SAC METRO AIR DISTRICT

CLEAN AIR FOR ALL

2025

Annual Network Plan

Monitoring, Planning, and Rules Division

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List of Abbreviations and Acronyms

Abbreviation	Definition
µg/m3	Microgram per cubic meter
AAC Lab	Atmospheric Analysis and Consulting, Inc.
AADT	Annual average daily traffic
AB617	Assembly Bill 617
AGL	Above ground level
ANP	Annual Network Plan
AQI	Air Quality Index
AQS	Air Quality System
ARM	Approved regional monitor
Auto-GC	Automatic gas chromatography analyzer
BAM	Beta attenuation monitor
BC	Black Carbon
BTX	Benzene, toluene, and xylenes
CAP III	California Alternative Plan III
CARB	California Air Resources Board
CBSA	Core-based Statistical Area
CFR	Code of Federal Regulation
CO	Carbon monoxide
CSN	Chemical Speciation Network
District	Sacramento Metropolitan Air Quality Management District
DV	Design Value
EMP	Enhanced Monitoring Plan
ERG	Eastern Research Group, Inc.
FEM	Federal equivalent method
FR	Federal Register
FRM	Federal reference method
m	Meter(s)
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCore	National Core Multiple-pollutant Monitoring Stations
NEI	National Emission Inventory
NMHC	Non-methane hydrocarbon
NO_2	Nitrogen dioxide
NO_X	Oxides of nitrogen
NOY	Reactive Oxides of Nitrogen
O_3	Ozone
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
PM	Particulate matter
PM_{10}	Particulate matter, 10 micrometers or smaller
$PM_{2.5}$	Particulate matter, 2.5 micrometers or smaller
PM_{COARSE}	Particulate matter, between 10 and 2.5 micrometers

ppb	Parts per billion
ppm	Parts per million
PQAO	Primary quality assurance organization
PWEI	Population weighted emission index
QA	Quality assurance
QC	Quality control
RASS	Radio acoustic sounding system
RTI	Research Triangle Institute
RWP	Radar wind profiler
Sac Metro Air District	Sacramento Metropolitan Air Quality Management District
SACDOT	Sacramento County Department of Transportation
SASS	Speciated air sampling system
SCC	Sacramento City Code
SIP	State Implementation Plan
SLAMS	State and local air monitoring stations
SO_2	Sulfur dioxide
SPM	Special purpose monitor
STN	Speciation Trends Network
TAPI	Teledyne Advanced Pollution Instrumentation
TC	Total Carbon
TEI	Thermo Environmental Instruments
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile organic compound
VSCC	Very sharp cut cyclone

Section 1 Introduction

State and local agencies that conduct ambient air monitoring for regulatory purposes are required by Title 40, Code of Federal Regulations (40 CFR), Section 58.10 to submit an Annual Network Plan (ANP) to the United States Environmental Protection Agency (U.S. EPA) no later than July 1st of each year. The report must contain specific monitoring network information and must be presented for a 30-day public review period prior to submittal to the U.S. EPA as required by 40 CFR Section 58.10. This ANP was posted on Sacramento Metropolitan Air Quality Management District's ('Sac Metro Air District's' or 'District's') website for public review and comment from May 28, 2025 through June 27, 2025. No public comment was received.

The primary purpose of this ANP is to document the existing Sacramento County air monitoring network and to discuss proposed changes in the ambient air monitoring network that may occur within 18 months following the submittal of this report. The plan includes information on monitors that are a part of State and Local Air Monitoring Stations (SLAMS) network, National Core Multi-Pollutant Monitoring Stations (NCore), Chemical Speciation Network (CSN), Speciation Trends Network (STN), Special Purpose Monitor (SPM) sites, and Photochemical Assessment Monitoring Station (PAMS) network. The plan states whether each monitor in the ambient air monitoring network meets the requirements of 40 CFR Part 58, including Appendix A, C, D, and E, where applicable. 40 CFR Part 58, Appendix B, does not apply to the District's monitoring network because the District does not operate any air monitors regulated by Appendix B, which pertains only to the Prevention of Significant Deterioration monitors. This report includes Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors.

This report is not an extensive analysis on the design of the local air monitoring network. The network assessment, done every five years starting 2010 as required by 40 CFR Section 58.10, performs that analysis. District staff is currently finalizing the 2025 network assessment. A draft of the 2025 network assessment is available on the District's website at http://www.airquality.org/Air-Quality-Health/Air-Monitoring/Regulatory-Air-Monitoring.

