0 m
Distance from supporting structure (meters)	______
Distance from obstructions on roof	______
Distance from obstructions not on roof (meters)	______
Distance from trees (meters)	21.2 m
Distance to furnace or incinerator flue (meters)	______
Distance between collocated monitors (meters)	______
Unrestricted airflow (degrees)	360
Probe material (Teflon, etc.)	______
Residence time (seconds)	______
Frequency of flow rate verification for manual PM samplers audit	______
Frequency of flow rate verification for automated PM analyzers audit	______
Frequency of one-point QC check (gaseous)	______
Last Annual Performance Evaluation (gaseous)	______
Last two semi-annual flow rate audits for PM monitors	______
Changes planned within the next 18 months (Y/N)	Yes

Site name	Merced–Coffee
AIRS #	060470003
County	Merced
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	10/1/91
Pollutant Parameters	Ozone, PM2.5 FEM, NO_2
Meteorological Parameters	Wind speed, wind direction, outdoor temperature
Address	385 S. Coffee St., Merced CA 95340
Latitude	37.2816 N
Longitude	-120.4340 W
Elevation (m)	86
Location	Portable building, residential area
Distance to road	15 m (east)
Traffic Count	300
Ground Cover	Dirt, vegetated

Merced–Coffee				
Pollutant	**Ozone**	**PM2.5 FEM**	**NO_2**	**Met Parameters**
Parameter code	44201	88101	42602	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Regional
Site type	Population	Population	Population	General
Monitor objective	Timely/public, standards/strategy, research support	Timely/public	Standards/strategy	Research, Timely/public
Monitor type	SLAMS	SPM	SLAMS	Other
POC	1	3	1	Many
Method code	087	170	074	Many
Sampling method (List Instrument)	Teledyne 400E	Met One BAM 1020	Thermo TECO 42C	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, WD- Met One 020C, WS-Met One 010C
Analysis method	UV	BETA	CL	____
Start date	10/1/1991	10/19/2009	10/1/1991	10/1/1991
Operation schedule (e.g. Hourly, Hourly)	Hourly	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	5.0 m	5.5 m	5.0 m	8.0 m
Distance from supporting structure (meters)	____		____	____
Distance from obstructions on roof	____		____	____
Distance from obstructions not on roof (meters)	____		____	____
Distance from trees (meters)	13.5 m	13.5 m	13.5 m	13.5 m
Distance to furnace or incinerator flue (meters)	____		____	____
Distance between collocated monitors (meters)	____		____	____
Unrestricted airflow (degrees)	345	345	345	345
Probe material (Teflon, etc.)	TEFLON	ALUMINUM	TEFLON	____
Residence time (seconds)	12.0		14.1	____
Frequency of flow rate verification for manual PM samplers audit	____		____	____
Frequency of flow rate verification for automated PM analyzers audit	____	BI-WEEKLY	____	____
Frequency of one-point QC check (gaseous)	Daily		Daily	____
Last Annual Performance Evaluation (gaseous)	11/15/2012		11/15/2012	____

Merced–Coffee (continued)				
Pollutant	**Ozone**	**PM2.5 FEM**	**NO_2**	**Met Parameters**
Last two semi-annual flow rate audits for PM monitors	____	4/25/2011, 11/15/2012	____	____
Changes planned within the next 18 months (Y/N)	N	N	N	N

Site name	Merced—M St	
AIRS #	060472510	
County	Merced	
Collecting (Operating) Agency	All equipment operated by SJVAPCD	
Reporting Agency	Data reported by CARB: PM10 FRM	Data reported by CARB: PM2.5 FRM
Site Start Date	4/1/99	
Pollutant Parameters	PM10 FRM, PM2.5 FRM	
Meteorological Parameters	None	
Address	2334 M Street, Merced CA 95340	
Latitude	37.3086 N	
Longitude	-120.4800 W	
Elevation (m)	35	
Location	Roof, post office	
Distance to road	55 m (northwest)	
Traffic Count	22400	
Ground Cover	Gravel	

Merced—M St		
Pollutant	**PM10 FRM**	**PM2.5 FRM**
Parameter code	81102	88101
Spatial scale	Neighborhood	Neighborhood
Site type	High Concentration/Population	High Concentration/Population
Monitor objective	Standards/strategy, research support	Standards/strategy, research support
Monitor type	SLAMS	SLAMS
POC	1	1
Method code	063	120
Sampling method (List Instrument)	Sierra Andersen SSI	Thermo Partisol 2025
Analysis method	GRAVI-METRIC	GRAVI-METRIC
Start date	4/1/1999	4/1/1999
Operation schedule (e.g. Hourly, 1:3)	1:6	1:3
Sampling season	ALL YEAR	ALL YEAR
Probe height (meters)	8.7 m	8.7 m
Distance from supporting structure (meters)	_____	_____
Distance from obstructions on roof	_____	_____
Distance from obstructions not on roof (meters)	_____	_____
Distance from trees (meters)	10 m	10 m
Distance to furnace or incinerator flue (meters)	38.5 m	45.0 m
Distance between collocated monitors (meters)	_____	_____
Unrestricted airflow (degrees)	360	360
Probe material (Teflon, etc.)	_____	_____
Residence time (seconds)	_____	_____
Frequency of flow rate verification for manual PM samplers audit	QUARTERLY	MONTHLY
Frequency of flow rate verification for automated PM analyzers audit	_____	_____
Frequency of one-point QC check (gaseous)	_____	_____
Last Annual Performance Evaluation (gaseous)	_____	_____
Last two semi-annual flow rate audits for PM monitors	11/15/2012, 11/14/2013, 4/21/2014 (re-audit)	11/15/2012, 11/14/2013
Changes planned within the next 18 months (Y/N)	N	N

Site name	Manteca
AIRS #	060772010
County	San Joaquin
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	11/16/10
Pollutant Parameters	PM2.5 FEM; PM10 FEM
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	530 Fishback Rd., Manteca CA 95337
Latitude	37.7933 N
Longitude	-121.2477 W
Elevation (m)	11
Location	Portable building, cement pad, dirt, corner near school
Distance to road	12 m (west)
Traffic Count	1,050*, 2008 (* - Average Daily Traffic. Nearest cross street to the count: Tuscany Dr. Direction from the count to the cross street: South Distance to the nearest cross street: 0.05 miles.)
Ground Cover	Sidewalk, dirt, grass

Manteca			
Pollutant	**PM2.5 FEM**	**PM10 FEM**	**Met Parameters**
Parameter code	88101	81102	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Site type	Population	Population	Population
Monitor objective	Standards/Strategy Research Support	Standards/Strategy Research Support	Standards/Strategy Research Support
Monitor type	SLAMS	SPM	Non-regulatory
POC	3	3	1
Method code	170	079	Many
Sampling method (List Instrument)	Met One BAM 1020	Thermo TEOM 1400	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS- Met One 010C
Analysis method			
Start date	11/16/10	5/2/11	11/16/10
Operation schedule (e.g. Hourly, Hourly)	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	6M	6M	10M
Distance from supporting structure (meters)	1.5 M	1.5 M	
Distance from obstructions on roof	0	0	
Distance from obstructions not on roof (meters)	87.5 M	87.5 M	87.5 M
Distance from trees (meters)	53.5 M	53.5 M	53.5 M
Distance to furnace or incinerator flue (meters)	n/a	n/a	n/a
Distance between collocated monitors (meters)	n/a	n/a	n/a
Unrestricted airflow (degrees)	360	360	360
Probe material (Teflon, etc.)	Aluminum	Teflon	
Residence time (seconds)			
Frequency of flow rate verification for manual PM samplers audit			
Frequency of flow rate verification for automated PM analyzers audit	Bi-weekly	Bi-Weekly	
Frequency of one-point QC check (gaseous)	n/a	n/a	n/a

Manteca (continued)			
Pollutant	**PM2.5 FEM**	**PM10 FEM**	**Met Parameters**
Last Annual Performance Evaluation (gaseous)	n/a	n/a	n/a
Last two semi-annual flow rate audits for PM monitors	12/13/2011, 5/31/2012	12/13/2011, 5/31/2012	
Changes planned within the next 18 months (Y/N)	N	N	N

Site name	**Stockton–Hazelton**
AIRS #	060771002
County	San Joaquin
Collecting (Operating) Agency	All equipment operated by CARB
Reporting Agency	All data reported by CARB
Site Start Date	
Pollutant Parameters	Ozone, PM10 FRM, PM2.5FRM, PM2.5 FEM, CO, NO_2, Toxics
Meteorological Parameters	Outdoor temperature
Address	1593 E. Hazelton St., Stockton CA 95205
Latitude	37.9507 N
Longitude	-121.2689 W
Elevation (m)	10
Location	
Distance to road	62 m (north)
Traffic Count	1000
Ground Cover	Asphalt

Stockton–Hazelton (1 of 2)			
Pollutant	**Ozone**	**PM10 FRM**	**PM2.5 FEM**
Parameter code	44201	81102	88101
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Site type	General/Background	Highest Concentration	Population Exposure, High Concentration
Basic monitoring objective(s)	Standards/strategy	Standards/strategy	Standards/strategy
Monitor type	SLAMS	SLAMS	SLAMS
POC	1	2	3
Method code	087	063	170
Sampling method (List Instrument)	API/Teledyne 400	Sierra Anderson 1200	Met One 1020
Analysis method	UV	Gravimetric	Beta Attenuation
Start date	1/1/1981	1/1/1985	5/11/2010
Operation schedule (e.g. Hourly, 1:3, Hourly)	Hourly	1:6	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	5.4 m	6.4 m	5.7 m
Distance from supporting structure (meters)	None	None	None
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof (meters)	None	None	None
Distance from trees (meters)	6.0 m to Dripline	None	None
Distance to furnace or incinerator flue (meters)	None	None	None
Distance between collocated monitors (meters)	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material (Teflon, etc.)	Teflon	N/A	N/A
Residence time (seconds)	6.1	N/A	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	Once a Month	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A	Once a month
Frequency of one-point QC check (gaseous)	Twice a month	N/A	N/A
Last Annual Performance Evaluation (gaseous)	8/1/2013	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	3/14/2014, 8/1/2013	3/14/2014, 8/1/2013
Changes planned within the next 18 months (Y/N)	N	Y	N

Stockton–Hazelton (2 of 2)

Pollutant	NO_2	CO	Toxics SN20021014	Toxics SN20021016	Met Parameters
Parameter code	42602	42101	Many	Many	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Regional
Site type	Population	Population Exposure	Population	Population	General
Basic monitoring objective(s)	Standards/strategy	Standards/strategy	Research, Timely/public	Research, Timely/public	Research, Timely/public
Monitor type	SLAMS	SLAMS	Many	Many	Many
POC	2	1	Many	Many	Many
Method code	074	593	Many	Many	Many
Sampling method (List Instrument)	API 200E	API 300 EU	Xontech 924	Xontech 924	
Analysis method	CL	IR			
Start date	1/1/1981	4/4/2013			1/1/1995
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	All year	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	5.4	5.4	7.0	7.0	
Distance from supporting structure (meters)	None	None	None	None	None
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof (meters)	None	None	None	None	None
Distance from trees (meters)	6.0 m to dripline	6.0 m to dripline	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	None	None	None
Distance between collocated monitors (meters)	None	None	2	2	None
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material (Teflon, etc.)	Teflon	Teflon	Teflon	Teflon	Teflon
Residence time (seconds)	6.7	7.9	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Twice a month	Twice a month	N/A	N/A	N/A
Last Annual Performance Evaluation (gaseous)	8/1/2013	Trace – not audited	8/1/2013	8/1/2013	9/18/2012

Stockton–Hazelton (2 of 2) continued					
Pollutant	**NO_2**	**CO**	**Toxics SN20021014**	**Toxics SN20021016**	**Met Parameters**
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A	N/A	N/A
Changes planned within the next 18 months (Y/N)	N	N	N	N	N

Site name	**Stockton–Wagner/Holt**
AIRS #	060773010
County	San Joaquin
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by CARB
Site Start Date	10/1/96
Pollutant Parameters	PM10 FRM
Meteorological Parameters	None
Address	8778 Brattle Pl., Stockton CA 95209
Latitude	38.0297 N
Longitude	-121.3530 W
Elevation (m)	7
Location	On school roof
Distance to road	30 m (north)
Traffic Count	500
Ground Cover	Felt/rubber

Stockton–Wagner/Holt	
Pollutant	**PM10 FRM**
Parameter code	81102
Spatial scale	Neighborhood
Site type	Population
Monitor objective	Standards/strategy, research support
Monitor type	SLAMS
POC	1
Method code	063
Sampling method (List Instrument)	Sierra Anderson SSI
Analysis method	GRAVI-METRIC
Start date	10/1/1996
Operation schedule (e.g. Hourly, 1:3)	1:6
Sampling season	ALL YEAR
Probe height (meters)	10 m
Distance from supporting structure (meters)	1.5 m
Distance from obstructions on roof	11.8 m
Distance from obstructions not on roof (meters)	_____
Distance from trees (meters)	12.5 m
Distance to furnace or incinerator flue (meters)	_____
Distance between collocated monitors (meters)	_____
Unrestricted airflow (degrees)	280
Probe material (Teflon, etc.)	______
Residence time (seconds)	______
Frequency of flow rate verification for manual PM samplers audit	QUARTERLY
Frequency of flow rate verification for automated PM analyzers audit	______
Frequency of one-point QC check (gaseous)	______
Last Annual Performance Evaluation (gaseous)	______
Last two semi-annual flow rate audits for PM monitors	3/21/2012, 2/13/2013
Changes planned within the next 18 months (Y/N)	Y

Site name	**Tracy–Airport**
AIRS #	060773005
County	San Joaquin
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	1/11/05
Pollutant Parameters	Ozone, PM10 FEM, PM2.5 Non-FEM, NO_2
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure, radio acoustic sounding system (RASS)
Address	5749 S. Tracy Blvd., Tracy CA 95376
Latitude	37.6826 N
Longitude	-121.4423 W
Elevation (m)	30
Location	Municipal airport yard
Distance to road	700 m (east)
Traffic Count	868
Ground Cover	Gravel

Tracy–Airport (1 of 2)

Pollutant	Ozone	PM10 FEM	PM2.5 Non-FEM	NO_2
Parameter code	44201	81102	88502	42602
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	Regional transport	Regional transport	Regional transport	Population
Monitor objective	Timely/public, standards/strategy, research support	Timely/public	Timely/public	Standards/strategy
Monitor type	SLAMS	SPM	SPM	SLAMS
POC	1	3	3	1
Method code	087	079	731	074
Sampling method (List Instrument)	Teledyne 400E	Thermo TEOM 1400	Met One BAM 1020	Thermo 200E
Analysis method	UV	TAPERED ELEMENT	BETA-ATTENUATION	CL
Start date	1/11/2005	10/25/2005	1/11/2005	1/11/2005
Operation schedule (e.g. Hourly, Hourly)	Hourly	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	7.0 m	6.5 m	6.5 m	7.0 m
Distance from supporting structure (meters)	_____	_____	_____	
Distance from obstructions on roof	_____	_____	_____	
Distance from obstructions not on roof (meters)	42.7 m	42.7 m	42.7 m	42.7 m
Distance from trees (meters)	41.5 m	41.5 m	41.5 m	41.5 m
Distance to furnace or incinerator flue (meters)	_____	_____	_____	
Distance between collocated monitors (meters)	_____	3.5m	3.5m	
Unrestricted airflow (degrees)	360	360	360	360
Probe material (Teflon, etc.)	TEFLON	ALUMINUM	ALUMINUM	TEFLON
Residence time (seconds)	10.6	_____	_____	13.8
Frequency of flow rate verification for manual PM samplers audit	_____	_____	_____	_____
Frequency of flow rate verification for automated PM analyzers audit	_____	BI-WEEKLY	BI-WEEKLY	_____
Frequency of one-point QC check (gaseous)	Hourly	_____	_____	Hourly
Last Annual Performance Evaluation (gaseous)	12/05/2013	_____	_____	12/05/2013

Tracy–Airport (1 of 2) continued				
Pollutant	**Ozone**	**PM10 FEM**	**PM2.5 Non-FEM**	**NO_2**
Last two semi-annual flow rate audits for PM monitors	______	12/05/13, 05/02/13	12/05/13, 05/02/13	______
Changes planned within the next 18 months (Y/N)	N	N	N	N

Tracy–Airport (2 of 2)	
Pollutant	**Met Parameters**
Parameter code	Many
Spatial scale	Regional
Site type	General
Monitor objective	Research, Timely/public
Monitor type	SLAMS
POC	Many
Method code	Many
Sampling method (List Instrument)	I ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS-Met One 010C
Analysis method	______
Start date	1/11/2005
Operation schedule (e.g. Hourly, 1:3)	Hourly
Sampling season	ALL YEAR
Probe height (meters)	10 m
Distance from supporting structure (meters)	______
Distance from obstructions on roof	______
Distance from obstructions not on roof (meters)	______
Distance from trees (meters)	48.7m
Distance to furnace or incinerator flue (meters)	______
Distance between collocated monitors (meters)	______
Unrestricted airflow (degrees)	360
Probe material (Teflon, etc.)	______
Residence time (seconds)	______
Frequency of flow rate verification for manual PM samplers audit	______

Tracy–Airport (2 of 2) continued	
Pollutant	**Met Parameters**
Frequency of flow rate verification for automated PM analyzers audit	______
Frequency of one-point QC check (gaseous)	______
Last Annual Performance Evaluation (gaseous)	______
Last two semi-annual flow rate audits for PM monitors	______
Changes planned within the next 18 months (Y/N)	N

Site name	Modesto–14th St
AIRS #	060990005
County	Stanislaus
Collecting (Operating) Agency	All equipment operated by CARB
Reporting Agency	All data reported by CARB
Site Start Date	1/1/81
Pollutant Parameters	Ozone, PM10 FRM, PM10 FEM, PM2.5 FRM, PM2.5 FEM, CO
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	814 14th Street, Modesto CA 95354
Latitude	37.6421 N
Longitude	-120.9942 W
Elevation (m)	33
Location	
Distance to road	50 m (southwest)
Traffic Count	10000
Ground Cover	Asphalt

Modesto–14th St (1 of 2)					
Pollutant	**Ozone**	**PM10 FRM**	**PM10 FEM**	**PM2.5 FRM**	**PM2.5 FEM**
Parameter code	44201	81102	81102	88101	88101
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Basic monitoring objective(s)	Standards /strategy	Standards/strategy	Standards/strategy	Standards/strategy	Standards/strategy
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
POC	1	3	7	1	3
Method code	087	063	122	118	170
Sampling method (List Instrument)	API/Teledyne 400	Sierra Anderson 1200	Met One 4 Models Beta A	R&P 2025	Met One 1020
Analysis method	UV	Gravimetric	Beta Attenuation	Gravimetric	Beta Attenuation
Start date	1/1/1983	8/27/1998	12/1/2013	1/3/1999	5/1/2010
Operation schedule (e.g. Hourly, 1:3,)	Hourly	1:6	Hourly	1:6	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	7.7	5.3	4.4	6.1	5.1
Distance from supporting structure (meters)	None	None	None	None	None
Distance from obstructions on roof	None	None	None	None	None
Distance from obstructions not on roof (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 collocated monitors (meters)	None	None	None	None	None
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material (Teflon, etc.)	Teflon	N/A	N/A	N/A	N/A
Residence time (seconds)	15.5	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	Once a month	N/A	Once a month	N/A

Modesto–14th St (1 of 2)					
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A	Once a month	N/A	Once a month
Frequency of one-point QC check (gaseous)	Twice a month	N/A	N/A	N/A	N/A
Last Annual Performance Evaluation (gaseous)	11/13/2013	N/A	N/A	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	4/21/2014, 11/13/2013	4/21/14	4/21/2014, 11/13/2013	4/21/2014, 11/13/2013
Changes planned within the next 18 months (Y/N)	N	Yes. Monitor end date was 12/31/2013.	N	N	N

Modesto–14th St (2 of 2)		
Pollutant	**CO**	**Met Parameters**
Parameter code	42101	Many
Spatial scale	Neighborhood	Regional
Site type	Population	General
Basic monitoring objective(s)	Standards/strategy	Research, Timely/public
Monitor type	SLAMS	SLAMS
POC	3	Many
Method code	067	Many
Sampling method (List Instrument)	API 300 EU	N/A
Analysis method	IR	N/A
Start date	1/1/2013	1/1/1995
Operation schedule (e.g. Hourly, 1:3)	1 hour	Hourly
Sampling season	ALL YEAR	ALL YEAR
Probe/Inlet height above ground(meters)	7.7	N/A
Distance from supporting structure (meters)	None	None
Distance from obstructions on roof	None	None
Distance from obstructions not on roof (meters)	None	None
Distance from trees (meters)	None	None

Modesto–14th St (2 of 2)		
Distance to furnace or incinerator flue (meters)	None	None
Distance between collocated monitors (meters)	None	None
Unrestricted airflow (degrees)	360	360
Probe material (Teflon, etc.)	Teflon	
Residence time (seconds)	N/A	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A
Frequency of one-point QC check (gaseous)	Twice a month	N/A
Last Annual Performance Evaluation (gaseous)	Trace – Not audited	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	N/A
Changes planned within the next 18 months (Y/N)	N	N

Site name	**Turlock**	
AIRS #	060990006	
County	Stanislaus	
Collecting (Operating) Agency	All equipment operated by SJVAPCD	
Reporting Agency	Data reported by SJVAPCD: Ozone, PM2.5 FEM, CO, NO_2, Meteorology	Data reported by CARB: PM10 FRM
Site Start Date	4/1/1992	
Pollutant Parameters	Ozone, PM10 FRM, PM2.5 FEM, CO, NO_2	
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure	
Address	1034 S. Minaret St., Turlock CA 95380	
Latitude	37.4880 N	
Longitude	-120.8360 W	
Elevation (m)	30	
Location	Portable building – neighborhood	
Distance to road	40 m (northeast)	
Traffic Count	670	
Ground Cover	Gravel	

Turlock (1 of 2)

Pollutant	Ozone	PM10 FRM	PM2.5 FEM	CO
Parameter code	44201	81102	88101	42101
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	Population	Population	Population, High Concentration	Population
Monitor objective	Timely/public, standards/strategy, research support	Standards/strategy, research support	Timely/public	Standards/strategy
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
POC	1	1	3	1
Method code	087	063	170	054
Sampling method (List Instrument)	Teledyne 400E	Sierra Andersen SSI	Met One BAM 1020	Thermo TECO 48C
Analysis method	UV	GRAVIMETRIC	Beta Attenuation	IR
Start date	4/1/2000	9/14/2006	9/14/2006	4/1/2000
Operation schedule (e.g. Hourly, 1:3, Hourly)	Hourly	1:6	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	7 m	6.5 m	5.4 m	7 m
Distance from supporting structure (meters)	_____	_____	_____	_____
Distance from obstructions on roof	_____	_____	_____	_____
Distance from obstructions not on roof (meters)	_____	_____	_____	_____
Distance from trees (meters)	37.5 m	37.5 m	37.5 m	37.5 m
Distance to furnace or incinerator flue (meters)	48.0 m	48.0 m	48.0 m	48.0 m
Distance between collocated monitors (meters)	_____	_____	_____	_____
Unrestricted airflow (degrees)	360	360	360	360
Probe material (Teflon, etc.)	TEFLON	_____	ALUMINUM	TEFLON
Residence time (seconds)	14.8	_____	_____	14.0
Frequency of flow rate verification for manual PM samplers audit	_____	QUARTERLY	_____	_____
Frequency of flow rate verification for automated PM analyzers audit	_____	_____	BI-WEEKLY	_____
Frequency of one-point QC check (gaseous)	Daily	_____	_____	Daily

Turlock (1 of 2) continued

Pollutant	Ozone	PM10 FRM	PM2.5 FEM	CO
Last Annual Performance Evaluation (gaseous)	3/19/2014	____	____	3/19/2014
Last two semi-annual flow rate audits for PM monitors	____	2/5/2014 4/28/2014	10/28/2013 4/2/2014	____
Changes planned within the next 18 months (Y/N)	N	N	N	Y

Turlock (2 of 2)

Pollutant	NO_2	Met Parameters	
Parameter code	42602	Many	
Spatial scale	Neighborhood	Regional	
Site type	Population	General	
Monitor objective	Standards/strategy	Research, Timely/public	
Monitor type	SLAMS	Other	
POC	1	1	
Method code	074	Many	
Sampling method (List Instrument)	Teledyne 200 E	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS-Met One 010C	
Analysis method	CL	____	
Start date	4/1/2000	Wind speed and wind direction 4/1/2000	Outdoor temperature and barometric pressure 9/3/2008
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	
Sampling season	ALL YEAR	ALL YEAR	
Probe height (meters)	7 m	7.7 m	7 m (OT)
Distance from supporting structure (meters)	____	____	
Distance from obstructions on roof	____	____	
Distance from obstructions not on roof (meters)	____	____	
Distance from trees (meters)	37.5 m	37.5 m	
Distance to furnace or incinerator flue (meters)	48.0 m	48.0 m	
Distance between collocated monitors (meters)	____	____	
Unrestricted airflow (degrees)	360	360	

Turlock (2 of 2) continued		
Pollutant	**NO_2**	**Met Parameters**
Probe material (Teflon, etc.)	TEFLON	____
Residence time (seconds)	14.1	____
Frequency of flow rate verification for manual PM samplers audit	____	____
Frequency of flow rate verification for automated PM analyzers audit	____	____
Frequency of one-point QC check (gaseous)	Daily	____
Last Annual Performance Evaluation (gaseous)	3/19/2014	1/9/2014
Last two semi-annual flow rate audits for PM monitors	____	____
Changes planned within the next 18 months (Y/N)	N	N

Site name	Porterville
AIRS #	061072010
County	Tulare
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	3/8/2010
Pollutant Parameters	Ozone, PM2.5 FEM
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	1839 S. Newcomb St., Porterville CA 93257
Latitude	36.0310 N
Longitude	-119.0550 W
Elevation (m)	41
Location	Portable building on parking lot
Distance to road	100 (south)
Traffic Count	1,010*, 2007 (* - Closest to Porterville site. Traffic Counts Ave 136 (36.036714°, -119.042117°). Nearest cross street to the count: S 236 Prospect Rd. Direction from the count to the cross street: West Distance to the nearest cross street: 0.12 miles.)
Ground Cover	Paved

Porterville			
Pollutant	**Ozone**	**PM2.5 Non-FEM**	**Met Parameters**
Parameter code	44201	88502	Many
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Site type	Population	Population	Population
Monitor objective	Timely/public, standards/strategy, research support	Timely/public	Timely/public
Monitor type	SLAMS	SPM	SLAMS
POC	1	3	1
Method code	087	731	Many
Sampling method (List Instrument)	Teledyne 400 E (IZS)	Met One BAM 1020	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS-Met One 010C
Analysis method	UV	BETA-ATTENUATION	
Start date	3/8/2010	3/8/2010	3/8/2010
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	5.4 m	5.4 m	9.6 m
Distance from supporting structure (meters)			
Distance from obstructions on roof			
Distance from obstructions not on roof (meters)	10 m	10 m	
Distance from trees (meters)			
Distance to furnace or incinerator flue (meters)			
Distance between collocated monitors (meters)			
Unrestricted airflow (degrees)	345	345	345
Probe material (Teflon, etc.)	TEFLON	ALUMINUM	
Residence time (seconds)	15.1		
Frequency of flow rate verification for manual PM samplers audit			
Frequency of flow rate verification for automated PM analyzers audit		BI-WEEKLY	

Porterville (continued)			
Pollutant	**Ozone**	**PM2.5 Non-FEM**	**Met Parameters**
Frequency of one-point QC check (gaseous)	Daily		
Last Annual Performance Evaluation (gaseous)	8/8/13, 11/6/13, 5/12/14		
Last two semi-annual flow rate audits for PM monitors		9/16/13, 3/10/14, 9/10/14	
Changes planned within the next 18 months (Y/N)	N	N	N

Site name	Sequoia–Ash Mountain
AIRS #	061070009
County	Tulare
Collecting (Operating) Agency	All equipment operated by NPS
Reporting Agency	All data reported by NPS
Site Start Date	1/1/00
Pollutant Parameters	Ozone, PM2.5 FEM, IMPROVE
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, relative humidity, solar radiation
Address	Ash Mountain, Sequoia National Park 47050 Generals Hwy, Three Rivers, CA 93271
Latitude	36.4894 N
Longitude	-118.8290 W
Elevation (m)	535
Location	Ash Mountain
Distance to road	120 m (north)
Traffic Count	1000
Ground Cover	Dirt

Pollutant	Ozone	PM2.5 FEM	Met Parameters
Parameter code	44201	88501	Many
Spatial scale	Regional	Regional	Regional
Site type	Regional transport	Regional transport	General
Monitor objective	Timely/public, standards/strategy, research support	Timely/public	Research, Timely/public
Monitor type	Non-EPA Federal	Non-EPA Federal	Non-EPA Federal
POC	1	1	1
Method code	047	707	Many
Sampling method (List Instrument)	Thermo TECO 49, 49C	BAM 1020	Many
Analysis method	UV	Beta Attenuation	Many
Start date	2000	2007	2000
Operation schedule (e.g. Hourly, Hourly, 1:3, Hourly)	Hourly	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	10	4	10
Distance from supporting structure (meters)	3	1.5	3
Distance from obstructions on roof	5	--	5
Distance from obstructions not on roof (meters)	--	--	--
Distance from trees (meters)	15 – 20	15 – 20	15-20
Distance to furnace or incinerator flue (meters)	305	305	305
Distance between collocated monitors (meters)	3	3	3
Unrestricted airflow (degrees)	360	360	360
Probe material (Teflon, etc.)	Teflon	--	--
Residence time (seconds)	13.4	--	--
Frequency of flow rate verification for manual PM samplers audit	--	--	--
Frequency of flow rate verification for automated PM analyzers audit	--	Weekly	--
Frequency of one-point QC check (gaseous)	daily	--	--
Last Annual Performance Evaluation (gaseous)	4/22/2014	--	4/22/2014
Last two semi-annual flow rate audits for PM monitors	--	11/19/2013, 4/9/2014	--
Changes planned within the next 18 months (Y/N)	N	N	N

Site name	Sequoia–Lower Kaweah
AIRS #	061070006
County	Tulare
Collecting (Operating) Agency	All equipment operated by NPS
Reporting Agency	All data reported by NPS
Site Start Date	4/1/1981
Pollutant Parameters	Ozone, NADP (wet deposition)
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, relative humidity, solar radiation
Address	Giant Forest, Sequoia National Park, 47050 Generals Highway, Three Rivers, CA 93271
Latitude	36.5661 N
Longitude	-118.7776 W
Elevation (m)	1890
Location	Giant Forest
Distance to road	380 m (southeast)
Traffic Count	To be determined
Ground Cover	Dirt

Sequoia–Lower Kaweah		
Pollutant	**Ozone**	**Met Parameters**
Parameter code	44201	Many
Spatial scale	Regional	Regional
Site type	Regional transport	General
Monitor objective	Timely/public, standards/strategy, research/monitoring support	Research, Timely/public
Monitor type	Non-EPA Federal	Non-EPA Federal
POC	1	1
Method code	087	Many
Sampling method (List Instrument)	Thermo TECO 49, 49C	Many
Analysis method	047	Many
Start date	1982	1982
Operation schedule (e.g. Hourly, 1:3)	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR
Probe height (meters)	5	5
Distance from supporting structure (meters)	1.5	10
Distance from obstructions on roof	1	--
Distance from obstructions not on roof (meters)	--	--
Distance from trees (meters)	5-10	5-10
Distance to furnace or incinerator flue (meters)	457	457
Distance between collocated monitors (meters)	5-10	10-15
Unrestricted airflow (degrees)	360	360
Probe material (Teflon, etc.)	Teflon	--
Residence time (seconds)	13.9	--
Frequency of flow rate verification for manual PM samplers audit	--	--
Frequency of flow rate verification for automated PM analyzers audit	--	--
Frequency of one-point QC check (gaseous)	daily	--
Last Annual Performance Evaluation (gaseous)	4/23/2014	4/23/2014
Last two semi-annual flow rate audits for PM monitors	--	--
Changes planned within the next 18 months (Y/N)	N	N

Site name	Visalia–Airport
AIRS #	061073000
County	Tulare
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	All data reported by SJVAPCD
Site Start Date	September 2000
Pollutant Parameters	None
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, relative humidity, barometric pressure, solar radiation, radio acoustic sounding system (RASS)
Address	9501 West Airport Drive, Visalia, CA 93277
Latitude	39.3266 N
Longitude	-119.3984 W
Elevation (m)	90
Location	Municipal airport yard
Distance to road	100 m (west)
Traffic Count	32000
Ground Cover	Vegetated

Visalia–Airport	
Pollutant	**Met Parameters**
Parameter code	Many
Spatial scale	Regional
Site type	General
Monitor objective	Research, Timely/public
Monitor type	PAMS
POC	1
Method code	Many
Sampling method (List Instrument)	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, RH- Vaisala HMP45D, SRD- Epply Mod. 8-48WD- Met One 020C, WS-Met One 010C
Analysis method	_______
Start date	10/1/1999
Operation schedule (e.g. Hourly, 1:3)	Hourly
Sampling season	ALL YEAR
Probe height (meters)	10 m
Distance from supporting structure (meters)	_______
Distance from obstructions on roof	_______
Distance from obstructions not on roof (meters)	_______
Distance from trees (meters)	6 m
Distance to furnace or incinerator flue (meters)	_______
Distance between collocated monitors (meters)	_______
Unrestricted airflow (degrees)	270
Probe material (Teflon, etc.)	_______
Residence time (seconds)	_______
Frequency of flow rate verification for manual PM samplers audit	_______
Frequency of flow rate verification for automated PM analyzers audit	_______
Frequency of one-point QC check (gaseous)	_______
Last Annual Performance Evaluation (gaseous)	_______
Last two semi-annual flow rate audits for PM monitors	_______
Changes planned within the next 18 months (Y/N)	N

Site name	Visalia—Church St
AIRS #	061072002
County	Tulare
Collecting (Operating) Agency	All equipment operated by CARB
Reporting Agency	All data reported by CARB
Site Start Date	7/1/79
Pollutant Parameters	Ozone, PM10 FRM, PM2.5 FRM, PM2.5 FEM, NO_2
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	310 N. Church St., Visalia CA 93291
Latitude	36.3325 N
Longitude	-119.2909 W
Elevation (m)	102
Location	Portable building
Distance to road	25 m (west)
Traffic Count	10000
Ground Cover	Asphalt

Visalia—Church St (1 of 2)

Pollutant	Ozone	PM10 FRM	PM2.5 FRM	PM2.5 Non-FEM
Parameter code	44201	81102	88101	88501
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Site type	General/Background	Population Exposure	Population Exposure, High Concentration	Regional transport, Population Exposure
Basic monitoring objective(s)	Standards/strategy	Standards/strategy	Standards/strategy	Research, Timely/public
Monitor type	SLAMS	SLAMS	SLAMS	Non-regulatory
POC	1	2	1	3
Method code	087	063	118	731
Sampling method (List Instrument)	API/Teledyne 400	Sierra Anderson 1200	R&P 2025	Met One 1020
Analysis method	UV	Gravimetric	Gravimetric	Beta attenuation
Start date	1/1/1981	1/1/1988	1/3/1999	11/1/2001
Operation schedule (e.g. Hourly, 1:3)	Hourly	1:6	1:3	Hourly
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR	ALL YEAR
Probe/Inlet height above ground (meters)	6.7	5.2	5.9	5.4
Distance from supporting structure (meters)	None	None	None	None
Distance from obstructions on roof	None	None	None	None
Distance from obstructions not on roof (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 collocated monitors (meters)	None	None	None	None
Unrestricted airflow (degrees)	360	360	360	360
Probe material (Teflon, etc.)	Teflon			
Residence time (seconds)	11.6	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	Once a month	Once a month	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A	N/A	Twice a month

Visalia—Church St (1 of 2)				
Pollutant	**Ozone**	**PM10 FRM**	**PM2.5 FRM**	**PM2.5 Non-FEM**
Frequency of one-point QC check (gaseous)	Twice a month	N/A	N/A	N/A
Last Annual Performance Evaluation (gaseous)	10/29/2013	N/A	N/A	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	4/21/2014, 10/29/2013	4/21/2014, 10/29/2013	4/21/2014, 10/29/2013
Changes planned within the next 18 months (Y/N)	N	Y	Y	N

Visalia—Church St (2 of 2)			
Pollutant	**NO_2**	**Met Parameters**	**PM2.5 Speciation**
Parameter code	42602	Many	Many
Spatial scale	Unknown	Regional	Neighborhood
Site type	Unknown	General	Unknown
Basic monitoring objective(s)	Standards/strategy	Research, Timely/public	
Monitor type	SLAMS	Many	Supplemental speciation
POC	1	1	5
Sampling method (List Instrument)	API 200E	Many	Gravimetric
Analysis method	099	Many	811/812
Start date	1/1/1981	1/1/1995	N/A
Operation schedule (e.g. Hourly, 1:3)	1 Hour	Hourly	N/A
Sampling season	ALL YEAR	ALL YEAR	ALL YEAR
Probe height (meters)	6.7	11.9	N/A
Distance from supporting structure (meters)	None	None	None
Distance from obstructions on roof	None	None	None
Distance from obstructions not on roof (meters)	None	None	None
Distance from trees (meters)	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	None

Visalia—Church St (2 of 2)			
Pollutant	**NO_2**	**Met Parameters**	**PM2.5 Speciation**
Distance between collocated monitors (meters)	None	None	None
Unrestricted airflow (degrees)	360	360	360
Probe material (Teflon, etc.)	Teflon	N/A	N/A
Residence time (seconds)	11.7	N/A	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A	N/A
Frequency of one-point QC check (gaseous)	Twice a month	N/A	N/A
Last Annual Performance Evaluation (gaseous)	10/29/2014	10/29/2013	N/A
Last two semi-annual flow rate audits for PM monitors	N/A	N/A	N/A
Changes planned within the next 18 months (Y/N)	N	N	N

APPENDIX C:

Near-Road NO_2 Monitoring Station Siting Requirements and Selection Process for the Fresno Core Based Statistical Area

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TABLE OF CONTENTS

TABLES

FIGURES

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1. INTRODUCTION

In 2010, the U.S. Environmental Protection Agency (EPA) established a new 1-hour standard and new minimum monitoring requirements for nitrogen dioxide (NO_2). Additionally, EPA promulgated new NO_2 monitoring network design requirements which consist of three distinct NO_2 air monitoring networks. The first network is the near-road monitoring network which is aimed at capturing the higher NO_2 concentrations that occur near roadways. The second network is the area-wide monitoring network which will represent NO_2 concentrations characteristic of large neighborhood or urban areas. The third network, which is called the Regional Administrator Required Monitoring Network, requires Regional Administrators to work with states to site a network of 40 NO_2 monitors throughout the nation in locations aimed at protecting susceptible and vulnerable communities.

The monitoring requirements for the first two monitoring networks mentioned above for the new NO_2 1-hour standard are based upon the population of Core Based Statistical Areas (CBSAs) as well as the annual average daily traffic (AADT) counts. The intent of the near-road NO_2 network is to place the monitoring stations near major roads where maximum hourly NO_2 concentrations are expected. As noted in Section 4.3 of Appendix D of 40 CFR Part 58, one microscale near-road NO_2 monitoring station is required in each CBSA with a population of 500,000 or more. Data, such as traffic volumes, fleet mix, roadway design, traffic congestion patterns, local terrain or topography, and meteorology are among the criteria that must be considered when determining areas which have the highest NO_2 concentrations. Additionally, population exposure, near-road siting criteria, safety, surrounding land use, and other factors are also considered during the location selection process. NO_2 monitors under this new standard were originally required to be operational by January 1, 2013; however on March 7, 2013, EPA amended the rule that moves this date to January 1, 2017. To assist agencies with the siting selection process, EPA provided the Near-Road NO_2 Monitoring Technical Assistance Document (TAD) which outlines recommendations and ideas on how to successfully meet the revised near-road NO_2 monitoring requirements[1].

Subsequent rule makings by EPA have made these sites into multi-pollutant sites. When CBSAs reach a population threshold of 1,000,000 people and that CBSA has a near-road NO_2 monitoring site, air districts are required to install a particulate monitor that measures particulates under 2.5 microns in size and an instrument that measures Carbon Monoxide levels in the ambient air. At this time, it is the District's intent to install these instruments at this site when the CBSA's population reaches the required thresholds and as required by the regulations EPA has promulgated.

[1] Near-Road NO_2 Monitoring Technical Assistance Document (TAD) – A document that provides state and local air agencies with recommendations and ideas on how to successfully implement near-road NO2 monitors in order to meet the NO_2 minimum monitoring requirements that were revised in 2010. http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf

EPA requires air monitoring agencies to submit a report which describes the site selection process for each near-road NO_2 monitoring station that will be established. The San Joaquin Valley Air Pollution District (District) is required to install four near-road air monitoring stations, one in each of the following CBSAs: Stockton, Modesto, Fresno, and Bakersfield. Accordingly, a report of the site selection process will be submitted by the District for each of the aforementioned stations.

With considerable assistance provided by the California Air Resources Board (CARB), the District carried out a detailed process of selecting a site for a near-road monitoring station in the Fresno CBSA. This report describes the site selection process conducted by the District and CARB for the purpose of establishing a new near-road NO_2 monitoring station.

2. SITE SELECTION PROCESS

The District conducted a site selection process that involved assistance from the CARB in gathering traffic count data, and determining candidate road segments and the positive and negative attributes of each. Road design, and wind direction associated with each road segment were also considered during the process. Once the acceptable land parcels were prioritized, the District began corresponding with the property owners in the highest ranked segment and is now negotiating a lease with a landowner who is willing to have a near-road monitoring site on his property. In addition to following the guidance provided in the TAD, the District also considered PM2.5 so the site could potentially accommodate a PM2.5 monitor in the future.

2.1 Traffic Count Data

In order to determine the road segments that theoretically have the highest NO_2 concentrations, CARB and the District assessed all available traffic count data available from the California Department of Transportation (Caltrans) for Fresno County. The data included AADT, Fleet mix, and congestion data. Following the guidance found in the TAD, the District and CARB calculated FE-AADT to determine and rank the road segments.

2.1.1 AADT

Traffic counts represent AADT which is the total traffic volume for one year divided by the number of days in the year. AADT usually depicts the traffic volume along a given road segment. All traffic count figures listed include traffic in both directions. Ahead AADT typically refers to traffic north and east of a traffic count location, and Back AADT typically refers to traffic south and west of a traffic location. To avoid overlapping data, the Ahead AADT was used in the District's site selection process.

Caltrans typically collects traffic counts on freeways. The majority of continuous traffic count sampling is conducted by moving the electronic counting instruments from location to location throughout the state. Traffic counts are adjusted estimates of AADT which compensate for seasonal influence, weekly variation, and other variables.

2.1.2 AADTT

Truck traffic is classified by the number of axles trucks have. For example, 1½ -ton trucks with dual rear tires are included in the two-axle class but pickups and vans with only four tires are not. Annual average daily truck traffic (AADTT) is the total truck traffic volume for one year divided by the number of days in the year. Continuous truck count sampling consists of vehicle classification counts that are conducted throughout California. This program includes partial day and 24-hour counts on high volume, urban freeways, and 7-day counts on low volume, rural freeways. Truck counts are adjusted estimates of AADTT which compensate for seasonal influence, weekly variation, and other variables.

2.1.3 Fleet Mix

Fleet mix pertains to a specific count or percentage of the total volume of traffic and differentiates between light-duty (LD) vehicles and heavy-duty (HD) vehicles. Differences between LD and HD vehicles include the type of fuel they run on (gasoline vs. diesel), and the vehicle's weight, length, or number of axles. NO_2 emissions vary for all vehicles depending on vehicle type; load, speed, and freeway grade, however, diesel fueled HD vehicles typically emit far higher amounts of NO_2 than do gasoline fueled LD vehicles. Fleet mix is important in determining where the emission differences occur.

2.1.4 Fleet Equivalent AADT

FE-AADT is a metric[2] that accounts for total traffic volume and fleet mix in order to compare road segments, especially when the amount of total traffic volume and HD vehicle volume on those road segments varies. FE-AADT gives a better indication of estimated NO2 emissions than does AADT. The FE-AADT values shown in Table 1 below were determined using Ahead AADT and AADTT in the equation below:

$$\text{FE-AADT} = (\text{Ahead AADT} - \text{AADTT}) + (\text{AADTT}*10)$$

This equation gives truck traffic 10 times the weight of non-truck traffic in determining rank because the NO_2 emissions are approximately 10 times as great as non-truck traffic. The segments with the highest levels of NO_2 should be those with the greatest truck traffic.

[2] For more information on the equation that defines FE-AADT, go to http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf.

2.1.5 Postmile

Caltrans has identified Postmile values as breakpoints on Freeways that usually increase from South to North or West to East depending on the direction the route follows within the county. Postmile values increase from the beginning of the route to the next county line and then start over. The total AADT values shown in the tables below apply to the freeway immediately ahead of the Postmile.

2.1.6 Traffic Congestion

Traffic congestion can lead to stop-and-go traffic conditions and per-vehicle emissions may increase as a result. A notable and constant reduction in speed between two points on a freeway is defined as a bottleneck. The congestion values shown in the tables below are annual vehicle hourly delay (AVHD) in thousand hours and represent the sum of the delay from the morning and evening peak periods and from the midday period. Additionally, Level of Service (LOS), Volume-to-Capacity Ratio ($^{V}/_{C}$), and AADT by Lane are examples of metrics that may be used to determine congestion pattern data. Because LOS and $^{V}/_{C}$ data were not available for the Fresno road segments, the AADT by Lane metric was used as a congestion surrogate (see Table 1).

2.2 Physical Characteristics of Near-Road Sites

The physical characteristics of candidate road segments must be considered in order to determine which segments are adequate for near-road monitor placement. The characteristics to be assessed and accounted for include roadway design, roadside structures and vegetation, terrain, and meteorology.

2.2.1 Roadway Design or Configuration and Clear Zones

Road design or configuration is important in determining acceptable locations for near-road monitors because it can impact the dispersion and transport of pollutants. Road designs can be characterized as above-grade, below-grade, or at-grade. Additionally, road designs that contain features such as interchanges and toll plazas can influence vehicle acceleration and deceleration rates which in turn affect pollutant concentrations and plumes.

Above-grade or elevated road configurations can be open or have solid fill material beneath them (see Figure 1). Roads that are open underneath are subject to wind from all directions, increased dispersion, turbulence, and dilution of the air as it flows over and under the road. These affects can cause pollutant concentrations to be lower downwind of the elevated roadway. Roads that are over solid fill material can have winds normal with the road and forces that keep the traffic plume near at the surface while others can cause the plume to loft above the ground when it meets the vertical filled material or wall beneath.

Figure 1: Above grade road

Source: Google Earth

Roads that are configured below-grade can have vertical or sloped walls that facilitate the funneling of air parallel to the road (see Figure 2). As the air streams through the corridor it can cause pollutant plumes to loft and be carried away as the air flows through, up, and out of the below-grade roadway.

Figure 2: Below grade with up-slope

Source: Google Earth

Roadways that are generally at the same elevation as the immediate surrounding terrain are referred to as at-grade roadways (see Figure 3). Other than structures or obstacles near the roadside, at-grade roadways pose the least amount of impact on pollutant dispersion. As stated in the TAD, at-grade or near at-grade roads are the most desirable road configurations for siting near-road monitors.

Figure 3: At grade roadway

Source: Google Earth

As stated above, EPA requires that near-road NO_2 monitoring stations be placed in areas representative of high NO_2 levels. According to the TAD, road areas that go uphill or downhill, and roads that contain on-ramps and off-ramps, interchanges, or unique features such as toll plazas, and tunnel entrances and exits should not be considered for near-road NO_2 monitor placement because they are designed for rapid vehicle accelerations and decelerations (see examples in Figure 4). These areas and road designs do not produce representative NO_2 concentrations. The most suitable place to locate a near-road NO_2 monitoring station is one that is at grade with immediate flat surrounding terrain.

Figure 4: Junction, interchange, on-ramp, and off-ramp

Source: Google Earth

Clear zones denote roadside areas that are available to drivers who need to pull over and stop safely or regain control if a vehicle leaves the road. Such zones extend from the road's outside traffic edge to an obstacle further off the road. The roadway's traffic volume, design speeds, and the slope of the terrain adjacent to and beneath the roadway are used to determine the width of the clear zone. Near-road monitoring stations are placed outside of clear zones.

2.2.2 Roadside Structures and Vegetation

Roadside structures such as sound walls or noise barriers can affect dispersion by blocking it or causing turbulence which can mix pollutants. Roadside structures can channel pollutants downwind and inhibit or reduce normal dispersion along the roadway. Vegetation can also affect pollutant transport and dispersion by mixing and diluting air as it blows through the branches and leaves of trees, and by blocking wind and slowing dispersion down. Additionally, pollutant concentrations in traffic plumes can decrease when particulate pollutants get deposited onto the surfaces of branches and leaves. Locations that are void of roadside structures and vegetation are therefore more acceptable for near-road monitor placement.

2.2.3 Terrain

Local terrain can affect dispersion and pollutant transport so it is important to have a good understanding of the large scale terrain features that characterize the air basin when considering locations for near-road monitor placement. For example, valleys may be more susceptible to high NO_2 concentrations because the surrounding terrain and temperature inversions tend to inhibit dispersion whereas open terrain areas allow for better air flow which can aid in lower pollutant concentrations.

2.2.4 Meteorology

The TAD states that evaluating historical meteorological data can be helpful in determining locations that may be directly impacted by traffic emissions from particular road segments due to local winds. Understanding the local meteorology can also indicate which side of a road segment may be more impacted by the traffic emissions. Research studies have shown that locations very close to the roadway on the downwind side of a given road segment can adequately capture peak pollutant concentrations.

2.3 Spatial Scales and Population Exposure

40 CFR Part 58 Appendix D requires that the spatial scale of a near-road NO_2 air monitoring site be classed as a microscale site. Microscale sites measure peak concentrations in an area with of a radius 100 meters. Concentrations decrease significantly as distance increases outside of this area. This being the case, EPA requires near-road monitoring stations to be placed as close as practicable but no further than 50 meters from the target road segment. Additionally, EPA requires that the sampling inlet be within 2 to 7 meters from the road's surface.

As specified in 40 CFR Part 58 Appendix D, Section 4.3.2(a)(1), state and local air monitoring agencies shall consider the potential for population exposure when making their final near-road monitoring site selections when there are multiple acceptable sites in the same ranked segment.