Section 2 Network Operations

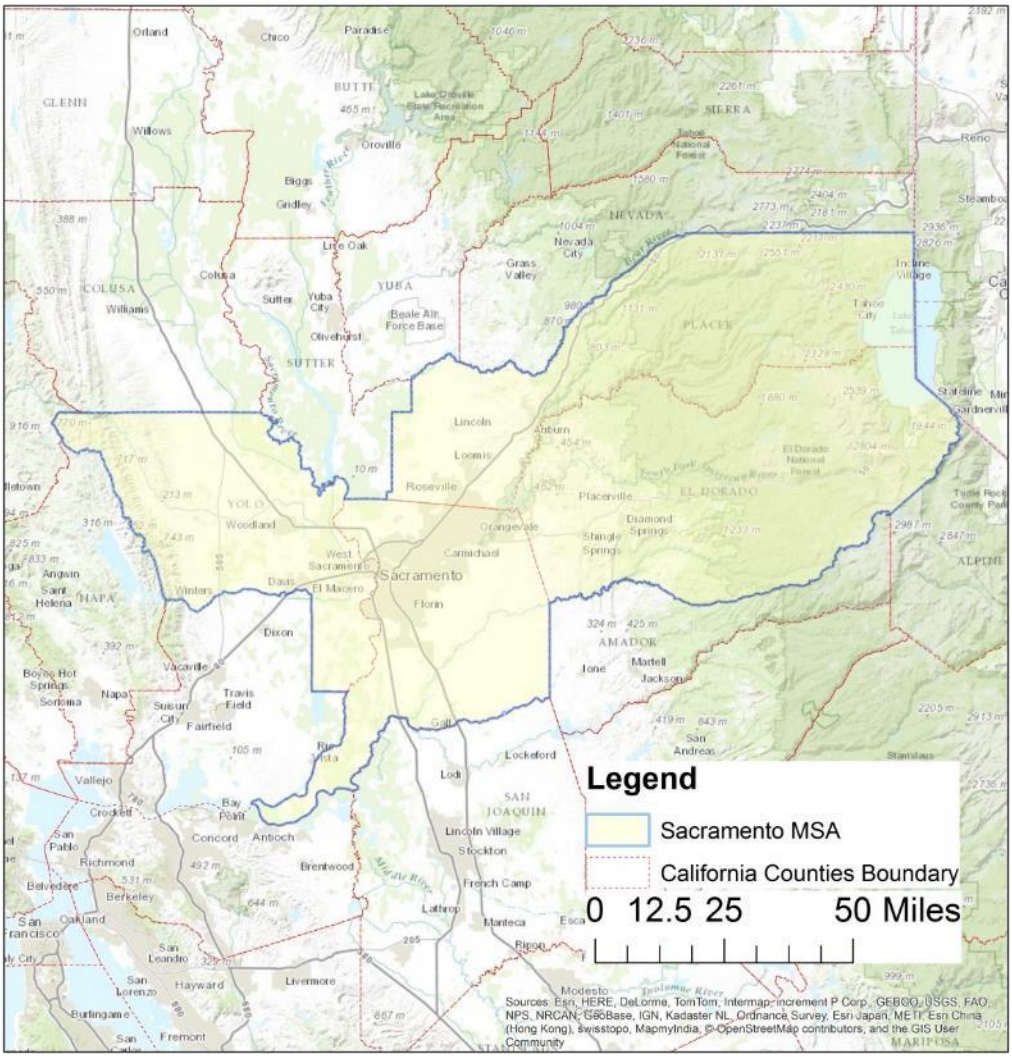
Sac Metro Air District is the local air quality regulatory and monitoring organization with jurisdiction in Sacramento County, California. Sacramento County is in the middle of California's Central Valley and part of the Sacramento-Arden Arcade-Roseville Metropolitan Statistical Area (Sacramento MSA). Sacramento MSA also includes Placer, El Dorado, and Yolo Counties. Sacramento MSA has an estimated population of 2.46 million, including 1.61 million in Sacramento County[1]. Figure 1 shows a map of Sacramento MSA.

A portion of the Sacramento MSA is a nonattainment area for the federal 2015 8-hr ozone (O_3) standards and is referred to as the Sacramento Federal Ozone Nonattainment Area[2]. The federal ozone nonattainment area includes all of Sacramento and Yolo Counties and portions of Placer, El Dorado, Solano, and Sutter Counties. On March 21, 2025, U.S. EPA published a proposal in the Federal Register "to determine that the Sacramento Metro,

[1] United States Census Bureau, QuickFacts, 2024 Population Estimates (accessed 10 Apr 2025)
[2] https://www.regulations.gov/document/EPA-HQ-OAR-2017-0548-0420

California area attained the 2008 8-hr ozone national ambient air quality standards (NAAQS)" (90 FR 13316).

Figure 1 – Counties within Sacramento-Arden Arcade-Roseville, California, MSA

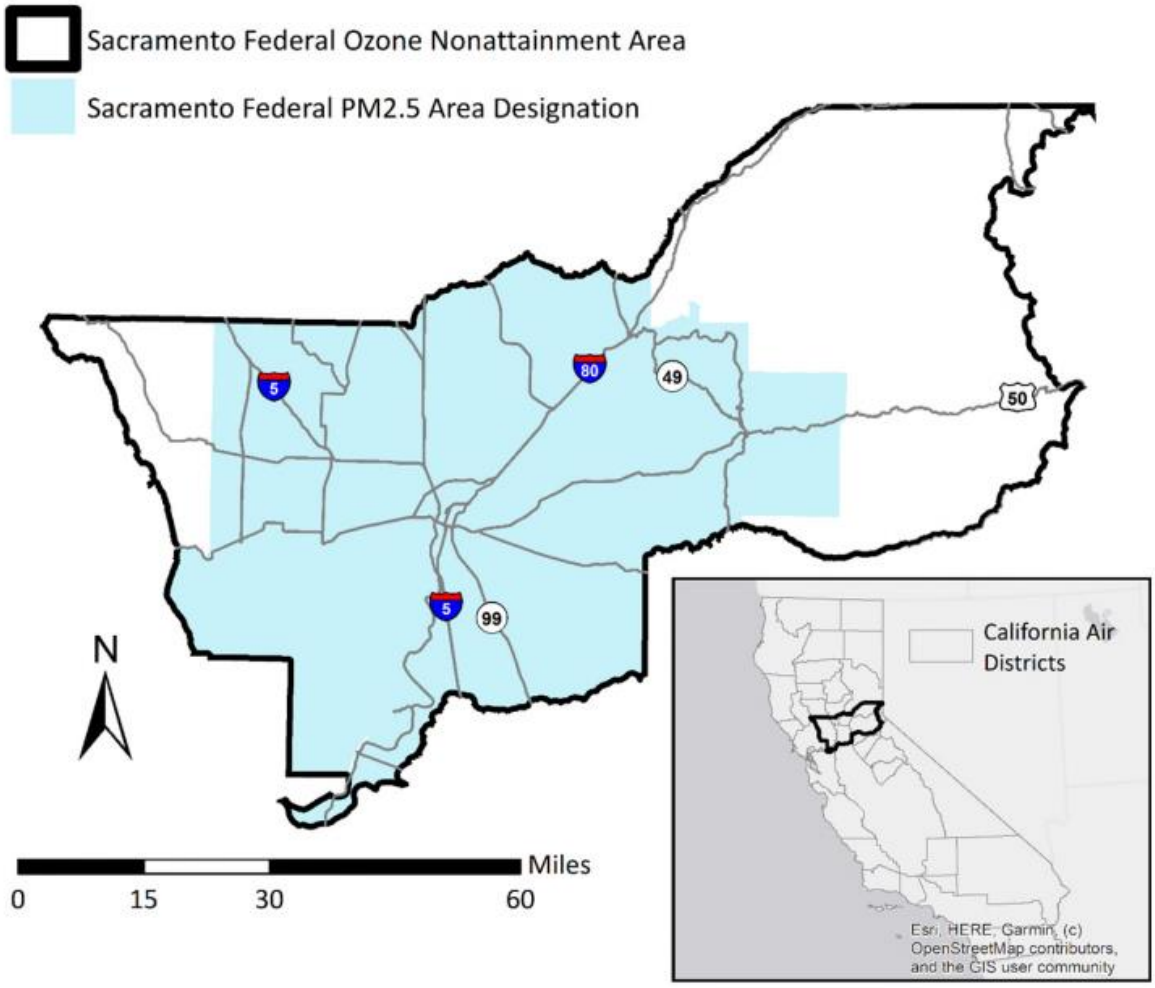


The Sacramento region was also designated as nonattainment for the 2006 24-hour particulate matter with size of 2.5 microns or smaller ($PM_{2.5}$) standard (Figure 2). The region met the 2006 24-hour $PM_{2.5}$ standard in 2015 (82 FR 21711) and will continue to reduce $PM_{2.5}$ levels through various programs and strategies. In February 2024, U.S. EPA promulgated a revised annual $PM_{2.5}$ standard. Designation process is expected to be completed in 2026, and the District will work with U.S. EPA if there are any additional monitoring requirements.