2.4 Safety

As specified in the TAD, near-road NO_2 monitoring stations must be safely sited for motorists traveling the roadway and for the monitoring station operators. The sites are required to be safely and legally accessible to station operators and pose no safety hazards to drivers as well as people walking or living nearby. In addition, some sites will require the installation of permanent safety barriers, such as guardrails.

3. SITE SELECTIONS FOR FRESNO CBSA

3.1 Introduction

As stated in Section 2.0 above, the District started with traffic count data to select the freeway segments that were to be considered for a site. Meteorology, terrain, road structures, parcels with locations acceptable for building a site on, and landowner willingness to host a site on their property all played a role determining site selection. The segments through the Fresno CBSA were generally intermittent rather than continuous and it became apparent that most of the ranked segments near the urban core did not have any available land for constructing a site. These segments in central Fresno were typically above or below grade with mixed vegetation and trees which prevented placement of the site close enough to the edge of the freeway to capture peak values. In fact, the District found that there are only a few locations along the top ten segments that could meet all of EPA's siting criteria.

At this juncture, the District decided to contact all landowners of parcels with acceptable locations in the top ten segments and prioritize working with the landowners who responded positively within the highest ranked segments before moving further down the list.

The District process in locating a near-road NO_2 site can be summed as follows:

- Rank all road segments
- Determine the top 10 segments
- Find locations where a site can be built (acceptable locations or parcels)
    - Take into account near-road exposure.
    - Take into account meteorology, structures, obstacles, grade, and other criteria.
- Contact property owners by sending a letter
- Contact those property owners that are willing to work with the District starting with those in the highest ranked segments
- Negotiate a lease with a willing property owner in the highest ranked segment
- Present site selection to the Governing Board for approval, and include the opportunity for public comments.

3.2 Traffic Count Data

Traffic count data determined which road segments would likely have the highest NO_2 concentrations in the Fresno CBSA. Because truck traffic accounts for the highest NO_2 emissions, the road segments were ranked by Fleet Equivalent Annual Average Truck Traffic (FE-AADT) counts. Areas that did not have recent truck traffic counts had to be estimated.

The TAD lists congestion patterns as an important factor in determining ranking road segments. Caltrans has stated that less than 2% of the state-wide congestion occurs in the counties of Madera, Fresno, Kings, Tulare and Kern counties. Since congestion is so low among the top 10 road segments, Caltrans only publishes congestion numbers for one of the top 10 segments. Segment 8 does have measurable traffic congestion equaling a total of 3,000 hours of delay on an annual basis. The average daily delay is 8.2 hours. With an AADT of 91,000 vehicles, this works out to be less than one second per vehicle per day. Any reasonable traffic congestion weighting scheme would not change the ranking of the 10 segments since all amounts of congestion in Fresno CBSA is near zero. Because so little traffic congestion occurs in the Fresno CBSA, congestion did not factor into site selection.

3.2.1 Road Segment Ranking

After the traffic data was examined, each road segment was ranked by FE-AADT from the highest traffic count to the lowest for the CBSA. The list was narrowed to the top 32 road segments (see Appendix A) then reduced to the top 10 segments (see Table 1 below). District staff surveyed the areas within each segment, and identified which locations could support a near-road monitoring station.

Table 1: Fresno County Top Road Segments by Fleet Equivalent (AADT)[4].

Route	Postmile[6]	Description	Total Ahead AADT	AADT Rank	AADTT	AADTT Rank	Congest.[3]	AADT by Lane (Congestion Surrogate)[8]	FE AADT[7]	FE AADT Rank
99	22.16	JCT RTE 180S	128,500	2	14,300	6	-	18,357	257,200	1
99	22.735	BELMONT AVE	122,500	4	14,300	7	-	20,416	251,200	2
99	23.304	OLIVE AVE	117,500	8	14,300	8	-	19,583	246,200	3
99	18.544	JENSEN AVE	93,000	16	14,945	2	-	11,625	227,505	4
99	24.416	CLINTON AVE	93,000	17	14,303	5	-	15,500	221,727	5
99	23.852	MC KINLEY AVE[5]	108,000	10	12,384	17	-	18,000	219,456	6
99	15.491	CHESTNUT AVE	73,500	38	16,170	1	-	12,250	219,030	7
99	26.224	DAKOTA AVE	91,000	19	14,000	11	3	15,166	217,000	8
99	25	SHIELDS AVE	89,500	20	14,000	12	-	14,916	215,500	9
99	9.164	MANNING AVE	83,500	28	14,245	9	-	13,916	211,705	10

[1] Road segments with no Truck AADT (AADTT) are given substitution with the following:
Route 99 – The top 3 route 99 AADT segments substituted with 14,300 truck AADT data from an adjacent road segment.
- Segments ranked 8 and 9 were estimated with 14,000 Truck AADT. The data for all of the truck segments on Route 99 that were not estimated ranged between 11,000 and 16,000 Truck AADT and the calculated average was 14,000 Truck AADT which was used as the estimate.

[2] The Total AADT numbers shown apply to the freeway immediately ahead of the postmile.

[3] Congestion data is in annual vehicle delay in thousand hours. Caltrans District 6 (which includes Fresno County) has less 2% of the statewide annual vehicle hours of delay.

[4] The Annual Average Daily Traffic (AADT) is defined as the total volume for the year divided by 365 days. Very few locations in California are actually counted continuously. Traffic Counting is generally performed by electronic counting instruments that are moved from location to location throughout the state in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. All traffic volume figures that are listed include traffic in both directions.

[5] AADT did not match Truck data table.

[6] Postmile – Each breakpoint is identified by the postmile value corresponding to that point on the freeway. Caltrans has identified that the postmile values increase from the beginning of a route within a county to the next county line. The postmile values start over again at each county line. Postmile values usually increase from South to North or West to East depending upon the general direction the route follows within the state.

[7] The equation FE AADT = (Ahead AADT-AADTT)+(AADTT*10) is defined in the TAD: http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf

[8] Congestion surrogate is calculated using this equation as defined in the TAD http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf :
AADT by lane = Total Ahead AADT ÷ Number of lanes.

3.2.2 The Top 10 Road Segments

The top 10 road segments are located along Freeway 99 through Fresno. The red lines in Figure 5 below demark the general location of the top 10 road segments. Gaps between the red lines along Freeway 99 depict locations of road segments that were ranked outside of the top ten and were not considered during the site selection process.

Figure 5: General location of the top 10 road segments in the Fresno CBSA.

Source: Google Earth

As shown in the TAD Matrix in Appendix A, road segment evaluations were based on many categories of criteria, however some of the categories were more critical to the decision-making process than others. In addition to meteorological considerations, the most important criteria included road design, road structures, and available space for an air monitoring site.

Below are descriptions of the 10 road segments and the reasons why they were acceptable or unacceptable for site consideration. Images of the segments are provided in Appendix B.

3.2.2.1 Segment 1: Jct. Rte. 180

This segment is located along Freeway 99 from Nielson Avenue northward to Belmont Avenue. The southern end of segment is above grade and the northern end of the segment is primarily below grade. The middle portion of segment is below grade with upward slopes and mixed vegetation and trees lining this entire portion of the segment. The slopes and vegetation present air flow obstruction and space limitations, and the above grade portion at the southern end of the segment is an overpass. The issues with this segment made it unacceptable for siting a near-road monitor.

3.2.2.2 Segment 2: Belmont Avenue

This segment is located along Freeway 99 from Belmont Avenue northward to Olive Avenue. The southern and northern ends of the segment are below grade with upward slopes and mixed vegetation and trees lining these portions of the segment. The middle portion of the segment is at grade with dense vegetation and a sound wall lining the east side of the freeway and a frontage road and businesses lining the west side of the freeway. These characteristics of this segment made it unacceptable for siting a near-road monitor.

3.2.2.3 Segment 3: Olive Avenue

This segment is located along Freeway 99 from Olive Avenue northward to McKinley Avenue. The southern end of the segment is below grade with upward slopes and vegetation lining both sides of the freeway. The northern end of the segment is above grade and comprises an overpass. The middle of the segment is at grade with trees lining this entire portion of the segment. These characteristics of this segment made it unacceptable for siting a near-road monitor.

3.2.2.4 Segment 4: Jensen Avenue

This segment is located along Freeway 99 from Jensen Avenue northward to Church Avenue. The southern end of the segment is above grade and comprises an overpass. The northern end of the segment descends into junction Highway 41 where upward slopes and vegetation align both sides of the freeway. The middle portion of the segment is at grade and industrial and commercial businesses with sizeable lots line both sides of the freeway. Air flow obstruction from vegetation and structures is minimal and there were two or three potential locations for siting a near-road monitor.

3.2.2.5 Segment 5: Clinton Avenue

This segment is located along Freeway 99 from Clinton Avenue northward to Shields Avenue. The entire segment is at grade with trees, bushes, and shrubs intermittently aligning much of the segment causing some space limitations and air flow obstruction. A railroad yard is located on the east side of the freeway throughout the segment, and a frontage road, businesses and some vacant lots comprise the west side of the freeway. The District determined that there were several acceptable parcels for near-road monitor placement along this segment and at least one landowner was willing to discuss the possibility with the District. However, the parcels will be in the path of the high-speed rail project when the portion of Freeway 99 in this segment gets moved 100 yards to the west which eliminated them from further consideration.

3.2.2.6 Segment 6: McKinley Avenue

This segment is located along Freeway 99 from McKinley Avenue northward to Clinton Avenue. The southern end of the segment is an above grade overpass that gently descends to the at grade configuration which makes up most of the segment. The east side of the north end of the segment becomes an upward slope due to an on/off ramp. Although some vacant lots are located on both sides of the freeway, trees and mixed vegetation aligning both sides of the freeway and intermittent sound walls pose obstruction to air flow. These characteristics made it unacceptable for near-road monitor placement.

3.2.2.7 Segment 7: Chestnut Avenue

Segment 7 is located along Freeway 99 from Chestnut Avenue northward to Central Avenue. The segment is essentially at grade except for the northbound on-ramp at the southern end of the segment. Bushes intermittently align both sides of the freeway. The west side of the freeway is occupied by agriculture and a mobile home park. The east side of the freeway is occupied by businesses with large lots. The District determined that there were good potential locations for near-road monitor placement along this segment.

3.2.2.8 Segment 8: Dakota Avenue

Segment 8 is located along Highway 99 from Dakota Avenue northward to Ashlan Avenue. This segment is entirely below grade with upward slopes and mixed vegetation and trees aligning both sides of the freeway. These characteristics made it unacceptable for near-road monitor placement.

3.2.2.9 Segment 9: Shields Avenue

This segment is located along Freeway 99 from Shields Avenue northward to North Brawley Avenue. This segment is entirely at grade with intermittent bushes and trees aligning the road side but. A railroad yard occupies the east side of the freeway while a frontage road and businesses occupy the west side of the freeway. There were several vacant lots along the frontage road that are good potential locations for a near-road monitoring site. However, the parcels will be in the path of the high-speed rail project when the portion of Freeway 99 in this segment gets moved100 yards to the west.

3.2.2.10 Segment 10: Manning Avenue

This segment is located along Freeway 99 from Manning Avenue northward to Merced Street. The segment is essentially at grade with exception of the northern end which becomes an overpass associated with on/off-ramps. Trees and bushes intermittently align the segment. Agricultural fields occupy the entire west side of the freeway in this segment. Most of the east side of the freeway is comprised of industrial businesses and vacant fields with minimal obstructions. There are many potential locations on the east side of the freeway.

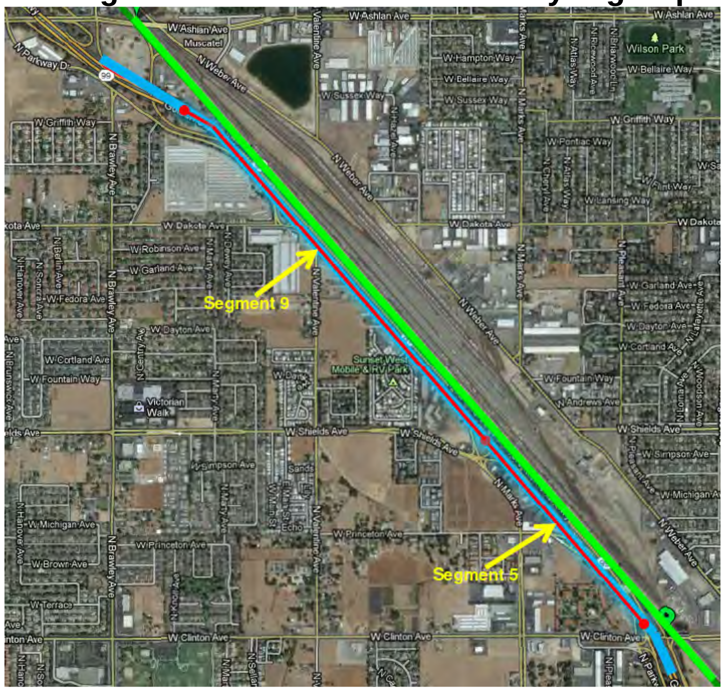
3.2.3 California High Speed Rail Project

In 2011, the California High-Speed Rail Authority began the procurement process of California's future high speed rail project[3]. The purpose of the project is to help meet the state's increasing transportation demands and will be designed to service those traveling from San Francisco to Los Angeles via the Central Valley, and eventually add routes from Sacramento to San Diego.

Construction of the Merced to Fresno route is scheduled to begin soon and the portion of the route through Fresno will extend from the San Joaquin River to downtown Fresno. Part of this stretch of track will run parallel to Freeway 99 and North Parkway Drive beginning near North Brawley Avenue and extending southward to Clinton Avenue. Construction of the track will involve moving this section of Freeway 99 about 100 yards to the west and displacing North Parkway Drive and the businesses located there. Segments 9 and 5 are in this section and acceptable parcels are in the path of the high-speed rail construction. Given these circumstances, the District was reluctant to place a near-road monitoring site in the path of the high-speed rail route. Figure 6 shows the high-speed rail route (green line) as it relates to Segments 9 and 5.

[3] For more information on the California High-Speed Rail Project, visit http://www.cahighspeedrail.ca.gov/home.aspx

Figure 6: Segments that will be affected by High Speed Rail

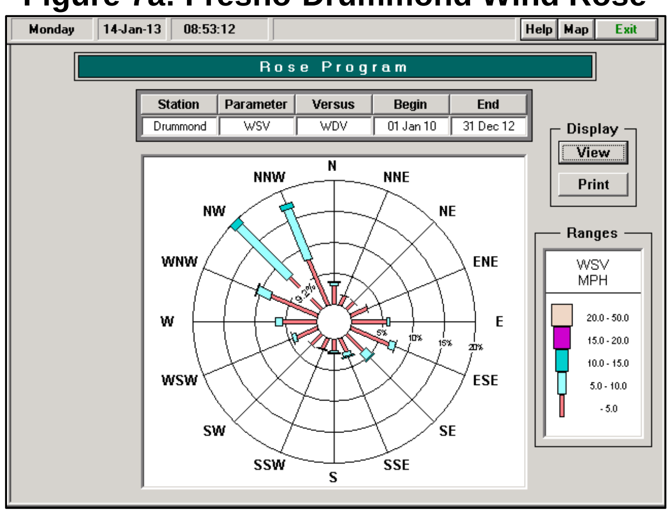


Source: Google Earth

3.3 Meteorological Considerations

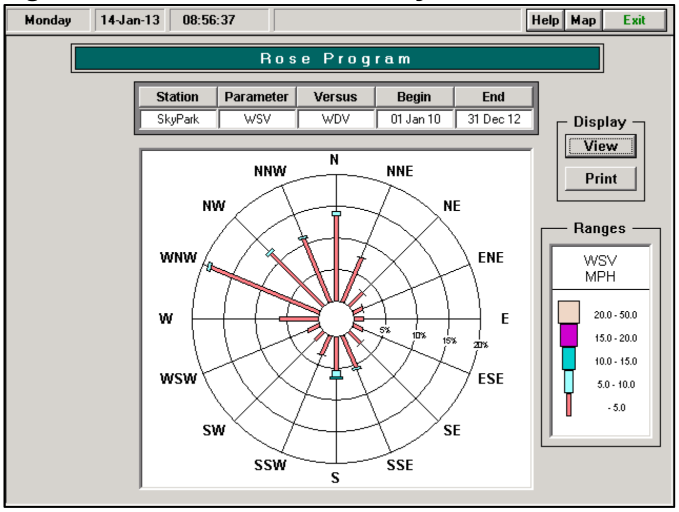
As shown in the wind roses below, local winds in Fresno blow primarily from the northwest to the southeast. The Freeway 99 corridor runs through the city of Fresno in a northwest-southeast orientation. Given that the prevailing winds basically flow parallel to the freeway, the District determined that locations on both sides of Freeway 99 were appropriate for near-road monitor placement.

Figure 7a: Fresno-Drummond Wind Rose



Source: District EMC Data Program

Figure 7b: Fresno-Sierra Sky Park Wind Rose



Source: District EMC Data Program

3.4 Terrain through Fresno CBSA

The terrain through Fresno CBSA is generally flat with agricultural lands located beyond the city limits. Freeway 99 is generally at grade at the northern and southern limits of the city of Fresno and either elevated or below grade in the urban area of city. Figure 8 shows a satellite image of the area under consideration in the city of Fresno.

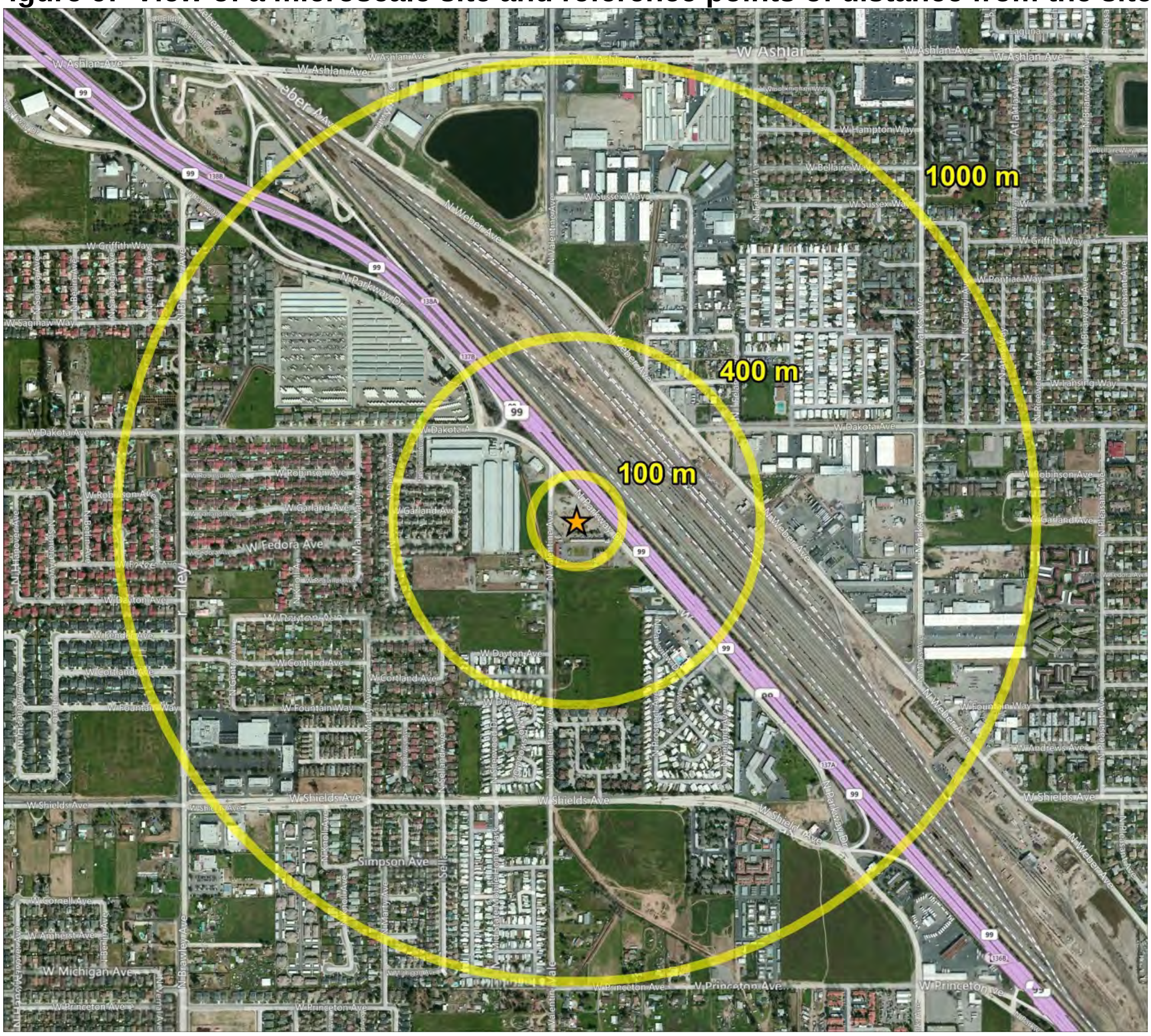
Figure 8: Map of the Fresno Metropolitan Area

Source: Google Earth

3.5 Spatial Scales and Population Exposure

As stated above, near-road NO_2 sites are intended to be microscale sites. This means that these sites measure representative concentrations within 100 meters. Figure 9 shows a microscale site with a maximum 100 meter radius for reference, and 400 and 1,000 meter radii shown for informational purposes. Maps showing locations that the District investigated in some detail are provided in Appendix D.

Figure 9: View of a microscale site and reference points of distance from the site.



Source: Arc GIS

The TAD states that the highest concentrations can be found within 20 meters of the freeway, so the District focused efforts on locations that can handle an air monitoring site within 20 meters. Additionally, the required range for the station's probe height is 2 to 7 meters in order to capture the highest NO_2 concentrations. While the preferred probe height is 2 meters, it will not be possible due to the structure and orientation of the monitoring station so, the District will place the probe as close to the 2 meter height as possible.

For the Fresno CBSA, the District determined that Segments 4, 5, 7, 9 and 10 had potential multiple acceptable sites. Sites in Segments 5, 7, and 9, were eventually eliminated for reasons explained in Section 3.6 below. Segment 10 was eliminated because the District opted to pursue an acceptable location with a higher FE-AADT ranking found in Segment 4.

3.6 Correspondence with Property Owners

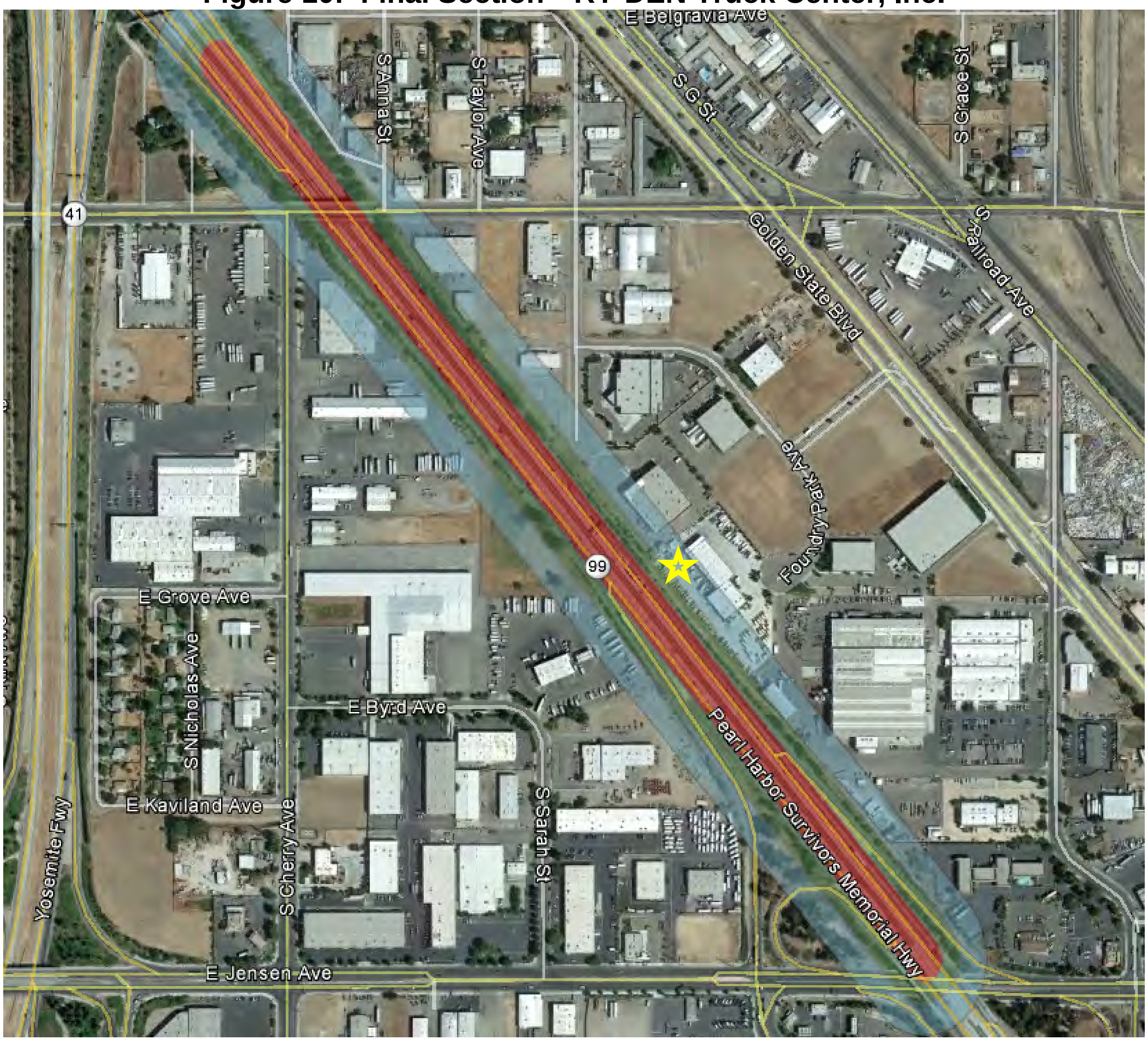
The District found 11 acceptable parcels along Freeway 99 so letters were sent to 10 of the property owners and one property owner was contacted by phone. Eight responses were received, and five of the property owners initially expressed interest. The District then began direct correspondence with the five interested landowners from Segments 9, 5, and 4 respectively. In addition to concerns about the future construction of high-speed rail, other factors lead to the elimination of Segments 9 and 5 from consideration. Two potential locations in Segment 9 were located at motels. One of the landowners offered use of one of the motel rooms for a monitoring station but the District determined that the space was unsuitable for station placement so the option was not pursued. The interested landowner in Segment 5 consented to placing a monitoring station in a specific place on the property however the location was more than 50 meters from the Freeway 99 roadside so it was eliminated from consideration. There were two interested landowners in Segment 4 who were willing to negotiate a lease with the District but one was eliminated because of vegetation obstructions on the property.