Sacramento County has met the particulate matter with size of 10 microns or smaller (PM_{10}) air quality standard since 2002. Sacramento County is designated as attainment for the most recent federal health standards for carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). U.S. EPA has designated Sacramento County as unclassifiable/attainment for the 2008 federal lead (Pb) standard[3].

[3] https://www.epa.gov/lead-designations/lead-designations-final-nonattainment-designations-rounds-1-and-2; 70 FR 72097

Figure 2 – Sacramento Federal O_3 and $PM_{2.5}$ Nonattainment Area



Sac Metro Air District operates six air monitoring sites within Sacramento County. CARB operates the seventh site at the Sacramento-T Street location. Figure 3 provides the location of air monitoring sites in Sacramento County. Sac Metro Air District is monitoring all criteria air pollutants[4] as federally required, except lead. Lead monitoring was discontinued in 2020 with U.S. EPA's approval. The District also monitors for federally required, non-criteria air pollutants and meteorological parameters. Table 1 through Table 3 list the criteria pollutants, non-criteria pollutants and meteorological parameters measured at each station located in Sacramento County. Each monitoring instrument is categorized by a monitor type: SLAMS or SPM. A SLAMS monitor may be further subdivided into one or more network affiliations (e.g., PAMS, NCore, near-road, CSN STN). Unless otherwise noted, all monitors listed in Table 1 through Table 3 are SLAMS monitor type. Each of the tables are color coded to identify network affiliations, if any.

Any shared monitoring responsibilities between the District and neighboring monitoring organizations in the Sacramento MSA are discussed in Section 3, Minimum Monitoring Requirements. For details on monitors in neighboring counties within the Sacramento MSA, please refer to the latest Annual Monitoring Network Plan published by California Air Resources Board (CARB).