4. FINAL SITE SELECTION

After everything was considered, a parcel in the road segment with the 4th highest FE-AADT was selected as the location of the Fresno near-road NO_2 monitoring site. The site's address is 2482 Foundry Park Avenue. The selected site meets the siting criteria listed in the CFR, and is also acceptable for accommodating placement of a PM2.5 and other air pollution analyzers in the future. The District has a signed lease in place with the land owner of this property.

Figure 10 is a map of the final site selection located on Foundry Park Avenue in Segment 4. Any of the parcels adjacent to these would have similar characteristics.

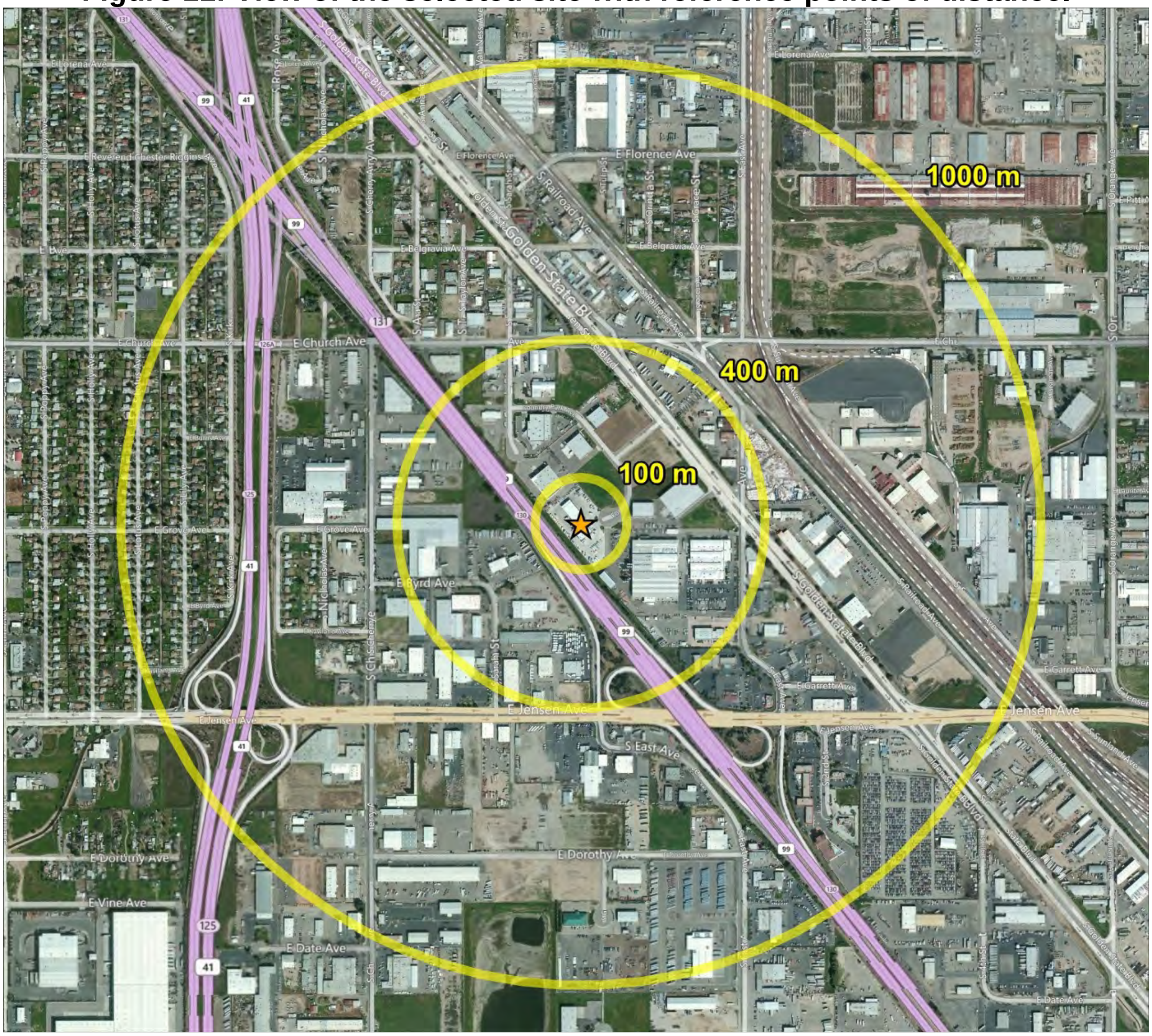
Figure 10: Final Section—RY-DEN Truck Center, Inc.



Source: Google Earth

Figure 11 shows the selected microscale site with concentric circles depicting 100, 400, and 1,000 meters radii around the parcels in the segment. The 100 meter circle is the maximum extent of the microscale site. The concentric circles show the land uses around the parcels.

Figure 11: View of the selected site with reference points of distance.



Source: Arc GIS

Figures 12a and 12b show roadside views of the selected site for the near-road NO_2 air monitoring station. The site will be as close to the freeway as practicable and the monitoring station will be placed in the corner of the truck lot. The vegetation on the freeway shoulder adjacent to the site will be removed. A detailed site description is found in Appendix E: Fresno-Foundry Park Avenue Detail Site Description.

Figures 12a and 12b: Selected site located in Segment 4

12a.

Source: Google Earth

12b.

Source: Google Earth

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APPENDICES

Appendix A: Traffic Data Table

Below is the list of the top 32 segments in the Fresno CBSA based on Caltrans data.

Table 1: Fresno County Top Road Segments by Fleet Equivalent (AADT)[4]

Route	Postmile[6]	Description	Total Ahead AADT[2]	AADT Rank	Truck AADT	AADTT Rank	Congestion[3]	FE AADT[7]	FE AADT Rank
99	22.16	JCT RTE 180S	128,500	2	14,300	6	-	257,200	1
99	22.735	BELMONT AVE	122,500	4	14,300	7	-	251,200	2
99	23.304	OLIVE AVE	117,500	8	14,300	8	-	246,200	3
99	18.544	JENSEN AVE	93,000	16	14,945	2	-	227,505	4
99	24.416	CLINTON AVE	93,000	17	14,303	5	-	221,727	5
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99	15.491	CHESTNUT AVE	73,500	38	16,170	1	-	219,030	7
99	26.224	DAKOTA AVE	91,000	19	14,000	11	3	217,000	8
99	25	SHIELDS AVE	89,500	20	14,000	12	-	215,500	9
99	9.164	MANNING AVE	83,500	28	14,245	9	-	211,705	10
99	5.321	SELMA, SECOND ST	67,000	41	14,740	3	-	199,660	11
99	21.012	NORTH JCT. RTE. 180	80,000	34	13,176	14	-	198,584	12
99	19.29	NORTH JCT. RTE. 41	63,000	46	14,490	4	-	193,410	13
99	31.609	HERNDON AVE	62,500	48	14,003	10	-	188,527	14
180	58.664	JCT RTE 41	143,000	1	5,000	21	-	188,000	15
99	28.102	SHAW AVE	61,000	49	13,347	13	-	181,123	16
99	6.431	JCT. RTE. 43 SOUTH	76,500	36	11,613	18	-	181,017	17
99	20.19	SOUTH JCT. RTE. 180	63,000	47	12,600	16	-	176,400	18
99	0.951	KINGSBURG, JCT. RTE 201 E	58,000	52	13,033	15	-	175,297	19
41	26.461	SHIELDS AVE	126,000	3	4,500	27	6	166,500	20
41	24.527	JCT. RTE. 180S	122,000	6	4,880	25	2	165,920	21
41	25.266	MC KINLEY AVE	121,000	7	4,840	26	18	164,560	22
41	27.471	ASHLAN AVE	122,000	5	4,500	28	2	162,500	23
41	28.469	SHAW JCT. RTE. 168	110,000	9	4,500	29	3	150,500	24
180	58.036	DIANA ST	102,000	11	5,000	22	-	147,000	25
180	57.843	BLACKSTONE AVE	102,000	12	5,000	23	-	147,000	26
180	57.242	FULTON ST	94,000	14	5,000	24	-	139,000	27
5	17.964	RTE. 33 S., RTE. 145 N.	37,500	57	11,085	19	-	137,265	28
5	14.873	JCT. RTE. 198	37,500	59	11,081	20	-	137,229	29
41	23.736	DIVISADERO ST	96,000	13	4,500	30	-	136,500	30
41	22.798	M ST	93,500	15	4,500	31	-	134,000	31
41	29.463	FRESNO	93,000	18	4,500	32	-	133,500	32

[1] Road segments with no Truck AADT (AADTT) are given substitution with the following:

Route 99 – The top 3 route 99 AADT segments substituted with 14,300 truck AADT data from an adjacent road segment.
- Segments ranked 8 and 9 were estimated with 14,000 Truck AADT. The data for all of the truck segments on Route 99 that were not estimated ranged between 11,000 and 16,000 Truck AADT and the calculated average was 14,000 Truck AADT which was used as the estimate.

Route 180 - 5,000 Truck AADT. Segments substituted with Truck AADT data from the only road segment with similar AADT data.

Route 41 - 4,500 Truck AADT. Calculated the average of the top 4 Truck AADT road segments with similar total AADT.

[2] The Total AADT numbers shown apply to the freeway immediately ahead of the postmile.
[3] Congestion data is in annual vehicle delay in thousand hours. Caltrans District 6 (which includes Fresno County) has less 2% of the statewide annual vehicle hours of delay.
[4] The Annual Average Daily Traffic (AADT) is defined as the total volume for the year divided by 365 days. Very few locations in California are actually counted continuously. Traffic Counting is generally performed by electronic counting instruments that are moved from location to location throughout the state in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. All traffic volume figures that are listed include traffic in both directions.
[5] AADT did not match Truck data table.
[6] Postmile – Each breakpoint is identified by the postmile value corresponding to that point on the freeway. Caltrans has identified that the postmile values increase from the beginning of a route within a county to the next county line. The postmile values start over again at each county line. Postmile values usually increase from South to North or West to East depending upon the general direction the route follows within the state.
[7] The equation FE AADT = (Ahead AADT-AADTT)+(AADTT*10) is defined in the TAD: http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf

Appendix B: Site Details

Below are the site details for the selected site and the sites that were ruled out for various reasons.

Table 2: Site Details Matrix

Site/Segment Parameter	Parameter Description			
Road segment name	Segment 4	Segment 4	Segment 5	Segment 9
Road segment end points	Jensen Ave to Church Ave	Jensen Ave to Church Ave	Clinton Ave to Shields Ave	Shields Ave to N. Brawley Ave
Road type	Controlled access highway	Controlled access highway	Controlled access highway	Controlled access highway
Interchanges	On-ramp nearby	On-ramp nearby	None	None
Frontage roads	None	None	None	Yes
Roadside design	At grade	At grade	At grade	At grade
Terrain	Flat	Flat	Flat	Flat
Current road construction	None	None	None	None
Future road construction	Not aware of any	Not aware of any	High Speed Rail Project	High Speed Rail Project
Roadside structures	Some vegetation	Some vegetation	Some vegetation	Some vegetation
AADT	93,000	93,000	93,000	89,500
HD counts	14,945	14,945	14,303	14,000
FE-AADT	227,505	227,505	221,727	215,500
Congestion information	No congestion	No congestion	No congestion	No congestion
Infrastructure	Freeway sign	Freeway sign	Light poles, billboard	Cell tower, power poles
Surrounding land use	Light Commercial/ Industrial	Light Commercial/ Industrial	Light Commercial	Light Commercial
Nearby sources	Freeway	Freeway	Freeway	Freeway
Meteorology	Acceptable	Acceptable	Acceptable	Acceptable
Population exposure	Non-residential area.	Non-residential area.	Commercial and nearby residential area.	Commercial and nearby residential area.
Available space – site footprint	1000 sq. feet	1000 sq. feet	1000 sq. feet	1000 sq. feet
Safety features	Will need to be installed.	None.	None.	None.
Property type	Private Property	Private Property	Private Property	Private Property
Property owner	Landowner is willing to work with the District.	District provided lease but landowner did not respond.	Landowner would not provide suitable location.	Landowner is willing to work with the District.
Likelihood of access	Easy access	Easy access	Easy access	Easy access
Other details/local knowledge	Vegetation on freeway shoulder will be removed			Selected higher ranked segment.

Appendix C: Maps of Segments

The aerial maps below show the top 10 segments, their end points in detail, and the surrounding land use of each segment.

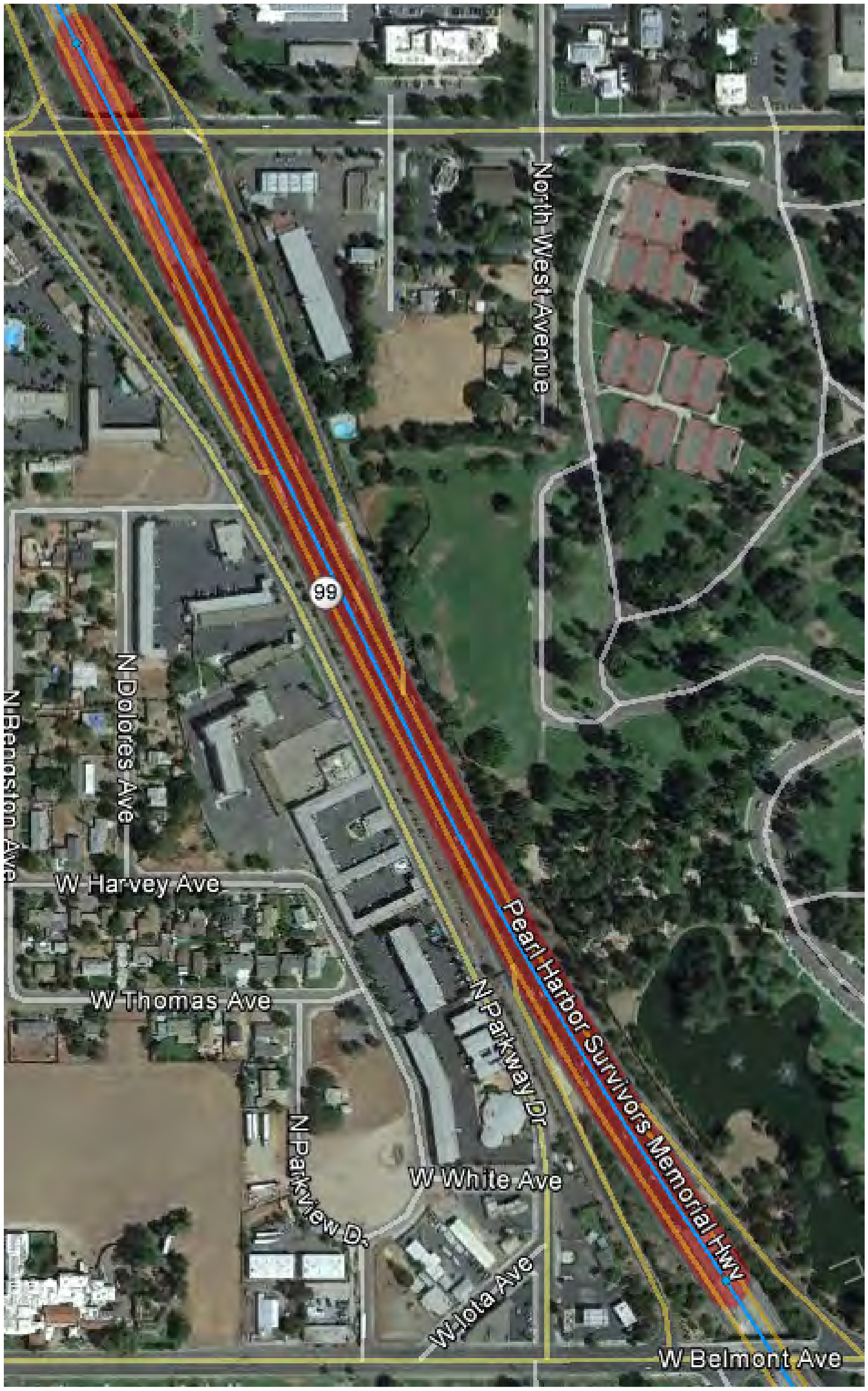
Segment 1

This segment is located along Freeway 99 from Nielson Avenue northward to Belmont Avenue.

Source: Google Earth

Segment 2

This segment is located along Freeway 99 from Belmont Avenue northward to Olive Avenue.



Source: Google Earth

Segment 3

This segment is located along Freeway 99 from Olive Avenue northward to McKinley Avenue.

Source: Google Earth

Segment 4

This segment is located along Freeway 99 from Jensen Avenue northward to Church Avenue. The yellow ellipse demarks the location of suitable parcels the District investigated. The green star demarks the parcel that was selected.

Source: Google Earth

Segment 5

This segment is located along Freeway 99 from Clinton Avenue northward to Shields Avenue. The yellow ellipse demarks the location of suitable parcels the District investigated but eventually eliminated from consideration for various reasons.

Source: Google Earth

Segment 6

This segment is located along Freeway 99 from McKinley Avenue northward to Clinton Avenue.

Source: Google Earth

Segment 7

Segment 7 is located along Freeway 99 from Chestnut Avenue northward to Central Avenue.

Source: Google Earth

Segment 8

Segment 8 is located along Highway 99 from Dakota Avenue northward to Ashlan Avenue.

Source: Google Earth

Segment 9

This segment is located along Freeway 99 on Parkway Avenue from Shields Avenue northward to North Brawley Avenue. The yellow ellipse demarks the location of suitable parcels the District investigated but eventually eliminated from consideration for various reasons.

Source: Google Earth

Segment 10

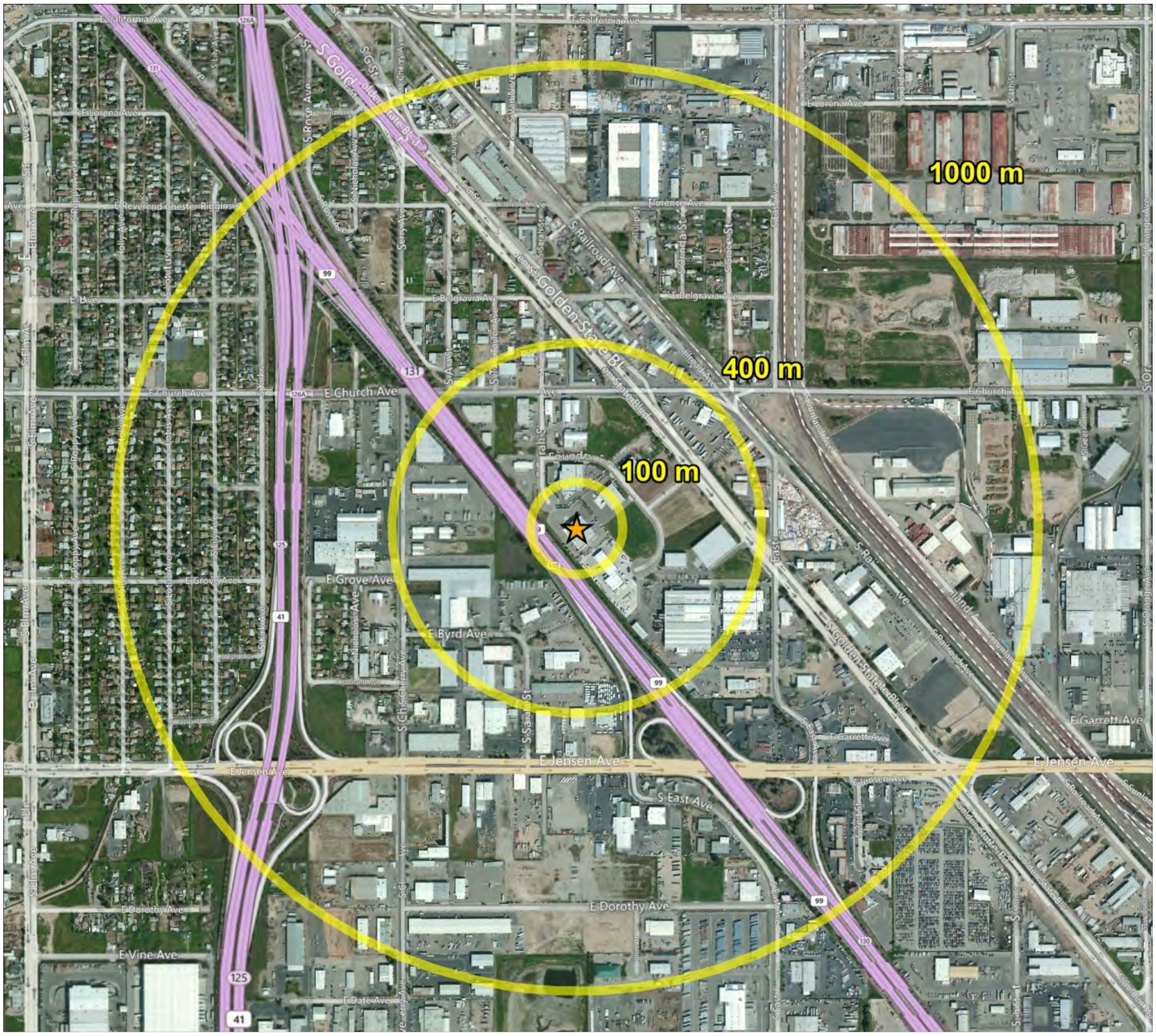
This segment is located along Freeway 99 from Manning Avenue northward to Merced Street.

Source: Google Earth

Appendix D: Sample Sites with Reference Points of Distance

Segment 4

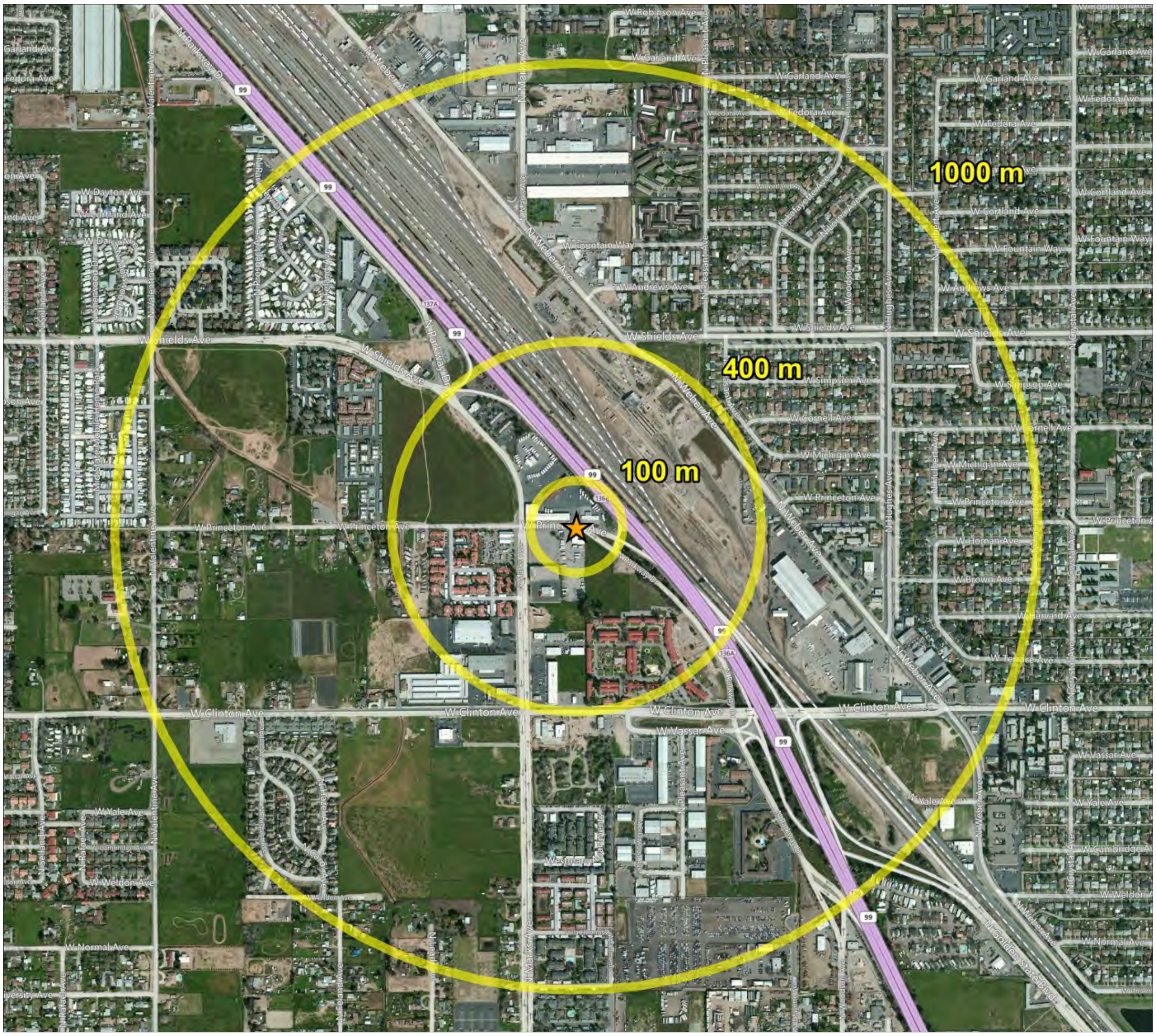
View of one of the microscale sites that the District investigated in some detail. The 100 meter circle is the maximum extent of the microscale site. The concentric circles show the land uses around the parcels. This site was not pursued because the property owner stopped corresponding with the District.



Source: Arc GIS

Segment 5

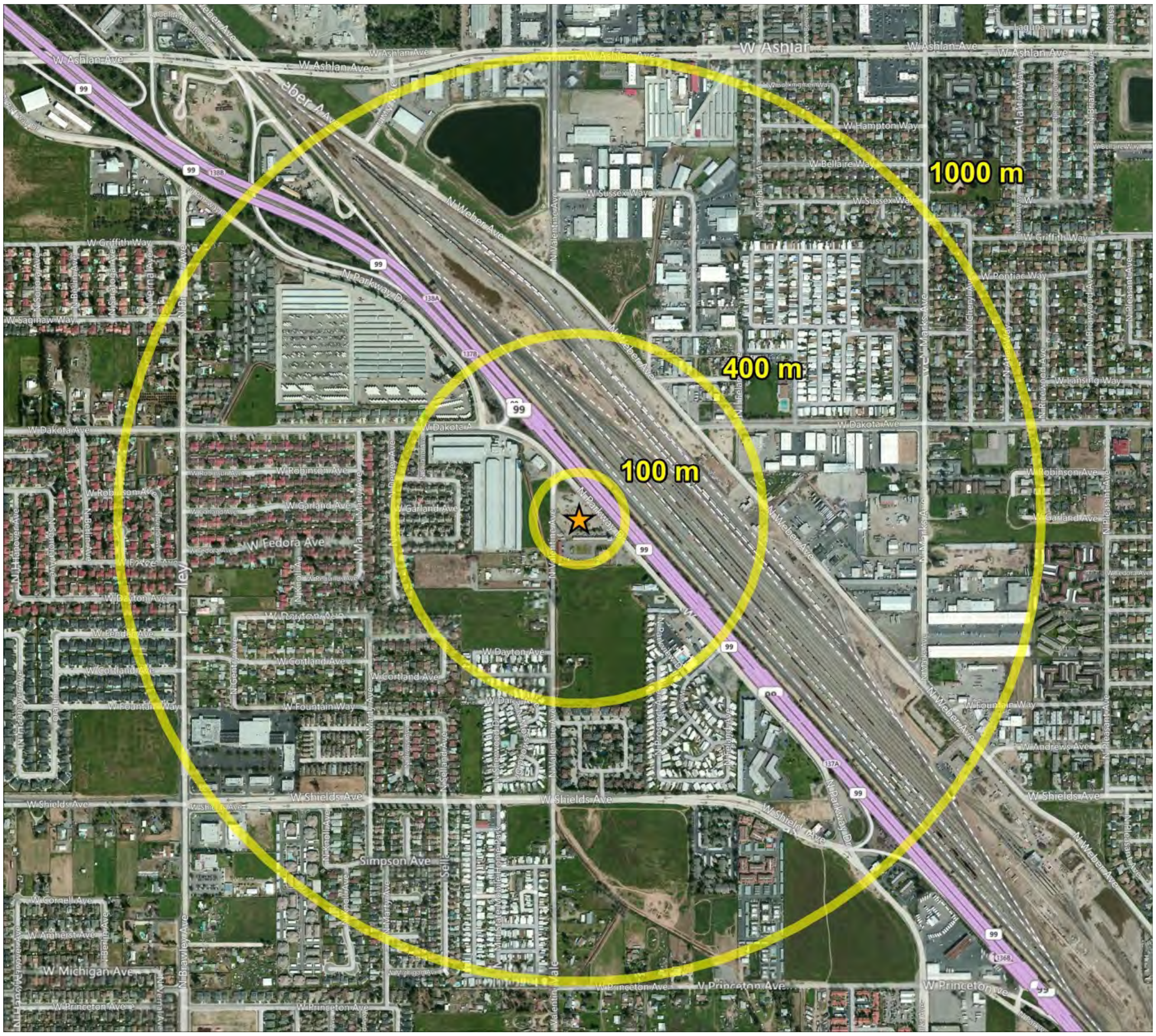
View of one of the microscale sites that the District investigated in some detail. The 100 meter circle is the maximum extent of the microscale site. The concentric circles show the land uses around the parcels. This site was not pursued because the property owner did not respond to the District's letter of interest.



Source: Arc GIS

Segment 9

View of one of the microscale sites that the District investigated in some detail. The 100 meter circle is the maximum extent of the microscale site. The concentric circles show the land uses around the parcels. This site was not pursued because of complications between multiple owners of the property as well as concerns about the future construction of high-speed rail.



Source: Arc GIS

APPENDIX D: FRESNO – FOUNDRY PARK AVENUE DETAIL SITE DESCRIPTION

Site name	**Fresno – Foundry Park Ave**
AIRS #	060192015 (Proposed)
County	Fresno
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	SJVAPCD
Site Start Date	April 1, 2015
Pollutant Parameters	NO_2
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	2482 Foundry Park Ave, Fresno, CA 93706
Latitude	N 36.10901
Longitude	W -119.777403
Elevation (m)	86
Location	Equipment/communications shelter
Distance to road	16 to 19 meters
Traffic Count	93,000 (FE AADT is 227,505)
Ground Cover	Rubberized plastic membrane roof; asphalt paving and landscaping beyond the roof

Fresno – Foundry Park Ave		
Pollutant	**NO_2**	**Met Parameters**
Parameter code	42602	Many
Spatial scale	Micro	Neighborhood
Site type	High Concentration	Population
Monitor objective	Timely/public, standards/strategy, research support	Timely/public, Standards/strategy, research support
Monitor type	SLAMS	Many
POC	1	Many
Method code	074	Many
Sampling method (List Instrument)	Teledyne 200 E	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS-Met One 010C
Analysis method	CL	Many
Start date	04/01/2015	04/01/2015
Operation schedule (e.g. 1:1, 1-Hour)	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR
Probe height (meters)	4 to 6 m (likely 5.5 m)	4 to 6 m (5.5 m most likely)
Distance from supporting structure (meters)	N/A	N/A
Distance from obstructions on roof	None	None
Distance from obstructions not on roof (meters)	0 (Bushes will be removed prior to start date)	0
Distance from trees (meters)	0 (Bushes will be removed prior to start date)	0
Distance to furnace or incinerator flue (meters)	None	None
Distance between collocated monitors (meters)	None	None
Unrestricted airflow (degrees)	360	360
Probe material (Teflon, etc.)	TEFLON	N/A
Residence time (seconds)	Less than 20 seconds (likely 14.5)	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	N/A
Last Annual Performance Evaluation (gaseous)	Will be scheduled when site is built	Will be scheduled when site is built
Last two semi-annual flow rate audits for PM monitors	N/A	N/A
Changes planned within the next 18 months (Y/N)	No	No

APPENDIX D:

Near-Road NO_2 Monitoring Station Siting Requirements and Selection Process for the Bakersfield Core Based Statistical Area

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TABLE OF CONTENTS

TABLE OF FIGURES

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1. Introduction

In 2010, the U.S. Environmental Protection Agency (EPA) established a new 1-hour standard and new minimum monitoring requirements for nitrogen dioxide (NO_2). Additionally, EPA promulgated new NO_2 monitoring network design requirements which consist of three distinct NO_2 air monitoring networks. The first network is the near-road monitoring network which is aimed at capturing the higher NO_2 concentrations that occur near roadways. The second network is the area-wide monitoring network which will represent NO_2 concentrations characteristic of large neighborhood or urban areas. The third network, which is called the Regional Administrator Required Monitoring Network, requires Regional Administrators to work with states to site a network of 40 NO_2 monitors throughout the nation in locations aimed at protecting susceptible and vulnerable communities.

The monitoring requirements for the first two monitoring networks mentioned above for the new NO_2 1-hour standard are based upon the population of Core Based Statistical Areas (CBSAs) as well as the annual average daily traffic (AADT) counts. The intent of the near-road NO_2 network is placing the monitoring stations near major roads where maximum hourly NO_2 concentrations are expected. As noted in Section 4.3 of Appendix D of 40 CFR Part 58, one microscale near-road NO_2 monitoring station is required in each CBSA with a population of 500,000 or more. Data such as traffic volumes, fleet mix, roadway design, traffic congestion patterns, and characteristics such as local terrain or topography, and meteorology are among the criteria that must be considered when determining areas which have the highest NO_2 concentrations. Additionally, population exposure, near-road siting criteria, safety, surrounding land use, and other factors are also considered during the location selection process. NO_2 monitors under this new standard were originally required to be operational by January 1, 2013; however on March 7, 2013, EPA amended on to the rule that moves this date to January 1, 2017. To assist agencies with the siting selection process, EPA provided the Near-Road NO_2 Monitoring Technical Assistance Document (TAD) which outlines recommendations and ideas on how to successfully meet the revised near-road NO_2 monitoring requirements[1].

EPA requires air monitoring agencies to submit a report which describes the site selection process for each near-road NO_2 monitoring station that will be established. The San Joaquin Valley Air Pollution District (District) is required to install four near-road air monitoring stations, one in each of the following CBSAs: Stockton, Modesto, Fresno, and Bakersfield. Accordingly, a report of the site selection process will be submitted by the District for each of the aforementioned stations.

[1] NO_2 Near-Road Monitoring Technical Assistance Document (TAD) – A document that provides state and local air agencies with recommendations and ideas on how to successfully implement near-road NO2 monitors in order to meet the NO_2 minimum monitoring requirements that were revised in 2010. http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf

With considerable assistance provided by the California Air Resources Board (CARB), the District carried out a detailed process of selecting a site for a near-road monitoring station in the Bakersfield CBSA. This report describes the site selection process conducted by the District and CARB for the purpose of establishing this new near-road NO_2 monitoring station.

2. Site Selection Process

The District conducted a site selection process that involved assistance from the CARB in gathering traffic count data, and determining candidate road segments and the positive and negative attributes of each. Road design, and wind direction associated with each road segment were also considered during the process. Once the acceptable land parcels were decided upon, a lease was negotiated between the District and one of the property owners and the final site selection was made. In addition to following the guidance provided in the TAD, the District also considered PM2.5 so the site could potentially accommodate a PM2.5 monitor in the future.

2.1 Traffic Count Data

In order to determine the road segments that theoretically have the highest NO_2 concentrations, CARB and the District assessed all available traffic count data available from the California Department of Transportation (Caltrans) for Kern County. The data included AADT, Fleet mix, FE-AADT, and congestion data. Following the guidance found in the TAD, the District and CARB used FE-AADT to determine and rank the road segments.

2.1.1 AADT

Traffic counts represent AADT which is the total traffic volume for one year divided by the number of days in the year. AADT usually depicts the traffic volume along a given road segment. All traffic count figures listed include traffic in both directions. Ahead AADT typically refers to traffic north and east of a traffic count location, and Back AADT typically refers to traffic south and west of a traffic location. To avoid overlapping data, the Ahead AADT was used in the District’s site selection process.

Caltrans typically collects traffic counts on freeways. The majority of continuous traffic count sampling is conducted by moving the electronic counting instruments from location to location throughout the state. Traffic counts are adjusted estimates of AADT which compensate for seasonal influence, weekly variation, and other variables.

2.1.2 AADTT

Truck traffic is classified by the number of axles trucks have. For example, 1½ -ton trucks with dual rear tires are included in the two-axle class but pickups and vans with only four tires are not. Annual average daily truck traffic (AADTT) is the total truck traffic volume for one year divided by the number of days in the year. Continuous truck count sampling consists of vehicle classification counts that are conducted throughout California. This program includes partial day and 24-hour counts on high volume, urban freeways, and 7-day counts on low volume, rural freeways. Truck counts are adjusted estimates of AADTT which compensate for seasonal influence, weekly variation, and other variables.

2.1.3 Fleet Mix

Fleet mix pertains to a specific count or percentage of the total volume of traffic and differentiates between light-duty (LD) vehicles and heavy-duty (HD) vehicles. Differences between LD and HD vehicles include the type of fuel they run on (gasoline vs. diesel), and the vehicle's weight, length, or number of axles. NO_2 emissions vary for all vehicles depending on vehicle type; load, speed, and freeway grade, however, diesel fueled HD vehicles typically emit far higher amounts of NO_2 than do gasoline fueled LD vehicles. Fleet mix is important in determining where the emission differences occur.

2.1.4 Fleet Equivalent AADT

FE-AADT is a metric[2] that accounts for total traffic volume and fleet mix in order to compare road segments, especially when the amount of total traffic volume and HD volume on those road segments varies. FE-AADT gives a better indication of estimated NO_2 emissions than does AADT. The FE-AADT values shown in Table 1 below were determined using Ahead AADT and AADTT in the equation below:

$$\text{FE-AADT} = (\text{Ahead AADT} - \text{AADTT}) + (\text{AADTT}*10)$$

This equation gives truck traffic 10 times the weight of non-truck traffic in determining rank because the NO_2 emissions are approximately 10 times as great as non-truck traffic. The segments with the highest levels of NO_2 should be those with the greatest truck traffic.

2.1.5 Postmile

Caltrans has identified Postmile values as breakpoints on Freeways that usually increase from South to North or West to East depending on the direction the route follows within the county. Postmile values increase from the beginning of the route to

[2] For more information on the equation that defines FE-AADT, go to http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf.

the next county line and then start over. The total AADT values shown in the tables below apply to the freeway immediately ahead of the Postmile.

2.1.6 Traffic Congestion

Traffic congestion can lead to stop-and-go traffic conditions and per-vehicle emissions may increase as a result. A notable and constant reduction in speed between two points on a freeway is defined as a bottleneck. The congestion values shown the tables below are annual vehicle hourly delay (AVHD) in thousand hours and represent the sum of the delay from the morning and evening peak periods and from the midday period. Additionally, Level of Service (LOS), Volume-to-Capacity Ratio ($^{V}/_{C}$), and AADT by Lane are examples of metrics that may be used to determine congestion pattern data. Because LOS and $^{V}/_{C}$ data were not available for the Bakersfield road segments, the AADT by Lane metric was used as a congestion surrogate (see Table 1).

2.2 Physical Characteristics of Near-Road Sites

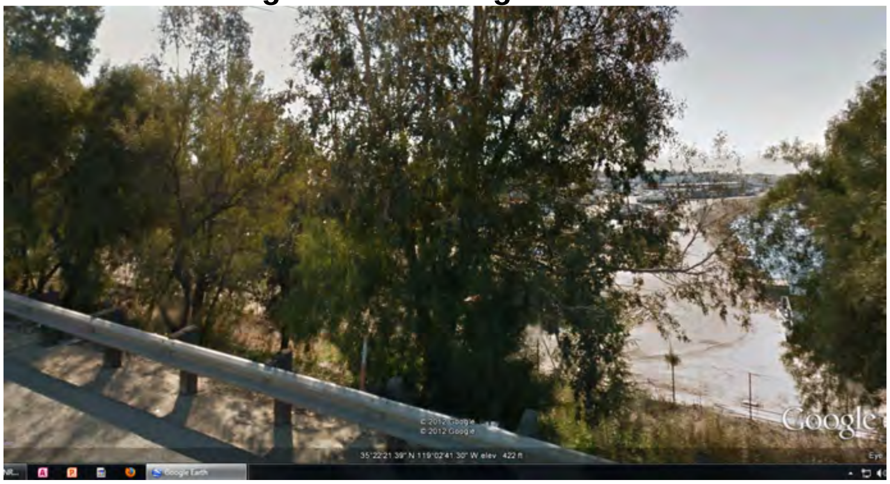
The physical characteristics of candidate road segments must be considered in order to determine which segments are adequate for near-road monitor placement. The characteristics to be assessed and accounted for include roadway design, roadside structures and vegetation, terrain, and meteorology.

2.2.1 Roadway design or configuration and clear zones

Road design or configuration is important in determining acceptable locations for near-road monitors because it can impact the dispersion and transport of pollutants. Road designs can be characterized as above-grade, below-grade, or at-grade. Additionally, road designs that contain features such as interchanges and toll plazas can influence vehicle acceleration and deceleration rates which in turn affect pollutant concentrations and plumes.

Above-grade or elevated road configurations can be open or have solid fill material beneath them (see Figure 1). Roads that are open underneath are subject to wind from all directions, increased dispersion, turbulence, and dilution of the air as it flows over and under the road. These affects can cause pollutant concentrations to be lower downwind of the elevated roadway. Roads that are over solid fill material can have winds normal with the road and forces that keep the traffic plume near at the surface while others can cause the plume to loft above the ground when it meets the vertical filled material or wall beneath.

Figure 1: Above grade road



Roads that are configured below-grade can have vertical or sloped walls that facilitate the funneling of air parallel to the road (see Figure 2). As the air streams through the corridor it can cause pollutant plumes to loft and be carried away as the air flows through, up, and out of the below-grade roadway.

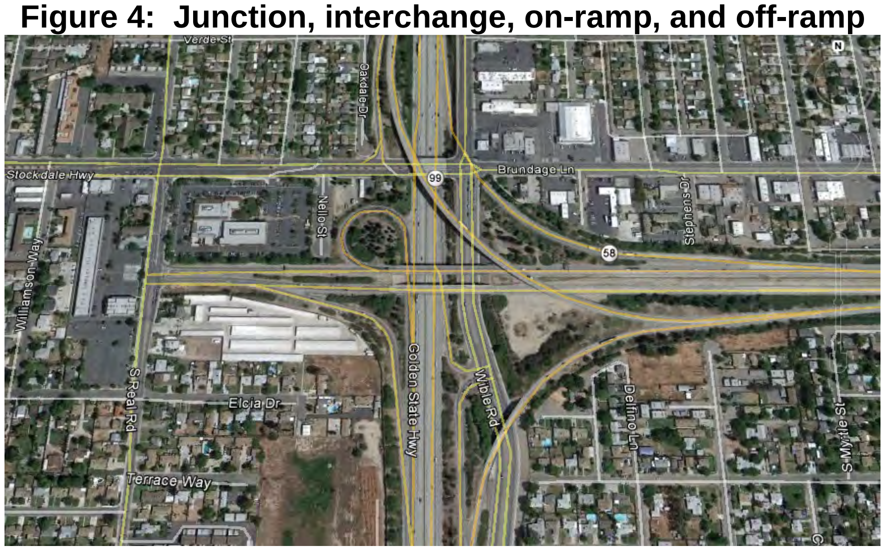
Figure 2: Below grade with up-slope

Roadways that are generally at the same elevation as the immediate surrounding terrain are referred to as at-grade roadways (see Figure 3). Other than structures or obstacles near the roadside, at-grade roadways pose the least amount of impact on pollutant dispersion. As stated in the TAD, at-grade or near at-grade roads are the most desirable road configurations for siting near-road monitors.

Figure 3: At grade roadway

As stated above, EPA requires that near-road NO_2 monitoring stations be placed in areas representative of high NO_2 levels. According to the TAD, road areas that go uphill or downhill, and roads that contain on-ramps and off-ramps, interchanges, or unique features such as toll plazas, and tunnel entrances and exits should not be considered for near-road NO_2 monitor placement because they are designed for rapid vehicle accelerations and decelerations (see examples in Figure 4). These areas and road designs do not produce representative NO_2 concentrations. The most suitable place to locate a near-road NO_2 monitoring station is one that is at grade with immediate flat surrounding terrain.

Figure 4: Junction, interchange, on-ramp, and off-ramp



Clear zones denote roadside areas that are available to drivers who need to pull over and stop safely or regain control if a vehicle leaves the road. Such zones extend from the road's outside traffic edge to an obstacle further off the road. The roadway's traffic volume, design speeds, and the slope of the terrain adjacent to and beneath the roadway are used to determine the width of the clear zone. Near-road monitoring stations are placed outside of clear zones.

2.2.2 Roadside structures and vegetation

Roadside structures such as sound walls or noise barriers can affect dispersion by blocking it or causing turbulence which can mix pollutants. Roadside structures can channel pollutants downwind and inhibit or reduce normal dispersion along the roadway. Vegetation can also affect pollutant transport and dispersion by mixing and diluting air as it blows through the branches and leaves of trees, and by blocking wind and slowing dispersion down. Additionally, pollutant concentrations in traffic plumes can decrease when particulate pollutants get deposited onto the surfaces of branches and leaves. Locations that are void of roadside structures and vegetation are therefore more acceptable for near-road monitor placement.

2.2.3 Terrain

Local terrain can affect dispersion and pollutant transport so it is important to have a good understanding of the large scale terrain features that characterize the air basin when considering locations for near-road monitor placement. For example, valleys may be more susceptible to high NO_2 concentrations because the surrounding terrain and temperature inversions tend to inhibit dispersion whereas open terrain areas allow for better air flow which can aid in lower pollutant concentrations.

2.2.4 Meteorology

The TAD states that evaluating historical meteorological data can be helpful in determining locations that may be directly impacted by traffic emissions from particular road segments due to local winds. Understanding the local meteorology can also indicate which side of a road segment may be more impacted by the traffic emissions. Research studies have shown that locations very close to the roadway on the downwind side of a given road segment can adequately capture peak pollutant concentrations.

2.3 Spatial scales and population exposure

40 CFR Part 58 Appendix D requires that the spatial scale of a near-road NO_2 air monitoring site be classed as a microscale site. Microscale sites measure peak concentrations in an area with of a radius 100 meters. Concentrations decrease significantly as distance increases outside of this area. This being the case, EPA requires near-road monitoring stations to be placed as close as practicable but no further than 50 meters from the target road segment. Additionally, EPA requires that the sampling inlet be within 2 to 7 meters from the road's surface.

As specified in 40 CFR Part 58 Appendix D, Section 4.3.2(a)(1), state and local air monitoring agencies shall consider the potential for population exposure when making their final near-road monitoring site selections when there are multiple acceptable sites in the same ranked segment.

2.4 Safety

As specified in the TAD, near-road NO_2 monitoring stations must be safely sited for motorists traveling the roadway and for the monitoring station operators. The sites are required to be safely and legally accessible to station operators and pose no safety hazards to drivers as well as people walking or living nearby. In addition, some sites will require the installation of permanent safety barriers, such as guardrails.

3. Site Selections for Bakersfield CBSA

3.1 Introduction

As stated in Section 2.0 above, the District started with traffic count data to select the freeway segments that were to be considered for a site. Meteorology, terrain, road structures, parcels with locations acceptable for building a site on, and landowner willingness to host a site on their property all played a role determining site selection. Since the segments were nearly continuous, the District looked at them as a whole, focusing on finding acceptable locations. It quickly became apparent that the highest ranked segments in the urban core did not have any available land for constructing a site. These segments in central Bakersfield were typically above or below grade with sound walls which prevented placement of the site close enough to the edge of the freeway to capture peak values. In fact, the District found that there are only a few locations along the top ten segments that could meet all of EPA's siting criteria.

At this juncture, the District decided to contact all landowners of parcels with acceptable locations in the top ten segments and prioritize working with the landowners who responded positively within the highest ranked segments before moving further down the list.

The District process in locating a near-road NO_2 site can be summed as follows:

- Rank all road segments
- Determine the top 10 segments
- Find locations were a site can be built (acceptable locations or parcels)
    - o Take into account meteorology, structures, obstacles, grade, and other criteria.
    - o Take into account near-road exposure.
- Contact property owners by sending a letter

- Contact those property owners that are willing to work with the District starting with those in the highest ranked segments
- Negotiate a lease with a willing property owner in the highest ranked segment
- Present site selection to the Governing Board for approval, and include the opportunity for public comments.

3.2 Traffic Count Data

Traffic count data determined which road segments would likely have the highest NO_2 concentrations in the Bakersfield CBSA. Because truck traffic accounts for the highest NO_2 emissions, the road segments were ranked by Fleet Equivalent Annual Average Truck Traffic (FE-AADT) counts. Areas that did not have recent truck traffic counts had to be estimated.

While the percentage of statewide annual vehicle hours of delay caused by traffic congestion is far less in the San Joaquin Valley than in other areas of the state, the District included traffic congestion with the traffic count data as per the requirements outlined in the TAD. Caltrans District 6, which includes the Bakersfield CBSA, has less than 2% of the statewide annual vehicle hours of delay due to traffic congestion in the entire district. The highest ranking bottleneck locations where freeway speed dropped and remained below 60 mph are shown in Table 1 in below. Because so little traffic congestion occurs in the Bakersfield CBSA, congestion did not factor into site selection.

3.2.1 Road Segment Ranking

After the traffic data was examined, each road segment was ranked by FE-AADT from the highest traffic count to the lowest for the CBSA. The list was narrowed to the top 30 road segments (see Appendix A) then reduced to the top 10 segments (see Table 1 below). District staff surveyed the areas within each segment, and identified which locations could support a near-road monitoring station.