[4] O_3, CO, NO_2, SO_2, $PM_{2.5}$, PM_{10}

Figure 3 – Air Monitoring Sites in Sacramento County

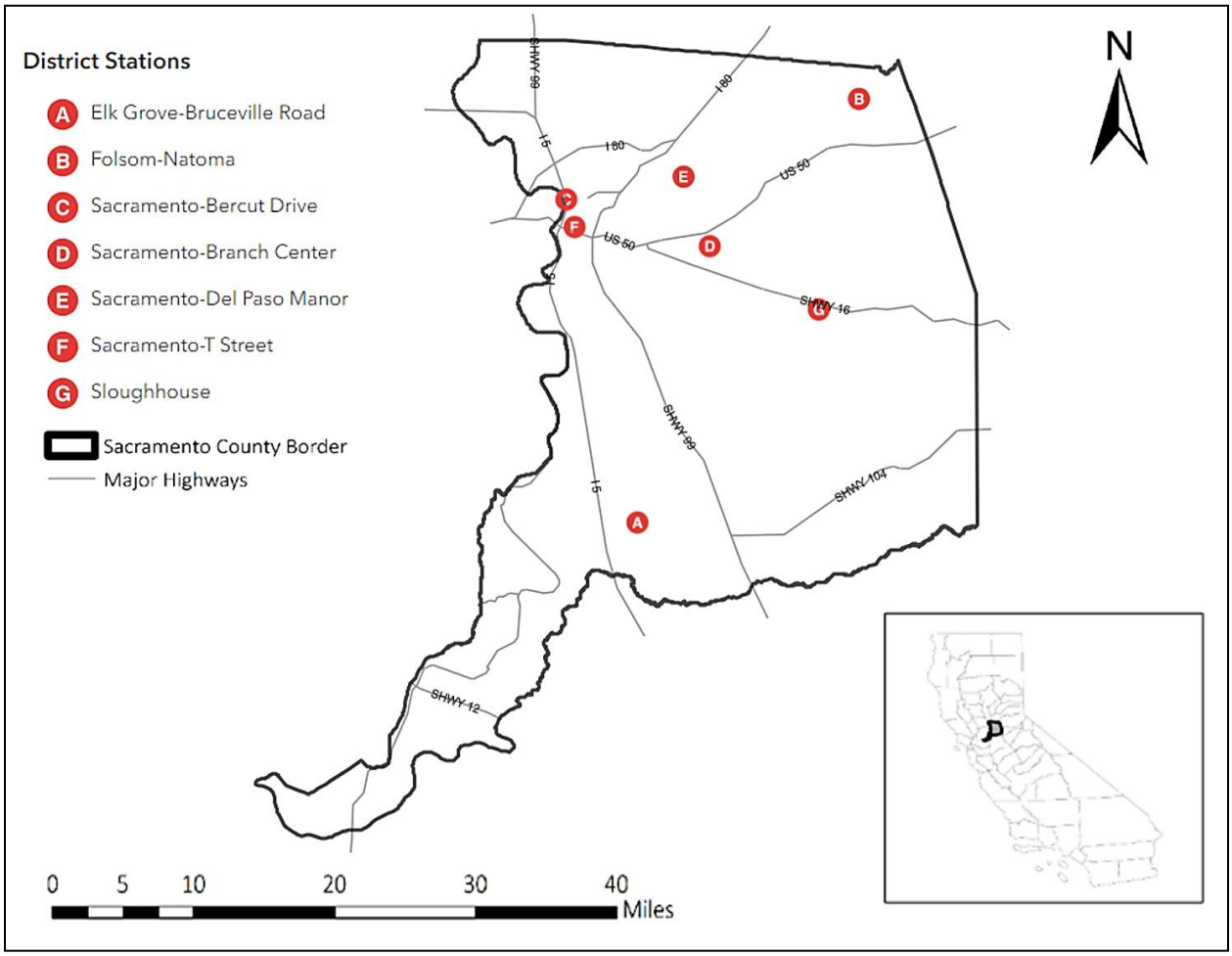


Table 1 – Criteria Pollutants Measured by Stations

Station Name	O_3	CO	NO_2	SO_2	Pb	PM_{10} (Hourly)	PM_{10} (24-hr)	$PM_{2.5}$ (Hourly)	$PM_{2.5}$ (24-hr)
Sacramento-Bercut Dr.		✓	✓					✓	
Sacramento-Branch Center #2							✓		
Elk Grove-Bruceville Rd.	✓		✓			✓(A)		✓	
Sacramento-Del Paso Manor	✓	✓	✓	✓			✓	✓	✓
Folsom-Natoma St.	✓		✓					✓	
Sloughhouse	✓							✓	
Sacramento-T Street	✓		✓			✓		✓	✓

Note: All monitors are part of the SLAMS federal air quality surveillance network unless noted otherwise

No affiliation or not applicable

Near Road

Photochemical Assessment Monitoring Station (PAMS)

National Core Multi-pollutant Monitoring Stations (NCore)

Multiple affiliation types (Includes SLAMS, PAMS & NCore)

(A) Monitor was installed in March 2025

Table 2 – Non-Criteria Pollutants Measured by Stations

Station Name	NO_Y[A]	NMHC[B]	VOC[C]	Carbonyl	$PM_{10-2.5}$	Speciated $PM_{2.5}$	BC[D]
Sacramento-Bercut Dr.							✓
Sacramento-Branch Center #2							
Elk Grove-Bruceville Rd.		✓[E]					
Sacramento-Del Paso Manor	✓	✓[E]	✓	✓	✓	✓	✓
Folsom-Natoma St.		✓[E]					
Sloughhouse							
Sacramento-T Street						✓	

Note: All monitors are part of the SLAMS federal air quality surveillance network unless noted otherwise

No affiliation or not applicable

Near Road

Photochemical Assessment Monitoring Station (PAMS)

National Core Multi-pollutant Monitoring Stations (NCore)

Carbon Speciation Network (CSN)

Multiple affiliation types (Includes SLAMS, NCore and CSN)

Special purpose monitor ([SPM] not part of SLAMS)

[A] Reactive oxides of nitrogen

[B] Non-methane hydrocarbon

[C] Volatile organic compounds

[D] Black carbon

[E] These monitors are on a temporary shutdown due to instrument malfunction and will be replaced

Table 3 – Meteorology Measured by Stations

Station Name	OT[A]	RH[B]	SR[C]	UVR[D]	BP[E]	Rain	WD/ WS[F]	Ceilo-meter
Sacramento-Bercut Dr.	✓						✓	
Sacramento-Branch Center #2								
Elk Grove-Bruceville Rd.	✓	✓	✓	✓	✓	✓	✓	✓
Sacramento-Del Paso Manor	✓	✓	✓				✓	
Folsom-Natoma St.	✓	✓	✓				✓	
Sloughhouse							✓	
Sacramento-T Street	✓	✓					✓	

Note: All monitors are part of the SLAMS federal air quality surveillance network unless noted otherwise

No affiliation or not applicable

Near Road

Photochemical Assessment Monitoring Station (PAMS)

Multiple affiliation types (includes SLAMS, PAMS and NCore)

Special purpose monitor ([SPM] not part of SLAMS)

[A] Outdoor temperature

[B] Relative humidity

[C] Solar radiation

[D] Ultraviolet radiation

[E] Barometric pressure

[F] Wind direction/wind speed

The primary focus of the current ambient air monitoring network is the data collection of criteria pollutants. The data collected from the air monitoring stations supports State Implementation Plan (SIP) development, attainment/nonattainment decisions, public notification, and air quality modeling and research efforts. The network is designed to meet three basic monitoring objectives as required by 40 CFR Part 58, Appendix D: (1) provide air pollution data to the general public in a timely manner; (2) support compliance with ambient quality standards and emissions strategy development; and (3) support air pollution research studies. An overview of monitoring objectives is in Table 4.