Table 1: Kern County Top Road Segments by Fleet Equivalent AADT[4]

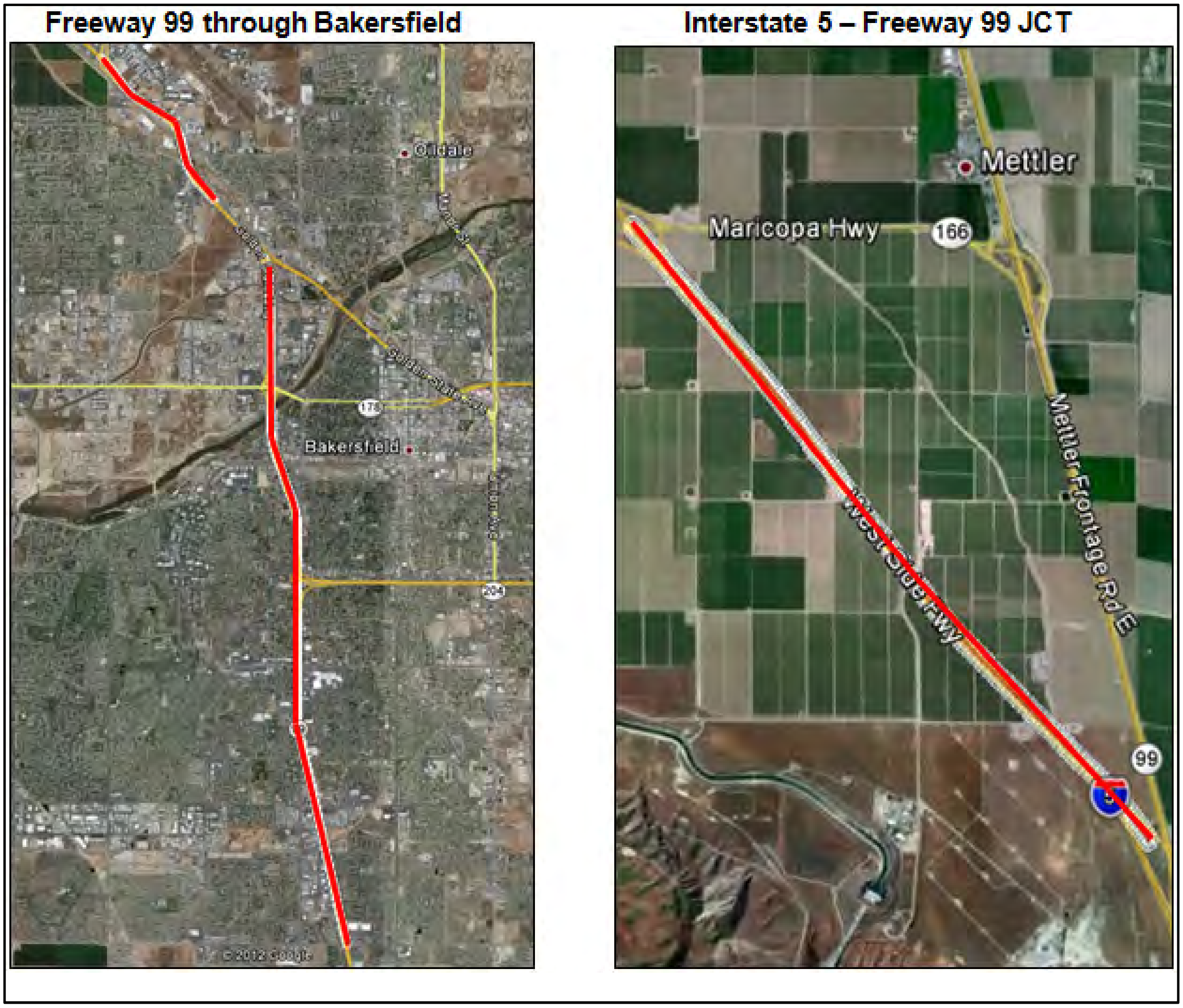
Route	Postmile[5]	Description	Total Ahead AADT[1]	AADT Rank	AADTT	AADTT Rank	Congest.[2]	AADT by Lane (Congestion Surrogate)[7]	FE AADT[6]	FE AADT Rank
99	24.599	BAKERSFIELD, CALIFORNIA AVE	132,000	2	28,188	1		16,500	385,692	1
99	22.604	BAKERSFIELD, MING AVE	133,000	1	27,720	2	1	16,625	382,480	2
99	23.514	JCT. RTE. 58 EAST	129,000	3	23,400	3		16,125	339,600	3
99	21.082	BAKERSFIELD, WHITE LANE	114,500	4	17,500	5		19,083	272,000	4
99	25.654	BUCK OWENS BLVD	102,500	5	18,300	4		12,812	267,200	5
99	26.776	JCT RTE 204 / AIRPORT DRIVE	102,500	6	15,904	8		14,642	245,636	6
99	19.541	PANAMA LANE	92,600	8	16,240	7		15,433	238,760	7
5	15.8583[3]	JCT. RTE. 99 NORTH	72,000	11	17,410	6		18,000	228,690	8
99	28.556	OIL JUNCTION	78,000	9	14,960	9		13,000	212,640	9
99	27.866	OLIVE DRIVE	74,000	10	13,783	11	2	12,333	198,047	10

[1] The Total AADT numbers shown apply to the freeway immediately ahead of the postmile.
[2] Congestion data is in annual vehicle delay in thousand hours. Caltrans District 6 (which includes Kern County) has less 2% of the statewide annual vehicle hours of delay.
[3] Postmile 15.8583 – Data for AADT was double counting the adjacent road segment. Caltrans has determined that the data is erroneous for this location and requested that the District use 2009 data. The annual traffic volume data shows that state freeway traffic decreased 0.2% in 2010 from 2009.
[4] The Annual Average Daily Traffic (AADT) is defined as the total volume for the year divided by 365 days. Very few locations in California are actually counted continuously. Traffic Counting is generally performed by electronic counting instruments that are moved from location to location throughout the state in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. All traffic volume figures that are listed include traffic in both directions.
[5] Postmile – Each breakpoint is identified by the postmile value corresponding to that point on the freeway. The postmile values increase from the beginning of a route within a county to the next county line. The postmile values start over again at each county line. Postmile values usually increase from South to North or West to East depending upon the general direction the route follows within the state.
[6] The equation FE AADT = (Ahead AADT-AADTT)+(AADTT*10) is defined in the TAD: http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf.
[7] Congestion surrogate is calculated using this equation as defined in the TAD http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf :
AADT by lane = Total Ahead AADT ÷ Number of lanes.

3.2.2 The top 10 road segments

With the exception of the road segment located on Interstate 5 from the Interstate 5/Freeway 166 interchange to the Interstate 5/Freeway 99 interchange, the rest of the top 10 road segments are located along Freeway 99 through Bakersfield. The red lines in Figures 5a and 5b below demark the general location of the top 10 road segments. Gaps between the red lines along Freeway 99 depict locations of road segments that were ranked outside of the top ten and were not considered during the site selection process. This section contains descriptions of the 10 road segments and images of the segments are provided in Appendix B below.

Figures 5a and 5b: General location of the top 10 road segments in the Bakersfield CBSA.



As shown in the TAD Matrix in Appendix A, road segment evaluations were based on many categories of criteria, however some of the categories were more critical to the decision-making process than others. In addition to meteorological considerations, the most important criteria included road design, road structures, and available space for an air monitoring site. Below are descriptions of the top 10 road segments and the reasons why they were acceptable or unacceptable for site consideration.

3.2.2.1 Segment 1: Bakersfield, California Ave

Segment 1 is located along Freeway 99 from California Avenue northward to Rosedale Freeway (JCT RTE 58). The southern and northern ends of the segment are above grade with no locations to consider for near-road monitoring. The southern end passes over a railroad yard and the northern end passes over a riverbed. The middle portion Of the segment is at grade with several potential locations for near-road monitor placement. Trees align much of this portion of the segment but could be removed to help meet near-road monitor siting criteria.

3.2.2.2 Segment 2: Bakersfield, Ming Ave

Segment 2 is located along Freeway 99 from Ming Avenue northward to Highway 58 (JCT RTE 58). The entire segment is below grade and characterized by upward slopes on both sides of the Freeway. Additionally, sound walls line the top of the slopes, and the interchange area is covered with mixed vegetation and trees. These characteristics of this segment made it unacceptable for siting a near-road monitor.

3.2.2.3 Segment 3: JCT RTE 58 East

Segment 3 is located along Freeway 99 from Highway 58 (JCT RTE 58) northward to California Avenue. The entire segment is below grade and both sides of the Freeway characterized by upward slopes with trees and ground vegetation on them. Additionally, sound walls line the top of the slopes on the west side of the freeway. These characteristics of this segment made it unacceptable for siting a near-road monitor.

3.2.2.4 Segment 4: Bakersfield, White Lane

Segment 4 is located along Freeway 99 from White Lane northward to Ming Avenue. The southern end of the segment is at grade with sound wall limiting space on the east side of the freeway. The remainder of segment is below grade characterized by upward slopes on both sides of the freeway. Trees align most of the segment causing space limitation and air flow obstruction issues. These characteristics of this segment made it unacceptable for siting a near-road monitor.

3.2.2.5 Segment 5: Buck Owens Blvd

Segment 5 is located along Freeway 99 from Rosedale Freeway northward to Airport Drive. The southern half of the segment is above grade and essentially an overpass on both sides of the freeway so there are no areas to consider for monitor placement. The northern half of the segment is at grade but numerous trees and bushes occupy this portion of the segment on both sides of the freeway. Parcels that appear to be acceptable are obstructed by the large amount of vegetation. The amount of vegetation removal and the cost to do so in order to establish a near-road monitoring site make this portion of the segment unfeasible for monitor placement.

3.2.2.6 Segment 6: JCT RTE 204 / Airport Drive

Segment 6 is located along Freeway 99 from Airport Drive northward to Route 204. The southern tip of the segment is slightly above grade due to a small downward slope from the Freeway shoulder to the adjacent frontage road on the east side of the Freeway. The segment then levels to at grade until upward sloping of an overpass at the northern end of the segment creates a below grade area. Trees, bushes, and shrubs align much of the segment causing space limitations and air flow obstruction. The characteristics of this segment made it unacceptable for siting a near-road monitor.

3.2.2.7 Segment 7: Panama Lane

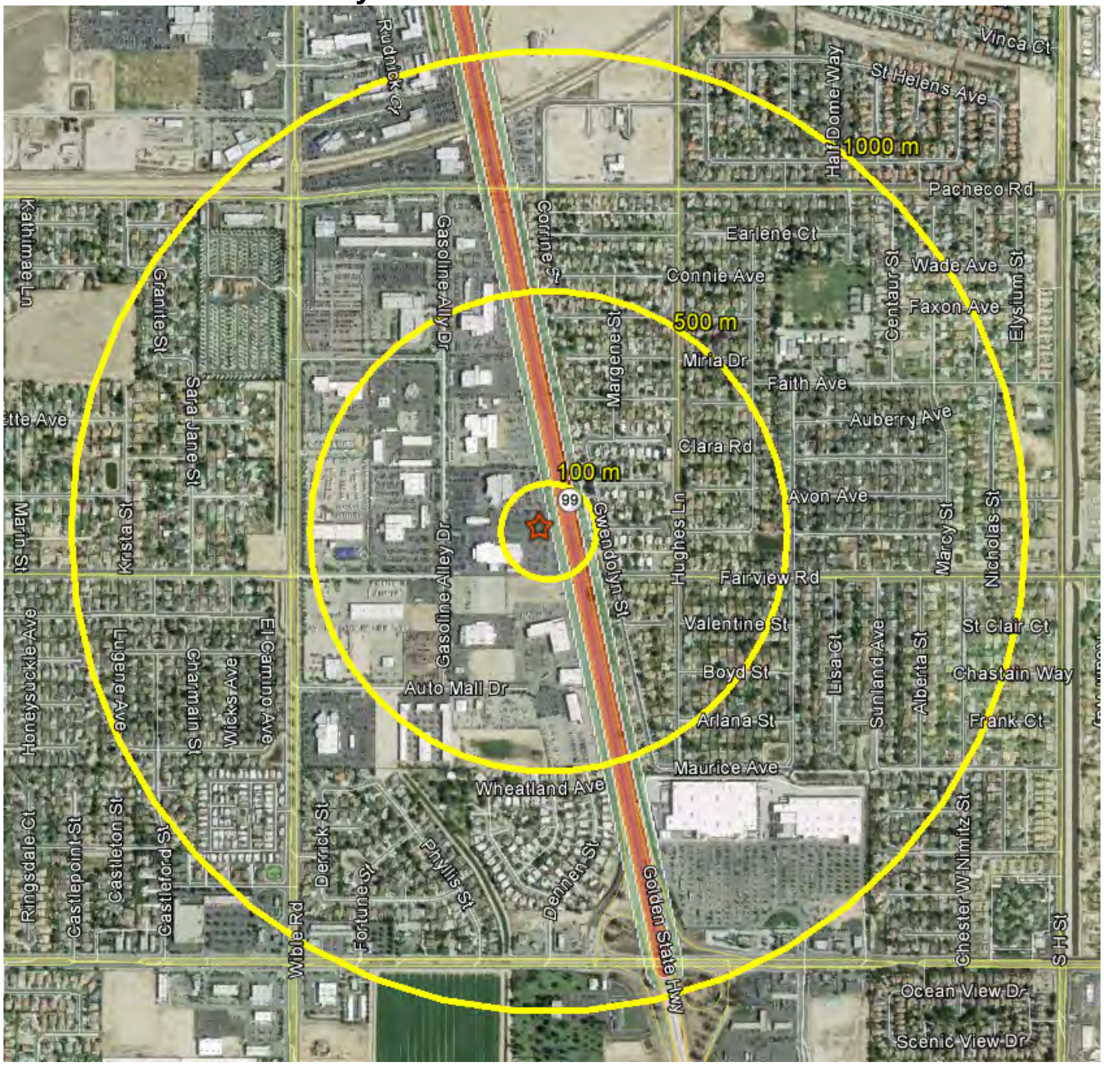
Segment 7 is located along Freeway 99 from Panama Lane northward to White Lane. The southern end and the center section of the segment are at grade and the northern end of the segment is above grade. The District investigated Segment 7 in some detail.

The east side of the segment is aligned with trees and a sound wall so there is limited or no space available for a monitoring station. Additionally, the shopping center parking lot at the south end of the segment is too close to the freeway on-ramp for near-road monitor placement.

The west side of the segment is intermittently aligned with trees and a sound wall aligns the southern end of the segment prior to the off-ramp. The District identified several parcels adequate for building a near-road monitoring station on the west side of the segment, and initial contact was made with the landowners. However after conducting a meteorological analysis of the segment, the parcels on the west side of the segment were removed from consideration because of the prevailing westerly wind direction.

Figure 6 shows Segment 7 and a sample location that was not chosen due to meteorology. The concentric circles depict 100, 500, and 1,000 meters radii around the parcels in Segment 7. The 100 meter circle is the maximum extent of a microscale site. These concentric circles show the land uses around the parcels. Any of the parcels adjacent to these would have similar characteristics.

Figure 6: A sample site in Segment 7 that was not pursued because it was on the windward side of the freeway.



3.2.2.8 Segment 8: JCT. RTE. 99 North

Segment 8 is located along Interstate 5 from the Interstate 5 – Freeway 99 JCT northwestward to Maricopa Freeway 166. The road is above grade on the interchange then descends to at-grade for remainder of segment to Maricopa Freeway 166. There are no roadside structures or space limitations along the segment. However, the surrounding land use is agricultural farming and not in an urban area. The District removed this segment from consideration because of the lack of population in the area. Given the relatively low population exposure in this rural segment, this segment may not be representative of near-road exposure levels that occur in more urban areas with higher populations in the Bakersfield CBSA.

3.2.2.9 Segment 9: Oil Junction

Segment 9 is located along Freeway 99 from Norris Road northward to JCT Freeway 65. The southern end of the segment is above grade then descends to at grade for remainder of segment. While there are some space limitations along the segment, the District identified a few parcels in the central portion of the segment that are acceptable for near-road monitor placement.

3.2.2.10 Segment 10: Olive Drive

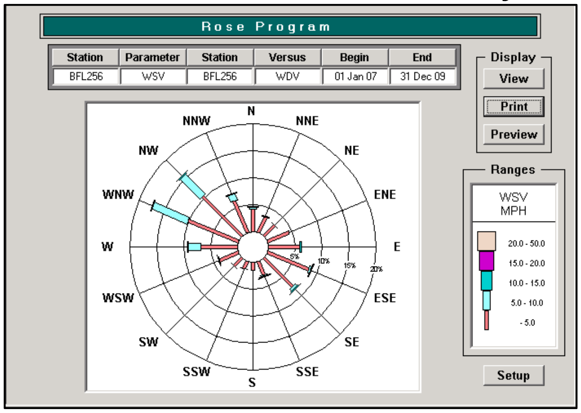
Segment 10 is located along Freeway 99 from Olive Drive northward to Norris Rd. The segment is at grade with intermittent trees and bushes aligning the segment. Space limitations are minimal however the frontage road adjacent to the freeway and the parcels and businesses located on the frontage road present accessibility issues which make the segment unacceptable for siting a near-road monitor.

3.3 Meteorological Considerations

As shown in the wind roses below, local winds in Bakersfield and along Interstate 5 blow primarily from the northwest to the southeast. The Freeway 99 corridor runs through the city of Bakersfield in a north-south orientation. Interstate 5 runs from northwest to southeast along the west side of the Valley to the Freeway 99 interchange located south of Bakersfield. Given that the prevailing winds have a westerly component to them, the District determined that locations on the east side of Freeway 99 and Interstate 5 were the most appropriate for near-road monitor placement and focused our efforts only on the east side of the freeway once the District made this determination. Air pollution from the freeway and the interstate would generally blow away from any monitor located on the west side of the freeway and interstate.

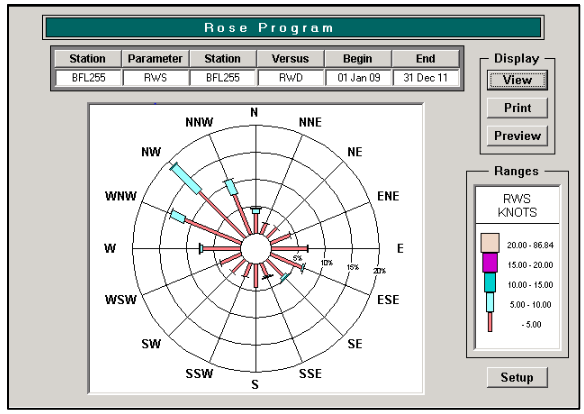
Figures 7a through 7c: Wind Roses

7a. Bakersfield-Golden State Hwy



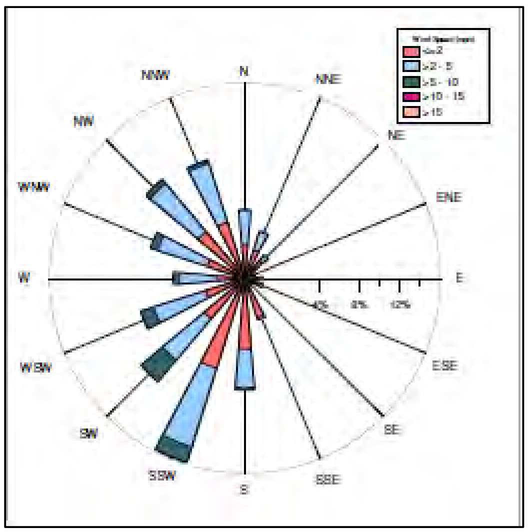
Source: District EMC Data Program

7b. Bakersfield-California Avenue



Source: District EMC Data Program

7c. Mettler Station AU491



Source: University of Utah Meso West
http://mesowest.utah.edu/cgi-bin/droman/download_ndb.cgi?stn=KSLC

3.4 Terrain through Bakersfield CBSA

The terrain through Bakersfield CBSA is generally flat with a number of bluffs caused by rivers. Freeway 99 is generally at grade at the northern and southern limits of the city of Bakersfield and either elevated or below grade in the urban area of the city. The Interstate 5 segment is flat with farm fields on either side. There are sloughs and other low areas along this part of Interstate 5. Figure 8a shows a satellite image of the area under consideration in the city of Bakersfield and Figure 8b shows a satellite image of the terrain of the Interstate 5 segment.

Figure 8a: Map of the Bakersfield Metropolitan Area

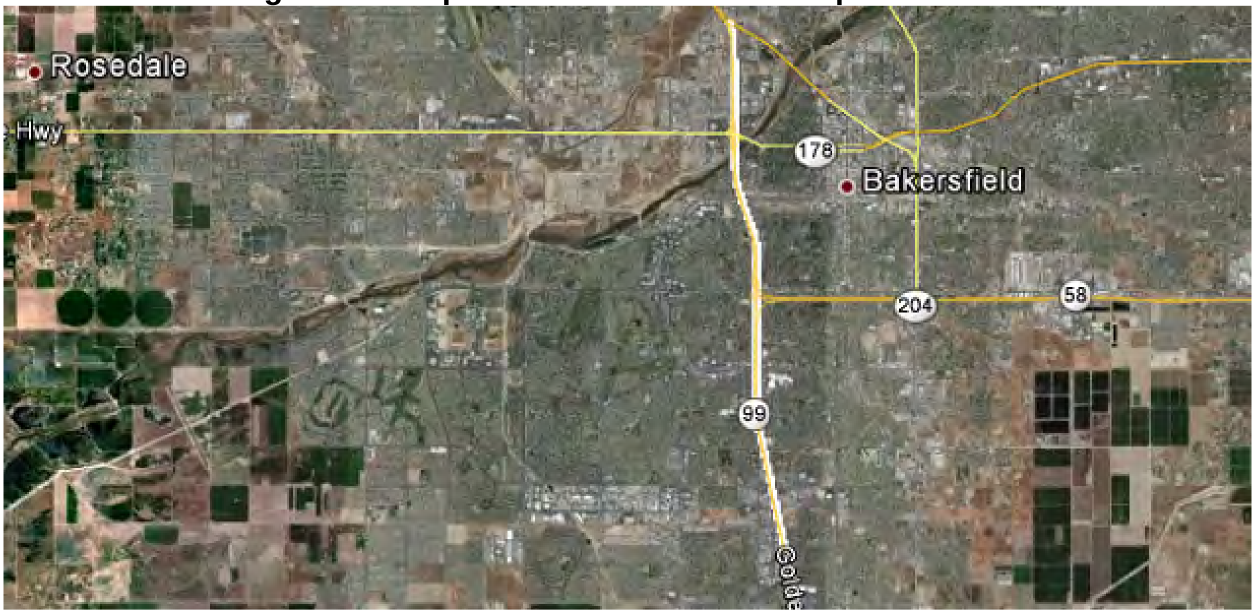
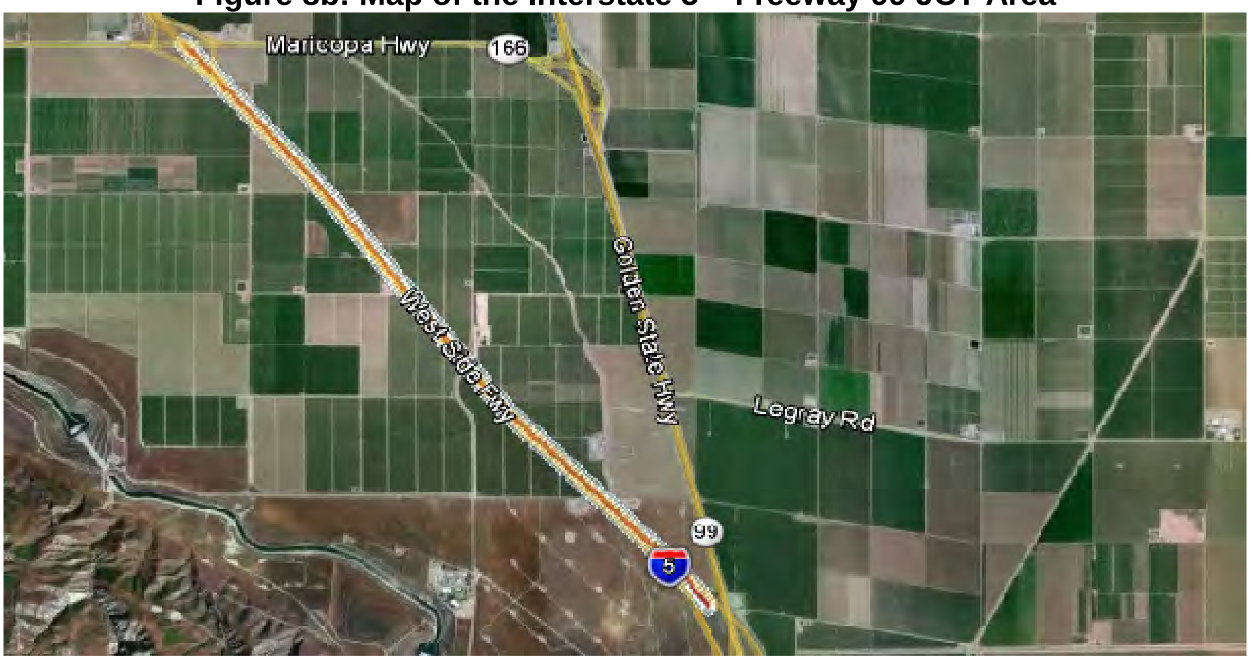


Figure 8b: Map of the Interstate 5 – Freeway 99 JCT Area



3.5 Spatial scales and population exposure

As stated above, near-road NO_2 sites are intended to be microscale sites. This means that these sites measure representative concentrations within 100 meters. Representative concentrations measured over areas greater than this do not fit the definition of a microscale site. The TAD states that the highest concentrations can be found within 20 meters of the freeway, so the District focused efforts on locations that can handle an air monitoring site within 20 meters. Additionally, the required range for the station's probe height is 2 to 7 meters in order to capture the highest NO_2 concentrations. While the preferred probe height is 2 meters, it will not be possible due to the structure and orientation of the monitoring station, therefore, District will place the probe as close to the 2 meter height as possible.

As referenced above, population exposure is one of the criteria that should be considered during the site selection if there are multiple acceptable sites in the same road segment. In the Bakersfield CBSA, the District determined that there were potential multiple acceptable sites in Segments 1, 5, 7 and 9. The sites in Segment 5 were not chosen because large amounts of vegetation would need to be removed before a near-road monitoring site could be established. Sites in Segment 7 were eliminated due to wind direction. In Segment 9, one landowner was willing to negotiate a lease with the District however EPA recommended finding a site in a segment with a higher traffic count. A suitable site was found in Segment 1 which had the highest FE-AADT of all the segments that were considered.

Segment 8 was removed from consideration because it was not in an urban area and there were no population sources nearby. The District believes that people living, working, or commuting daily within and adjacent to the Bakersfield metropolitan area will have a more significant exposure than those utilizing the portion of Interstate 5 that runs through Segment 8.

Maps showing the locations that the District investigated in some detail are shown later in the document below. The maximum 100 meter radius of a microscale site is shown for reference. The 500 and 1,000 meter radii are shown for informational purposes.

3.6 Correspondence with property owners

The District took two separate trips to Bakersfield to look for potential locations for near-road monitor placement. During the first trip, 19 acceptable parcels were identified while 10 acceptable properties were found during the second trip.

The District initially sent letters of interest to the property owners of the 19 locations found during the first trip, and nine responses were received. However, only seven of those property owners expressed interest. The District then began making direct contact with the seven interested land owners. Upon meeting with the representative of a landowner in Segment 7, the District discovered that the wind direction would be a problem and that lead to the elimination of all locations on the west side of the freeway. This issue left only three potential locations in Segment 9 from which to choose. One of the three potential sites would need extensive changes made to the property in order to accommodate an air monitoring station so that site was deemed infeasible. Of the two remaining potential sites, one of the landowners stopped talks with the District after reading the draft lease, but the other was willing to negotiate a lease. Although the

District was preparing to move forward with selecting the location in Segment 9, EPA recommended the District continue to try to find a more suitable site in a higher ranking segment.

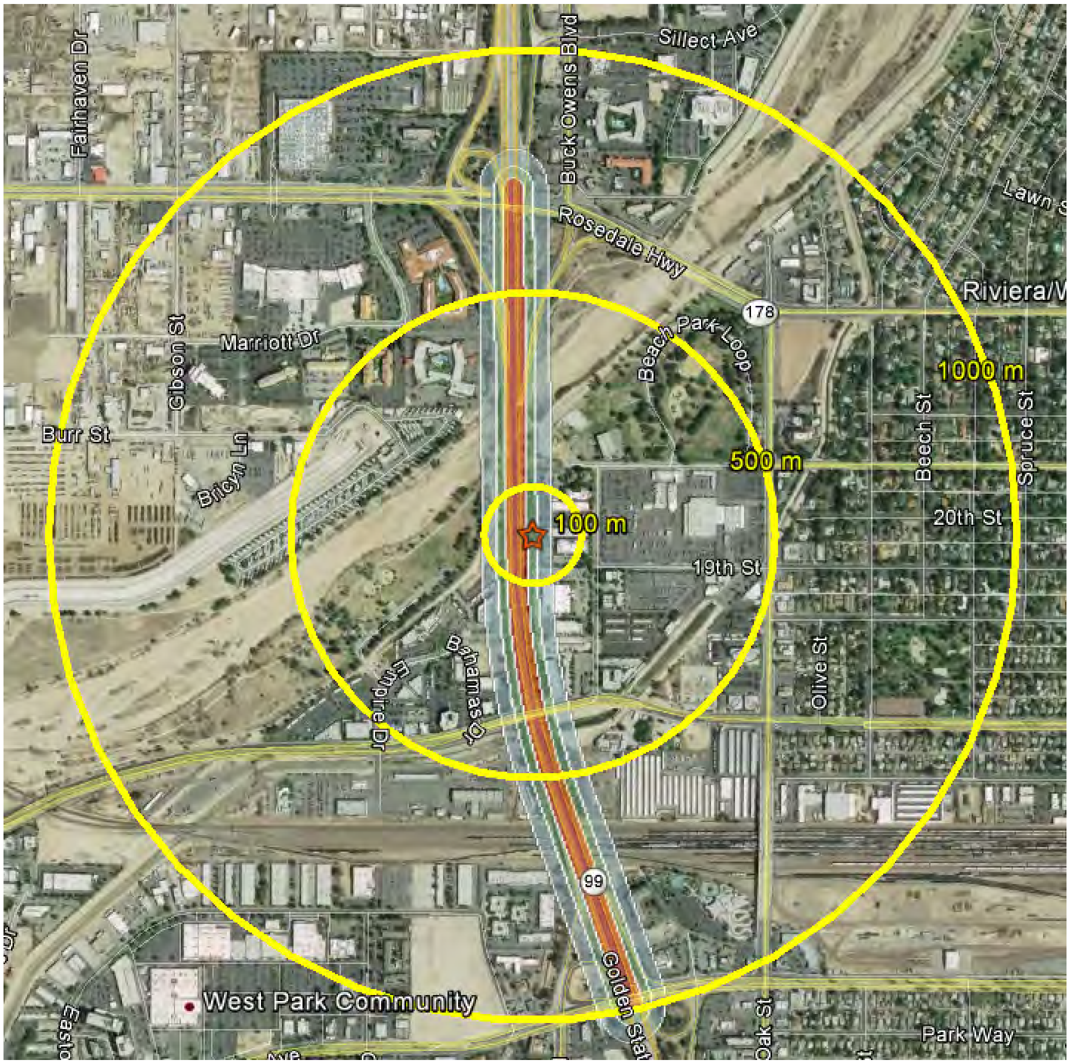
Following EPA's recommendation, the District arranged a second trip to Bakersfield and the search was extended. Both agencies traveled to Bakersfield together to look for more potential site prospects. The search led to 10 more potential sites: Two sites in Segment 1, seven sites in Segment 5, and one more site in Segment 7 (on the east side of the freeway). Based on FE-AADT counts from highest to lowest, the District opted to start with Segment 1 and then work down the list to Segments 5 and 7 if needed. Letters of interest were sent to the two property owners in Segment 1 and one of them responded expressing interest in negotiating a lease. The District then contacted the property owner directly and after successful negotiations, the final site selection was made. The lease agreement process is now underway.

4.0 Final Site Selection

After a very thorough and extensive process, the property located at 2001 Westwind Drive in Segment 1 was selected for the near-road NO_2 site in the Bakersfield CBSA. Segment 1 had the highest FE-AADT of all the segments considered during the selection process. This site is located in a light industrial area on the east side of the freeway and meets the siting criteria listed in the CFR. It is also acceptable for accommodating placement of a PM2.5 and other air pollution analyzers in the future.

Figure 9 shows Segment 1 and the final site selection. The concentric circles depict 100, 500, and 1,000 meters radii around the parcels in the segment. The 100 meter circle is the maximum extent of a microscale site. These concentric circles show the land uses around the parcels. Any of the parcels adjacent to these would have similar characteristics.

Figure 9: Final site selection—2001 Westwind Drive



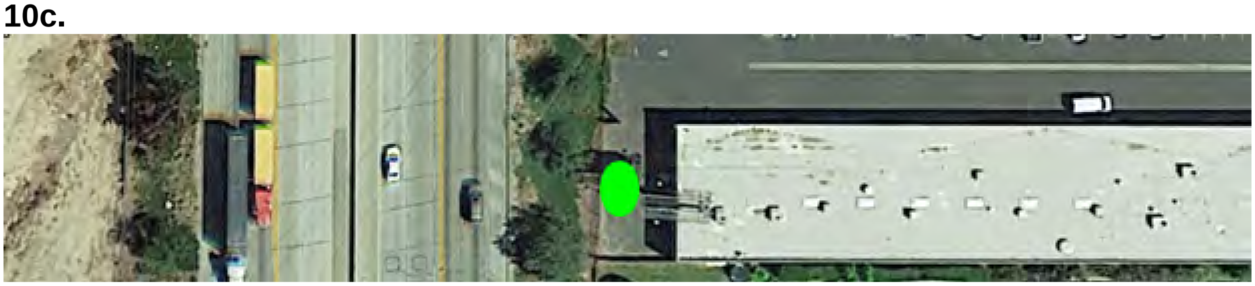
Roadside views of the selected site are shown in Figures 10a and 10b below. The area shaded in light green depicts where the monitoring station shelter will be placed. Figure 10c shows an aerial view of the site location depicted by the green dot. The site will be as close to the freeway as practicable, and the trees on the freeway shoulder adjacent to the site will be removed.

Figures 10a, 10b, and 10c: Selected site in Segment 1

10a.

10b.

10c.



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APPENDICES

Appendix A —Traffic Data Table

Below is the list of the top 30 segments in the Bakersfield CBSA based on Caltrans data.

Table 1: Kern County Top Road Segments by Fleet Equivalent AADT[5]

Route	Postmile[6]	Description	Ahead AADT[2]	AADT Rank	AADTT[1]	AADTT Rank	Congestion[3]	FE AADT[7]	FE Rank
99	24.599	BAKERSFIELD, CALIFORNIA AVE	132,000	2	28,188	1		385,692	1
99	22.604	BAKERSFIELD, MING AVE	133,000	1	27,720	2	1	382,480	2
99	23.514	JCT. RTE. 58 EAST	129,000	3	23,400	3		339,600	3
99	21.082	BAKERSFIELD, WHITE LANE	114,500	4	17,500	5		272,000	4
99	25.654	BUCK OWENS BLVD	102,500	5	18,300	4		267,200	5
99	26.776	JCT RTE 204 / AIRPORT DRIVE	102,500	6	15,904	8		245,636	6
99	19.541	PANAMA LANE	92,600	8	16,240	7		238,760	7
5	15.858^	JCT. RTE. 99 NORTH	72,000	11	17,410	6		228,690	8
99	28.556	OIL JUNCTION	78,000	9	14,960	9		212,640	9
99	27.866	OLIVE DRIVE	74,000	10	13,783	11	2	198,047	10
58	53.519	SOUTH CHESTER AVE	72,000	12	13,770	12		195,930	11
58	54.419	SOUTH UNION AVE	71,000	13	13,860	10		195,740	12
99	27.046	JCT RTE 204/AIRPORT DRIVE	102,500	7	10,294	21		195,146	13
58	55.404	COTTONWOOD RD	70,000	14	13,084	13		187,756	14
5	0.000	LOS ANGELES/KERN CO LINE	70,000	15	13,020	14		187,180	15
58	53.387	H ST	70,000	16	11,750	15		175,750	16
58	52.360	BAKERSFIELD, S. JCT RTE 99	68,000	20	11,487	16		171,383	17
5	5.020	FORT TEJON/DIGIER RD	69,000	17	11,250	17		170,250	18
5	13.523	WHEELER RIDGE RD	69,000	18	11,000	18		168,000	19
5	1.612	LEBEC RD	69,000	19	10,890	20		167,010	20
178	2.009	BAKERSFIELD, JCT. RTE. 204	67,000	21	10,962	19		165,658	21
99	17.500	JCT. RTE. 119 WEST	66,500	22	10,500	*		161,000	22

Table 1: Kern County Top Road Segments by Fleet Equivalent AADT[5] (continued)

Route	Postmile[6]	Description	Ahead AADT[2]	AADT Rank	AADTT[1]	AADTT Rank	Congestion[3]	FE AADT[7]	FE Rank
178	0.360	BAKERSFIELD, OAK ST	62,000	24	10,002	22		152,018	23
99	29.878	JCT. RTE. 65	61,000	25	9,723	23		148,507	24
99	30.532	SEVENTH STANDARD RD	62,500	23	9,000	*		143,500	25
58	56.410	MT. VERNON AVE	60,000	26	8,473	24		136,257	26
178	3.402	BAKERSFIELD, BEALE AVE	56,000	28	7,280	25		121,520	27
99	52.450	POND RD	53,000	29	6,891	26		115,019	28
99	50.410	MC FARLAND, ELMO HWY	53,000	30	6,749	27		113,741	29
99	36.523	CAWELO, LERDO FREEWAY	59,500	27	6,000	*		113,500	30
178	0.000	JCT. RTES. 99/58	52,000	31	6,640	28		111,760	31

[1] Road segments with no Truck AADT (AADTT) are given substitution with the following:
Route 99:

- PM 17.500 using 2/3 of adjacent segment Panama's value = value of 10,500
- PM 30.532 using JCT. RTE. 65, the segment had similar AADTT and was estimated at 9,000
- PM 36.523 using JCT. RTE. 65, the segment had a large estimated exit volume of 6,000 at Lerdo Hwy

[2] The Total AADT numbers shown apply to the freeway immediately ahead of the postmile.

[3] Congestion is in annual vehicle delay in thousand hours. Caltrans District 6 (which includes Kern County) has less than 2% of the statewide annual vehicle hours of delay.

[4] PM 15.858 - Data for AADT was double counting the adjacent road segment. Caltrans has determined that the data is erroneous for this location and requested that the District use 2009 data. The annual traffic volume data shows that state freeway traffic decreased 0.2% in 2010 from 2009.

[5] The Annual Average Daily Traffic (AADT) is defined as the total volume for the year divided by 365 days. Very few locations in California are actually counted continuously. Traffic counting is generally performed by electronic counting instruments that are moved from location to location throughout the State in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. All traffic volume figures listed include traffic in both directions.

[6] Postmile - Each breakpoint is identified by the postmile value corresponding to that point on the freeway. The postmile values increase from the beginning of a route within a county to the next county line. The postmile values start over again at each county line. Postmile values usually increase from South to North or West to East depending upon the general direction the route follows within the state.

[7] The equation FE AADT = (Ahead AADT-AADTT)+(AADTT*10) is defined in the TAD: http://www.epa.gov/ttn/amtic/nearroad.html

Data source:
Caltrans - All Vehicle http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2010all/2010_Traffic_Volumes.pdf
Caltrans - Truck Data http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/truck2010final.pdf
Caltrans - Congestion http://www.dot.ca.gov/hq/traffops/sysmgtpl/MPR/pdfs/MPR2009.pdf
Data accuracy of Caltrans AADT for 100,000 vehicles is approximately ± 6%

Appendix B—Site Details

Below are the site details for the segments within which acceptable potential sites were found.

Table 2: Site Details Matrix

Site/Segment Parameter	Parameter Description			
Road segment name	Segment 1 Bakersfield, California Avenue	Segment 5 Buck Owens Blvd	Segment 7 Panama Lane	Segment 9 Oil Junction
Road segment end points	California Avenue to Rosedale Freeway (JCT RTE 58)	Rosedale Freeway (JCT RTE 58) to Airport Drive	Panama Lane to White Lane	Norris Rd to JCT Hwy 65
Road type	Freeway	Freeway	Freeway	Freeway
Interchanges	None	None	None	None
Frontage roads	None	None	None	None
Roadside design	Near grade	At grade	At grade	At grade
Terrain	Sloping	Flat	Flat	Flat
Current road construction	None	None	None	None
Future road construction	Not aware of any	Not aware of any	Not aware of any	Not aware of any
Roadside structures	None	None	None	None
AADT	132,000	102,500	95,600	78,000
HD counts	28,188	17,500	15,904	14,960
FE-AADT	385,692	267,200	238,760	212,640
Congestion information	No congestion	No congestion	No congestion	No congestion
Infrastructure	At the street	At the street	At the street	At the Street
Surrounding land use	Light Commercial/Industrial	Light Commercial/Industrial	Light Commercial/ Industrial	Light Commercial
Nearby sources	Freeway	Freeway	Freeway	Freeway
Meteorology	Acceptable	Acceptable	Unacceptable	Acceptable
Population exposure	Only commercial nearby	Only commercial and industrial nearby	Only parcel in segment	Only parcel in segment
Available space – site footprint	1000 sq. feet	1000 sq. feet	1000 sq. feet	1000 sq. feet
Safety features	None	None	None	Will need to be installed
Property type	Private Property	Private Property	Private Property	Private Property
Property owner	Landowner willing to work with the District	Not Applicable	Not Applicable	
Likelihood of access	Easy access	Easy Access	Easy access	Easy access
Other details/local knowledge	Site is adjacent to large billboard; mature trees on freeway shoulder will be removed	Found site in segment 1, did no further investigation	Landowner willing to work with the District	Landowner willing to work with the District

Appendix C—Maps of Segments

The top 10 segments, their end points in detail, and the surrounding land use of each segment are shown in the aerial maps displayed below.

Segment 1

This segment is located along Freeway 99 from California Avenue northward to Rosedale Freeway (JCT RTE 58). The yellow ellipses demark locations of suitable parcels the District investigated. The green star demarks the parcel that was selected.

Source: Google Earth

Segment 2

This segment is located along Freeway 99 from Ming Avenue northward to Highway 58 (JCT RTE 58).

Source: Google Earth

Segment 3

This segment is located along Freeway 99 from Highway 58 (JCT RTE 58) northward to California Avenue.

Source: Google Earth

Segment 4

This segment 4 is located along Freeway 99 from White Lane northward to Ming Avenue.

Source: Google Earth

Segment 5

This segment is located along Freeway 99 from Rosedale Freeway northward to Airport Drive.

Source: Google Earth

Segment 6

This segment is located along Freeway 99 from Airport Drive northward to Route 204.

Source: Google Earth

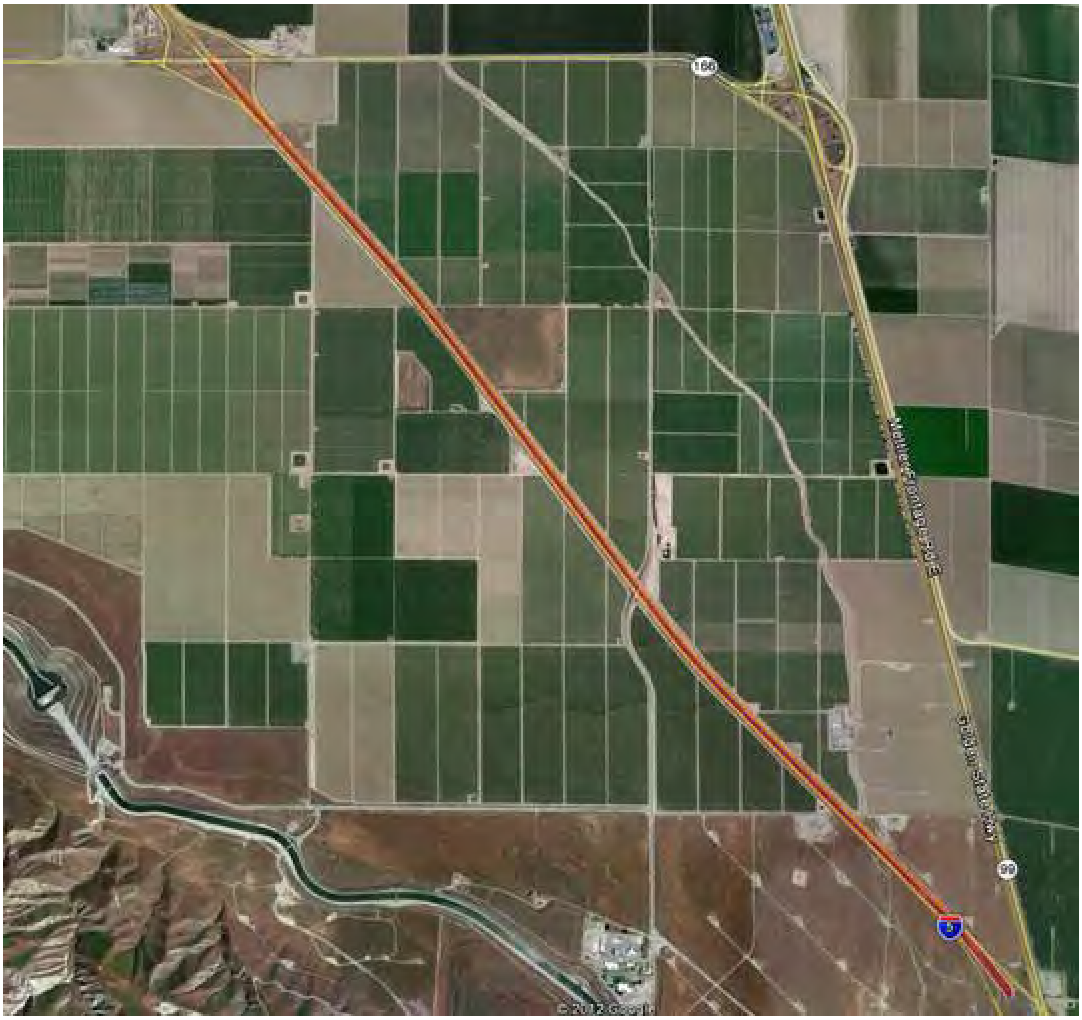
Segment 7

Segment 7 is located along Freeway 99 from Panama Lane northward to White Lane. The yellow ellipse demarks the location of suitable parcels the District investigated but eventually eliminated from consideration due to meteorology.

Source: Google Earth

Segment 8

Segment 8 is located along Interstate 5 from the Interstate 5 – Freeway 99 JCT northwestward to Maricopa Freeway 166.



Source: Google Earth

Segment 9

This segment is located along Freeway 99 from Norris Road northward to JCT Freeway 65. The yellow ellipse demarks the location of suitable parcels the District investigated but eventually eliminated from consideration for various reasons.

Source: Google Earth

Segment 10

This segment is located along Freeway 99 from Olive Drive northward to Norris Rd.

Source: Google Earth

Appendix D: Bakersfield – Westwind Drive Detail Site Description

Site name	Bakersfield – Westwind Drive
AIRS #	060292015 (Proposed)
County	Kern
Collecting (Operating) Agency	All equipment operated by SJVAPCD
Reporting Agency	SJVAPCD
Site Start Date	October 1, 2015
Pollutant Parameters	NO_2
Meteorological Parameters	Wind speed, wind direction, outdoor temperature, barometric pressure
Address	2001 Westwind Drive, Bakersfield, CA 93301
Latitude	N 35.376916
Longitude	W -119.044012
Elevation (m)	122
Location	Equipment/communications shelter
Distance to road	16 to 19 meters
Traffic Count	132,000 (FE AADT is 385,692)
Ground Cover	Rubberized plastic membrane roof; asphalt paving and landscaping beyond the roof

Bakersfield – Westwind Drive		
Pollutant	**NO_2**	**Met Parameters**
Parameter code	42602	Many
Spatial scale	Micro	Neighborhood
Site type	High Concentration	Population
Monitor objective	Timely/public, standards/strategy, research support	Timely/public, Standards/strategy, research support
Monitor type	SLAMS	Many
POC	1	Many
Method code	074	Many
Sampling method (List Instrument)	Teledyne 200 E	ITP- Hy-Cal 512AA3B, OT- Met One 060A-2, BP- Met One 092, WD- Met One 020C, WS-Met One 010C
Analysis method	CL	Many
Start date	10/01/2015	10/01/2015
Operation schedule (e.g. 1:1, 1-Hour)	Hourly	Hourly
Sampling season	ALL YEAR	ALL YEAR
Probe height (meters)	4 to 6 m (likely 5.5 m)	4 to 6 m (5.5 m most likely)
Distance from supporting structure (meters)	N/A	N/A
Distance from obstructions on roof	None	None
Distance from obstructions not on roof (meters)	0 (Tress, bushes will be removed prior to start date)	0
Distance from trees (meters)	0 (Trees will be removed prior to start date)	0
Distance to furnace or incinerator flue (meters)	None	None
Distance between collocated monitors (meters)	None	None
Unrestricted airflow (degrees)	360	360
Probe material (Teflon, etc.)	TEFLON	N/A
Residence time (seconds)	Less than 20 seconds (likely 14.5)	N/A
Frequency of flow rate verification for manual PM samplers audit	N/A	N/A
Frequency of flow rate verification for automated PM analyzers audit	N/A	N/A
Frequency of one-point QC check (gaseous)	Daily	N/A
Last Annual Performance Evaluation (gaseous)	Will be scheduled when site is built	Will be scheduled when site is built
Last two semi-annual flow rate audits for PM monitors	N/A	N/A
Changes planned within the next 18 months (Y/N)	No	No

APPENDIX E:

Technical Justification for the Removal of CO Monitors at the Air Monitoring Sites of Turlock, Fresno-Sierra Sky Park, and Fresno-Drummond

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Introduction

As recommended by EPA to reduce redundancy, to increase efficiency, effectiveness, and to minimize costs, the San Joaquin Valley Air Pollution Control District (District) requests permission to remove from operation the carbon monoxide (CO) monitors at the Turlock (06-099-0006-42101-1), Fresno-Sierra Sky Park (06-019-0242-42101-1), and Fresno-Drummond (06-019-0007-42101-1) air monitoring sites at the end of the 2014 year. This will help the District to “right-size” the monitoring network and reduce costs. In addition, replacing the aging CO monitors in the District will require extensive funding; therefore removing a portion of the CO network will help reduce these future costs.