Table 4 – Monitoring Objectives of Criteria Pollutants

Station Name	O_3	CO	NO_2	SO_2	Pb	PM_{10} (Hourly)	PM_{10} (24-hr)	$PM_{2.5}$ (Hourly)	$PM_{2.5}$ (24-hr)
Sacramento-Bercut Dr.		N,P,R	N,P,R						N,P,R
Sacramento-Branch Center #2							N,P		
Elk Grove-Bruceville Rd.	N,P		N,P			N, P[(A)]		P	
Sacramento-Del Paso Manor	N,P,R	N,P,R	N,P,R	N,P,R			N,P,R[(B)]	P,R	N,P,R
Folsom-Natoma St.	N,P		N,P					N,P,R	
Sloughhouse	N,P							N,P,R	
Sacramento-T Street	N,P		N,P			N,P		N,P	

Monitoring objective abbreviation:
N – National Ambient Air Quality Standards (NAAQS) Comparison
P – Public Info
R – Research
[(A)] Monitor was installed in March 2025
[(B)] There are three PM_{10} monitors at Sacramento-Del Paso Manor; the primary monitor for NAAQS comparison and its collocated (audit) monitor with parameter code 88102 have objectives of N and P; the last PM_{10} monitor with parameter code 85101, used in the calculation of Particulate Matter with size between 10 and 2.5 micrometers (Coarse), has objectives of P and R.

There are different types of monitoring sites to support these monitoring objectives. Examples of these include: sites that are located in the highest pollutant concentration area, sites that are located in areas of high population density to monitor for population exposure, and sites that determine general background concentration levels. A complete list of different types of monitoring sites is in 40 CFR Part 58, Appendix D. In addition, a spatial scale of representativeness is assigned to the air monitors to identify “the link between general monitoring objectives, site types and the physical location of a particular monitor” (40 CFR Part 58, Appendix D). Table 5 summarizes the site type and spatial scale. Description and further explanation on site type and spatial scale can be found in 40 CFR Part 58, Appendix D.

For in-depth details on individual monitors, see Appendix A, which documents the monitor type, affiliation, monitoring objectives, type of site, and spatial scale by each monitor. It also provides a statement of purpose and pollutant specific information, such as whether a $PM_{2.5}$ monitor is suitable for comparison to the national ambient air quality standard, 1-point quality control (QC) check frequency and distance to other PM monitors. All monitors operated in the District’s ambient air monitoring network meet the requirements of 40 CFR Part 58, including Appendices A, C, D, and E.

Table 5 – Type of Site and Spatial Scale

Site	Pollutant	Site Type	Spatial Scale
Sacramento-Bercut Dr.	CO	Source Oriented	Microscale
	NO_2	Source Oriented	Microscale
	$PM_{2.5}$	Source Oriented	Microscale
	BC	Source Oriented	Not applicable
Sacramento-Branch Center #2	PM_{10}	Highest Concentration	Neighborhood
Elk Grove-Bruceville Rd.	O_3	Upwind/Background	Urban
	NO_2	Upwind/Background	Urban
	$PM_{2.5}$	General/Background	Urban
	PM_{10}[(A)]	General/Background	Urban
Sacramento-Del Paso Manor	O_3	Population Exposure	Neighborhood
	CO	Population Exposure	Neighborhood
	NO_2	Population Exposure	Neighborhood
	SO_2	Population Exposure	Urban
	PM_{10}	Population Exposure	Neighborhood
	$PM_{2.5}$	Population Exposure, Highest Concentration	Neighborhood
	BC	Population Exposure	Not applicable
Folsom-Natoma St.	O_3	Maximum Ozone, Population Exposure	Neighborhood
	NO_2	Highest Concentration	Neighborhood
	$PM_{2.5}$	Population Exposure	Neighborhood
Sloughhouse	O_3	Maximum Ozone	Neighborhood
	$PM_{2.5}$	Upwind/background	Urban
Sacramento-T Street	O_3	Upwind/background	Urban
	NO_2	Population Exposure	Neighborhood
	PM_{10}	Population Exposure	Neighborhood
	$PM_{2.5}$	Population Exposure	Neighborhood

[(A)] Monitor was installed in March 2025

Section 3 Minimum Monitoring Requirements

Section 3.1 General

The minimum number of monitoring sites required for each pollutant is based on one or more applicable factors, as described in 40 CFR Part 58, Appendix D. Examples of these factors include: MSA population, core-based statistical area (CBSA) population, pollutant design value, pollutant maximum concentration, attainment status, annual average daily traffic (AADT), population weighted emission index (PWEI), SIP, maintenance plan and U.S. EPA's national emission inventory (NEI) data requirements.