Background

As a part of fulfilling EPA requirements for the 2010 Air Monitoring Network Plan, the District contracted with Sonoma Technology, Inc. (STI) to conduct an ambient air quality monitoring network assessment for the San Joaquin Valley, as required every 5 years. Among the recommendations from the network assessment, STI identified and recommended the closure of redundant CO monitors in the Valley, specifically in the Fresno area. Following the recommendations from the network assessment, the District proposes to remove the CO monitors at the Turlock, Fresno-Sierra Sky Park, and Fresno-Drummond air monitoring sites.

Stanislaus County currently has in operation two (2) CO monitors, located at the Modesto-14th and Turlock air monitoring sites. After the proposed closure of the CO monitor at Turlock, the pollutant will continue to be measured in the county at the Modesto-14th site.

Similarly Fresno County has in operation four (4) CO monitors, located at the Clovis, Fresno-Sierra Sky Park, Fresno-Garland, and Fresno-Drummond air monitoring sites. After the proposed closures of the CO monitors at Fresno-Sierra Sky Park and Fresno-Drummond, the pollutant will continue to be measured in the county at the Clovis and Fresno-Garland sites.

As noted in 40 CFR 58 Appendix D Section 4.2, there are no minimum monitoring requirements for CO except at near-road NO_2 monitors within Core Based Statistical Areas (CBSA) with a population of at least 1 million. To meet the near-road NO_2 monitoring requirements, the District is planning to establish four (4) near-road NO_2 monitors; one (1) within each of the Stockton, Modesto, Fresno, and Bakersfield CBSAs. Since each of these CBSAs currently have populations of less than 1 million, CO monitors are not required at these sites at this time. However, since the Fresno CBSA is nearing a population of 1 million, a CO monitor at the Fresno CBSA near-road NO_2 monitoring location may be required soon.

Additionally, as specified in 40 CFR Part 58 Appendix D Section 5, CO monitoring is required at Type 2 Photochemical Assessment Monitoring Stations (PAMS). Since the

Clovis and Bakersfield-Muni air monitoring sites serve as the District's two (2) Type 2 PAMS sites, CO is required and will continue to be monitored at these sites.

Technical Justification for the Removal of CO Monitors

Under 40 CFR 58.14(c)(1), there are four criteria listed that an Agency's monitor must satisfy before the Regional Administrator can consider whether to approve a request for monitor removal. The four criteria are summarized below with supporting documentation:

- The monitor has shown attainment of the applicable standard(s) during the previous 5 years.
- There is a probability of <10% that this monitor will exceed 80% of the applicable National Ambient Air Quality Standard (NAAQS) during the next 3 years based upon levels, trends, concentrations, and variability observed in the past.
- The monitor is not specifically required by an attainment plan or maintenance plan.
- The monitor is not the last monitor in the nonattainment or maintenance area.

As the following justification shows, the District meets the technical criteria required for monitor removal, required by 40 CFR 58.14(c)(1).

1. The monitor has shown attainment of the applicable standard(s) during the previous 5 years.

The monitors at the Turlock, Fresno-Sierra Sky Park, and Fresno-Drummond air monitoring sites have been in attainment of both the 1-hour and 8-hour CO standards for the previous 5 years. The 1-hour CO standard is 35 parts per million (ppm) and the 8-hour CO standard is 9 ppm. Table 1 displays the design values for all three sites over the past 5 years from 2009-2013. The design value is calculated over a 2 year period and is the second highest value below the maximum value. As a standard of notation, the design value for the 2 year period of 2012-2013 is noted as the 2013 design value. Clearly the CO monitors at all three of the air monitoring sites in question have been in attainment of both the 1-hour and 8-hour CO standards during the previous 5 years.

Note that the Fresno-First monitoring site was closed in early 2012 and its nearby replacement site of Fresno-Garland was opened soon after. To form a continuous data record, these two sites were combined to create a Fresno-First/Garland historical record.

Table 1: 1-Hour and 8-Hour CO Design Values from 2009-2013*

County	Site	Standard	2009	2010	2011	2012	2013
Stanislaus	Modesto-14th	1-Hour	2.7	2.7	2.9	2.9	2.9
		8-Hour	2.0	2.0	2.2	2.2	2.2
	Turlock	1-Hour	2.0	2.0	2.0	2.0	2.0
		8-Hour	1.4	1.5	1.5	1.4	1.5
Fresno	Fresno-Sierra Sky Park	1-Hour	2.1	2.1	2.1	3.2	3.2
		8-Hour	1.1	1.1	1.6	1.6	1.7
	Clovis	1-Hour	2.3	2.3	2.0	2.0	2.4
		8-Hour	1.4	1.4	1.4	1.4	1.4
	Fresno-First/Garland	1-Hour	2.9	2.9	2.9	2.8	2.8
		8-Hour	2.1	2.0	2.0	2.1	2.1
	Fresno-Drummond	1-Hour	2.8	2.6	2.6	2.8	3.3
		8-Hour	1.9	1.9	1.7	1.7	2.2

*CO design values calculated based on reports (AMP 450) from EPA's Air Quality System database.

2. **The probability is <10% that the monitor will exceed 80% of the applicable NAAQS during the next 3 years based upon levels, trends, concentrations, and variability observed in the past.**

Through EPA guidance (Ref: EPA-454/D-07-001, Ambient Monitoring Network Assessment Guidance, US EPA/OAQPS, February 2007), this can be established by showing that:

$$\bar{X} + \frac{t * s}{\sqrt{n}} < 0.8 * NAAQS$$

Where:

$\bar{X}$ = average design value for the last 5 years or more,
t = student's t value for n-1 degrees of freedom at 90% confidence level (taken from EPA document referenced above),
s = standard deviation of the design values,
n = number of design values, and
$NAAQS$ = National Ambient Air Quality Standard of interest (35 ppm for 1-hour CO and 9 ppm for 8-hr CO).

Averaging the 5 years of design values presented in Table 1, where n = 5 with t = 2.13 (for 4 degrees of freedom at 90% confidence level). Upon calculating the average $\bar{X}$ and the standard deviation s, a comparison can be made against 80% of each NAAQS. Note that 80% of the 1-hour CO standard is 0.8*(35 ppm) = 28 ppm and 80% of the 8-hr CO standard is 0.8*(9 ppm) = 7.2 ppm. After calculating the Left Hand Side (LHS) of the above inequality for each site and standard, the results can then be summarized as shown in Table 2 below.

Table 2: Statistical Demonstration

Site	Standard	$\bar{X}$	t	s	n	90% Upper Confidence Interval (LHS*)	80% of NAAQS	Passes Test**
Turlock	1-Hour	2.00	2.13	0.00	5	2.00	28	Yes
	8-Hour	1.46	2.13	0.05	5	1.51	7.2	Yes
Fresno-Sierra Sky Park	1-Hour	2.54	2.13	0.60	5	3.11	28	Yes
	8-Hour	1.42	2.13	0.29	5	1.70	7.2	Yes
Fresno-Drummond	1-Hour	2.86	2.13	0.05	5	2.91	28	Yes
	8-Hour	2.06	2.13	0.05	5	2.11	7.2	Yes

*Note that the LHS (Left Hand Side of the equation) figures in this table were calculated based on more precise standard deviation values than what is shown here.
**Passes test when the 90% Upper Confidence Interval is less than the 80% of the NAAQS (probability is less than 10% that the monitor will exceed 80% of the NAAQS).

As can be observed in Table 2, the LHS calculations for 1-hour CO are all less than 28 ppm, and the LHS calculations for 8-hour CO are all less than 7.2 ppm. Therefore, the CO monitors at the Turlock, Fresno-Sierra Sky Park, and Fresno-Drummond air monitoring sites all have a probability of less than 10% that measurements will exceed 80% of the applicable NAAQS.

3. The monitor is not specifically required by an attainment plan or maintenance plan.

The Turlock, Fresno-Sierra Sky Park, and Fresno-Drummond monitors are not required by the California statewide CO maintenance plan submitted by the California Air Resources Board in 1996, and subsequently updated in 1998 and 2004.

4. The monitor is not the last monitor in a maintenance area.

The monitor in Turlock is not the last monitor in the Modesto maintenance area since the Modesto-14th CO monitor will continue to operate. The monitors at Fresno-Sierra Sky Park and Fresno-Drummond are not the last monitors in the Fresno maintenance area since the Clovis and Fresno-Garland CO monitors will continue to operate.

Conclusion

As demonstrated, the District has met all four criteria under 40 CFR 58.14(c)(1) and proposes to remove from operation the CO monitors at the Turlock, Fresno-Sierra Sky Park, and Fresno-Drummond air monitoring sites.

APPENDIX F:

Technical Justification for the Closure of Stockton-Wagner/Holt Air Monitoring Site and Designation of Manteca PM10 Monitor as SLAMS

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Introduction

As recommended by EPA to reduce redundancy, to increase efficiency, effectiveness, and to minimize costs, the San Joaquin Valley Air Pollution Control District (District) is planning to close the Stockton-Wagner/Holt State and Local Air Monitoring Station (SLAMS) PM10 monitor (06-077-3010-81102-1). This closure will help the District to "right-size" the monitoring network and reduce operating costs which may make other monitoring opportunities available elsewhere in the District.

Background

The Stockton-Wagner/Holt air monitoring site is located at 8778 Brattle Place, Stockton, CA 95209 and has been monitoring since October 1996. The Stockton-Wagner/Holt site only measures PM10 using a Federal Reference Method (FRM) filter-based monitor.

The San Joaquin Valley is designated attainment for PM10, and the District's ***2007 PM10 Maintenance Plan*** and ongoing PM10 monitoring will assure continued compliance with the federal standards. As shown in Table 1, the number of required PM10 monitors for the Stockton Metropolitan Statistical Area (MSA) is 2 to 4. With the proposed closure alone, the District would no longer meet the minimum PM10 monitoring requirements for the Stockton MSA since the only remaining SLAMS PM10 monitor would be at the Stockton-Hazelton air monitoring site.

Table 1: PM10 Monitoring requirements for Stockton MSA

Metropolitan Statistical Area (MSA)	County	2013 Population[1]	PM10				
			2013 Highest 24-hour concentration in MSA (µg/m³)	SLAMS Monitors required[2]	# of SLAMS Monitors in MSA	# of SPM Monitors in MSA	Total Number of Monitors
Stockton	San Joaquin	698,414	139	2 – 4	2	2	4

[1] From California Department of Finance, County and State Population
[2] Does not include collocated monitors.

At present there are 2 PM10 SLAMS and 2 PM10 Special Purpose Monitors (SPM) located at 4 air monitoring sites in the Stockton MSA, where one (1) of these (Stockton-Hazelton) is operated by the California Air Resources Board (ARB) and the other three (3) are operated by the District (Table 2). After the site closure is complete, there will be 1 SLAMS and 2 SPM monitors in the county. In order to meet the PM10 monitoring requirements as summarized in Table 1, the PM10 SPM monitor at the Manteca air monitoring site will be designated as a PM10 SLAMS monitor upon the closure of the

Stockton-Wagner/Holt air monitoring site. As Table 3 shows, this designation will ensure 2 PM10 SLAMS monitors continuing to operate in the Stockton MSA.

Table 2: Current PM10 Air Monitoring Stations in the Stockton MSA

MSA/CBSA: Stockton County: San Joaquin	Instrument Type		Monitor Type	
	FRM	FEM	SLAMS	SPM
Site Name				
Manteca		1		1
Stockton-Hazelton	1		1	
Stockton-Wagner/Holt	1		1	
Tracy-Airport		1		1
Total SLAMS/SPM			2	2

Table 3: Proposed PM10 Air Monitoring Stations in the Stockton MSA

MSA/CBSA: Stockton County: San Joaquin	Instrument Type		Monitor Type	
	FRM	FEM	SLAMS	SPM
Site Name				
Manteca		1	1	
Stockton-Hazelton	1		1	
Tracy-Airport		1		1
Total SLAMS/SPM			2	1

Technical Justification for the Closure of PM10 Monitor at Stockton-Wagner/Holt

Under 40 CFR 58.14(c)(1), there are four criteria listed that an Agency must satisfy, before the Regional Administrator has the authority to consider whether or not to approve a request for monitor shutdown/termination. The four criteria are summarized below with supporting documentation following:

- The PM10 monitor is in attainment of the Federal PM10 NAAQS (24 hour).
- There is a probability of <10% that this monitor will exceed 80% of the applicable NAAQS during the next 3 years based upon concentrations, trends, and variability observed in the past.
- The PM10 monitor is not specifically required by the District’s PM10 maintenance plan.

- The PM10 monitor is not the last PM10 monitor in the maintenance area.

The District meets the required technical criteria for monitor shut-down as shown below.

1. The PM10 monitor showed attainment during the previous 5 years.

The Stockton-Wagner/Holt PM10 monitor is in attainment of the Federal PM10 NAAQS (24 hour). In fact, the Stockton-Wagner/Holt PM10 monitor has never recorded a Federal 24-Hour PM10 NAAQS exceedance since the monitor began operating in 1996 (Table 4). The highest recorded PM10 FRM measurement from Stockton-Wagner/Holt was 130 µg/m^3 on December 31, 1997.

Table 4: Data from Stockton Wagner/Holt PM10

Stockton-Wagner/Holt	Annual 24-Hr Maximum[1]	24-Hr Design Value[2]	Measured NAAQS Violations[3,4,5]
1996[6]	117	------	0
1997	130	------	0
1998	99	130.0	0
1999	118	130.0	0
2000	104	118.0	0
2001	119	119.0	0
2002	80	119.0	0
2003	52	119.0	0
2004	48	80.0	0
2005	68	68.0	0
2006	69	69.0	0
2007	61	69.0	0
2008	71.5	71.5	0
2009	61.6	71.5	0
2010	46.7	71.5	0
2011	61.5	61.6	0
2012	59.5	61.5	0
2013	62.7	62.7	0
Average Design Value $\bar{X}$		**88.8**	

1 Maximum PM10 for days collected (collection day schedules vary). Data from EPA AQS "Raw Data Report" AMP350
2 End year is listed (for example, the 3 year average 2000-2002 is labeled as 2002). Data from EPA AQS "Raw Data Report" AMP 350 and "QuickLook All Parameters" report AMP 450NC.
3 Code of Federal Regulations, Title 40, Section 58.14 System Modification, Subparts (c)(3)
4 PM10 24-Hour NAAQS is 150 µg/m^3
5 Data from EPA AQS "Design Value Report" AMP 480
6 Station opened in October 1996

2. The probability is <10% that the monitor will exceed 80% of the applicable NAAQS during the next 3 years based on concentrations, trends, and variability observed in the past.

Through EPA guidance (Ref: EPA-454/D-07-001, Ambient Monitoring Network Assessment Guidance, US EPA/OAQPS, February 2007), this can be established by showing that:

$$\bar{X} + \frac{t * s}{\sqrt{n}} < 0.8 * NAAQS$$

Where:

$\bar{X}$ = average design value (3-year average Annual 24-hr Maximum PM10) for the last 5 years or more,
t = student's t value for n-1 degrees of freedom at 90% confidence level,
s = standard deviation of the design values,
n = number of design values,
$NAAQS$ = PM10 24-Hour National Ambient Air Quality Standards is the standard of interest, which is 150 μg/m^3

As presented in Table 4; where 24-hour Design Value n = 16, with t = 1.75 (for 15 degrees of freedom at 90% confidence level). Upon calculating the average Design Value of $\bar{X}$, the standard deviation s, and plugging that data into the above equation, a comparison can be made against 80% of the 150 μg/m^3 NAAQS 24-hour PM10 Standard (0.8*150 μg/m^3 = 120 μg/m^3).

From Table 4 and the above, the average Design Value $\bar{X}$ over the 1998-2013 time period was 88.8 μg/m^3, t = 1.75, the standard deviation was s = 26.6, and n = 16. Given these values, the left hand side of the above inequality is equal to 100.4.

$$88.8 + \frac{1.75 * 26.6}{\sqrt{16}} = 100.4$$

Since 100.4 μg/m^3 is less than 120 μg/m^3 (80% of 150 μg/m^3 NAAQS 24-hour PM10 Standard), this monitor has a probability of less than 10% that measurements will exceed 80% of the applicable NAAQS during the next 3 years based upon concentrations, trends, and variability observed in the past and therefore passes the test.

In addition, Table 5 below shows that the Stockton-Wagner/Holt PM10 air monitoring site is not the design value site in the Stockton MSA, since PM10 at the

Stockton-Hazelton and Tracy-Airport air monitoring sites have historically recorded higher values.

Table 5: 24-Hour Design Value for PM10 Monitoring Sites in the Stockton MSA

24-Hr Design Value [7]	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Stockton-Wagner/Holt	119.0	119.0	80.0	68.0	69.0	69.0	71.5	71.5	71.5	61.6	61.5	62.7
Stockton-Hazelton	143.0	143.0	176.1	176.1	176.1	82.0	104.5	104.5	104.5	66.1	69.4	90.1
Tracy-Airport	*	*	*	*	74.7	74.7	97.7	97.7	97.7	47.9	67.6	72.8
Manteca	*	*	*	*	*	*	*	*	*	73.4	125.7	125.7

[7] End year is listed (for example, the 3 year average 2000-2002 is labeled as 2002)

3. **The monitor is not specifically required by an attainment plan or maintenance plan.**

   The Stockton-Wagner/Holt PM10 monitor is not specifically required by the District's PM10 maintenance plan. In order to demonstrate continued attainment of the PM10 NAAQS, the PM10 maintenance plan requires continued ambient PM10 monitoring in accordance with 40 CFR 58 requirements. 40 CFR 58 requires a minimum of 2 to 4 PM10 SLAMS monitors in this MSA. At the current time, there are 2 PM10 SLAMS monitors operating in the Stockton MSA. Upon the closure of the Stockton-Wagner/Holt air monitoring site, the District will designate the Manteca PM10 monitor as SLAMS, ensuring that minimum monitoring requirements continue to be met.

4. **The monitor is not the last monitor in a maintenance area.**

   The Stockton-Wagner/Holt PM10 monitor is not the last PM10 monitor in the District's PM10 maintenance area and the Stockton MSA will continue to meet the minimum PM10 monitoring requirements.

Conclusion

The District has met all four criteria under 40 CFR 58.14(c)(1) and proposes to close the Stockton-Wagner/Holt site. The current SPM PM10 monitor at the Manteca air monitoring station will be designated as a SLAMS PM10 monitor upon the closure of the Stockton-Wagner/Holt site to ensure that the PM10 monitoring requirements continue to be satisfied in the Stockton MSA.

APPENDIX G:

San Joaquin Valley Unified Air Pollution Control District Notice of Public Inspection Period on the 2014 Air Monitoring Network Plan

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT NOTICE OF PUBLIC INSPECTION PERIOD ON THE 2014 AIR MONITORING NETWORK PLAN

NOTICE IS HEREBY GIVEN that a 30-day public inspection period is being held on the San Joaquin Valley Air Pollution Control District's (District) 2014 Air Monitoring Network Plan.

Interested persons may submit comments to:

Jennifer Ridgway
San Joaquin Valley Unified Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, CA 93726
Email: jennifer.ridgway@valleyair.org

The public inspection period begins November 26, 2014 and will end December 25, 2014.

Copies of the 2014 Air Monitoring Network Plan can be obtained by calling (559) 230-6100. You may download a copy of the 2014 Air Monitoring Network Plan from the District's website on or after November 26, 2014 under the Other Notices portion of the following page:

http://www.valleyair.org/notices/public_notices_idx.htm

For additional information, contact Jennifer Ridgway by phone at (559) 230-6100.

APPENDIX H:

Comments and Responses

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Appendix H: Comments and Responses

This Appendix contains responses to comments made by the public on the 2014 Air Monitoring Network Plan (Plan). The District held a 30-day public inspection period on the Plan from November 26, 2014 through December 25, 2014.

WRITTEN COMMENTS ON THE 2014 AIR MONITORING NETWORK PLAN

Comment period held from November 26, 2014 through December 25, 2014.

Comments were received from the following organization:

Earthjustice

Comment: Earthjustice commented on the need for more discussion on the closure of the Arvin-Bear Mountain air monitoring site, and specifically the District's plans to reestablish a Type 3 PAMS site in the Arvin area.

Response: In 2010 the Arvin-Edison Water Storage District made a decision to not renew the lease of its property with the California Air Resources Board (ARB) on which the Arvin-Bear Mountain air monitoring site resided. There were multiple efforts made by ARB, EPA, the San Joaquin Valley Air Pollution Control District (SJVAPCD), and other stakeholders in order to compel the Arvin-Edison Water Storage District to renew the lease, but those efforts were unsuccessful. This essentially forced the closure of the Arvin-Bear Mountain site. The Arvin-DiGiorgio site was established as a replacement for the closed Arvin-Bear Mountain site by ARB; however this new site was not established as a full sized shelter since this site still required EPA approval. Due to the size limitations of the site, the PAMS equipment that the District operated at the Arvin-Bear Mountain site did not fit inside the Arvin-DiGiorgio shelter. EPA is fully aware of this and all efforts are being made by ARB and the SJVAPCD to urge EPA to approve the Arvin-Bear Mountain site as the permanent site. Upon EPA approval of the Arvin-DiGiorgio site, ARB will proceed with establishing a permanent full sized monitoring shelter, which has already been purchased and is currently being kept in storage. This full sized monitoring shelter will have enough room to house the District's PAMS equipment and the Type 3 PAMS site in the Bakersfield area will once again be in operation.

Comment: Earthjustice requested that full documentation be provided through a public process should the District move forward with consolidating the Merced County air monitoring sites and the Madera County air monitoring sites.

Response: Should the District decide to pursue the consolidation of the Merced-M Street and Merced-Coffee air monitoring sites in Merced County, and the consolidation of the Madera-Pump and Madera-City air monitoring sites in Madera County, proper documentation will be prepared pursuant to 40 CFR Part 58.14. This documentation will be afforded a public review process before these potential network modification requests are submitted to EPA for consideration.

December 25, 2014

Jennifer Ridgway
San Joaquin Valley Unified Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, CA 93726

Dear Ms. Ridgway,

Thank you for the opportunity to comment on the San Joaquin Valley Air Pollution Control District's ("District") 2014 Air Monitoring Network Plan ("Plan"). Maintaining a strong air quality monitoring network is essential to track progress toward meeting clean air standards, and we appreciate the information the District shares with the public in this Plan. In these comments, we note areas where the District should provide greater clarity to the public about the status of the San Joaquin Valley's air monitoring network and the District's future changes to the network.

Despite the wealth of information included in the Plan, the public receives little information about impact of the Arvin-Bear Mountain monitor's closure on the network as a whole. This monitor is essential for demonstrating attainment with the National Ambient Air Quality Standards ("NAAQS") for ozone, and also was a critical piece of the Photochemical Assessment Monitoring Stations ("PAMS") network. The closure of this monitor compromises the effectiveness of the District's entire monitoring network. However, the Plan's language is vague about when the gap in the network will be filled. The Plan states that since the closure of the Arvin-Bear Mountain monitor, the District has lacked a Type 3 PAMS site in the Bakersfield Metropolitan Statistical Area ("MSA"). A Type 3 PAMS site is a site that experiences the maximum ozone concentrations in an MSA. According to the Plan, the Arvin-DiGiorgio monitor will become the Type 3 PAMS site "when space becomes available."[1]

The Plan's language understates the importance of this missing monitor, and as a result fails to provide the public with the information it deserves. Table 7 of the Plan lists the PAMS monitors in the San Joaquin Valley, and includes "Arvin" as the Type 3 PAMS site in the Bakersfield MSA. A footnote explains that the "Arvin" monitor is actually the Arvin-DiGiorgio monitor, which is not currently a PAMS site. Table 7 should be edited to reflect the fact that there is not an operational Type 3 PAMS site in the Bakersfield MSA. Further, the District should provide the public with more information about the efforts being made to make the Arvin-DiGiorgio monitor a Type 3 PAMS site. Some questions that the District should answer include:

[1] San Joaquin Valley Air Pollution Control District. 2014 Air Monitoring Network Plan, p. 11, note 2.

- Has the District worked with the California Air Resources Board ("ARB") on the development of the Type 3 PAMS site?
- What has caused the delay in establishing the Arvin-DiGiorgio monitor as the Type 3 PAMS site?
- When can the public expect the Type 3 PAMS site to be operational?
- How will the District and/or ARB demonstrate that the Arvin-Di Giorgio site is an appropriate replacement for the Arvin-Bear Mountain Type 3 PAMS site? When and how will that demonstration be shared with the public?

The PAMS network, as described in the Plan, aims to produce a "better understanding of the effect of precursors, control measures, and photochemistry on ozone formation."[2] Without a maximum ozone concentration monitor in the part of the Valley with the worst ozone pollution, the PAMS network is unable to fulfill its goals.

In the Plan, the District discussed changes to the monitoring network that may occur in 2015, specifically the consolidation of two monitors in Madera and two monitors in Merced. We understand that these are possible, not definite, changes and as a result, the District has not provided documentation for these changes in the Plan. We ask that the District notify interested members of the public when it confirms its plans regarding these monitor consolidations, using the same channels as were used to distribute the Plan. The public should have the opportunity to review and comment on these proposed actions.

Sincerely,

Adenike Adeyeye
Research & Policy Analyst
Earthjustice

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[2] San Joaquin Valley Air Pollution Control District. 2014 Air Monitoring Network Plan, p. 11.