Sacramento MSA meets federal monitoring requirements for most criteria pollutants – O_3, $PM_{2.5}$ (manual and continuous methods), PM_{10}, SO_2, and Pb. The District is working with CARB and EPA to meet CO and NO_2 monitoring requirements. Details of the monitors representing Sacramento MSA (or CBSA, ID#40900) are provided in Table 6. As mentioned in Section 2, Sacramento MSA has 2.46 million residents and covers all El Dorado, Placer, Sacramento, and Yolo Counties.

Sac Metro Air District has an agreement with CARB to share specific portions of the monitoring responsibility in the Sacramento MSA. A copy of this agreement is available upon request. Placer County Air Pollution Control District, Yolo-Solano Air Quality Management District, the air monitoring organizations for Placer and Yolo Counties, respectively, also operate air monitoring stations within the Sacramento MSA. Appendix B lists the number of monitors operated by CARB and different air districts in Sacramento MSA.

Table 6 – Sacramento MSA Design Value and SLAMS Monitoring Site Requirement

Pollutant and type[A]		Sites in MSA	Additional needed	Notes[B]
O_3		15	0	0.075 ppm at Sacramento-Del Paso Manor (Site #06-067-0006) with wildfire impact[C]
CO	Near-road	1	1[D]	Sacramento-Bercut Dr. is one of the two required near-road monitors
	Area-wide	1	0	Sacramento-Del Paso satisfies the NCore and CO Maintenance Plan requirements
NO_2	Near-road	1	1[D]	Highest AADT: 309,000[E]
	Area-wide	6	0	Sacramento-Del Paso Manor serves as both PAMS and area-wide monitor
SO_2		1	0	PWEI: 2,716 million persons-tons per year[F] Sacramento-Del Paso Manor satisfies the NCore requirement
$PM_{2.5}$	FRM/FEM	8	0	24-hr standard: 31 µg/m3 at Sacramento-Del Paso Manor (Site #06-061-0006) with wildfire impact[C] Annual Standard: 8.9 µg/m3 at Sacramento-Bercut Dr. (Site #06-067-0015) with wildfire impact[C]
	Continuous (includes non-FEM)	13	0	
PM_{10}		8[G]	0	Estimated number of exceedances: 0.0
$PM_{10-2.5}$		1	0	Required at the Sacramento-Del Paso Manor as an NCore requirement
Pb	NCore	0	0	Monitor discontinued in May 2020 due to low ambient concentration and change in monitoring requirements
	Source oriented	0	0	No non-airport source greater than 0.5 tons per year or airport source greater than 1.0 tons per year[H]

Source: U.S. EPA Air Quality System (AQS) Site/Monitor Data Report (AMP 500), accessed on 14 Apr 2025, and Design Value Report (AMP 480), accessed on 14 Apr 2025
Units' abbreviation: ppm – part per million; µg/m^3 – microgram per cubic meter
[A] For site requirement information, see 40 CFR Part 58, Appendix D
[B] Design values are included for O_3, $PM_{2.5}$, PM_{10}, as they help to determine the number of sites required
[C] The design values shown in this table include wildfire smoke impact in 2023; the District will address these impacts under the Exceptional Event Rule (81 FR 68216) as necessary
[D] The District is working with EPA and CARB to investigate potential sites, determine appropriate timeline, and funding to implement a 2nd near-road site
[E] California Department of Transportation, 2022 Traffic Volumes, accessed 14 Apr 2025
[F] Determined with the current MSA population and the SO_2 emission from the 2020 National Emission Inventory, accessed 14 Apr 2025
[G] Monitor was installed in March 2025
[H] 2020 National Emission Inventory, accessed 14 Apr 2025

Section 3.2 Photochemical Assessment Monitoring Station

The District operated the legacy PAMS network from 1994 through 2020. Elk Grove-Bruceville Rd., Sacramento-Del Paso Manor, and Folsom-Natoma St. were the type I, II, III PAMS sites, respectively. The 2015 review of National Ambient Air Quality Standards for Ozone (80 FR 65292) required PAMS sites to be at the NCore sites. In addition, it also required each State to draft an Enhanced Monitoring Plan (EMP) for areas with moderate or higher ozone nonattainment to include additional monitoring that is needed at other sites for the region. For 2008 the Sacramento ozone federal nonattainment area is classified as "Severe-15"[5]. For the 2015 standard, Sacramento is classified as serious but have submitted a request to EPA bump up to severe. The District, CARB, and neighboring air districts worked together to determine the appropriate monitoring plan. Details are provided in Enhanced Monitoring Plan portion of the 2020 Monitoring Network Assessment drafted by CARB.

In Sacramento County, Sacramento-Del Paso Manor is the core PAMS station. Elk Grove-Bruceville Rd. and Folsom-Natoma St. are serving as enhanced ozone monitoring sites. Table 7 lists the PAMS instruments operated by the District. Additional modifications needed to realign to the new PAMS network requirements are as followed:

- To accommodate the large automatic gas chromatography analyzer (Auto-GC) and its support equipment, the District will have to rebuild the PAMS station at Sacramento-Del Paso Manor. Construction efforts began in 2022 but challenges such as increased power needs and securing an easement for underground power have delayed construction of the site significantly. The physical construction work is scheduled to start mid-2025 and be completed prior to the 2026 PAMS season.
- The District will be submitting a waiver to operate some of the required meteorological instruments (ultraviolet radiation, precipitation, barometric pressure) at Elk-Bruceville Rd. instead of Sacramento-Del Paso Manor.

Table 7 – Enhanced PAMS Monitoring

Site Name	O_3	NO_2	VOC	Carbonyl	NMHC(A)	Meteor-ology	Ceilo-meter
Elk Grove-Bruceville Rd.	✓	✓			✓(B)	✓(C)	✓(D)
Sacramento-Del Paso Manor	✓	✓	✓(E)	✓	✓(E)	✓(F)	
Folsom-Natoma St.	✓	✓			✓(B)	✓(G)	

(A) Non-methane hydrocarbon
(B) The NMHC analyzers at Elk-Grove Bruceville Rd. and Folsom Natoma St. are on a temporary shutdown due to instrument malfunction and will be replaced
(C) Surface meteorology at Elk Grove-Bruceville Rd. includes: temperature, relative humidity, wind direction and speed, solar radiation, ultraviolet radiation, precipitation, and barometric pressure
(D) The District received an approval to operate the ceilometer at Elk Grove-Bruceville Rd. through our 2017 annual network plan
(E) An Auto-GC will replace the temporarily shutdown canister sampling system and NMHC monitor as required under the new PAMS requirements
(F) Surface meteorology at Sacramento-Del Paso Manor includes: temperature, relative humidity, wind direction and speed, and solar radiation
(G) Surface meteorology at Folsom-Natoma St. includes: temperature, relative humidity, wind direction and speed, and solar radiation

[5] Further information on the current planning efforts on attaining ozone standards can be found on https://www.airquality.org/residents/air-quality-plans

Section 3.3 Operating Schedule

All instruments operated by the District meet the operating schedule requirements as specified in 40 CFR Section 58.12. All continuous monitors report hourly data and monitor air pollutants year-round, unless otherwise specified in Appendix A. Non-continuous monitors are operated by following the sampling schedule in Table 8 and are operated year-round.

Table 8 – Operating Schedule for PM monitors in Sacramento

Site	Pollutant	Operating Schedule[(A)]	Note
Sacramento-Branch Center #2	PM_{10}	1 in 6 days	Max. 24-hr concentration: 58 µg/m3; ratio to standard: 0.39
Elk Grove-Bruceville Rd.	PM_{10}	Hourly	Monitor was installed in 2025
Sacramento-Del Paso Manor	PM_{10}	1 in 6 days	Max. 24-hr concentration: 36 µg/m3; ratio to standard: 0.24
	$PM_{10-2.5}$	1 in 3 days	
	$PM_{2.5}$	Hourly, Daily	A continuous FEM monitor operates in parallel with a 24-hr sampler.

Source: Design values from U.S. EPA Air Quality System Raw Data Report (AMP 350), accessed on 14 Apr 2025

[(A)] Operating schedule requirements can be found in 40 CFR Section 58.12

Section 4 Recent and Proposed Modifications to the Network

This section discusses recent and proposed modifications to the Sacramento County air monitoring network. It includes modifications starting from 2024 and possible modifications through the end of 2026. Unless specifically noted below, Sac Metro Air District is not formally requesting approval for modification through this network plan from CARB or U.S. EPA. Prior to the termination of any SLAMS monitor, the District will work with the CARB to submit to U.S. EPA the required documentation for official review and approval. Sac Metro Air District is a part of CARB's primary quality assurance organization and works with CARB to ensure air monitoring requirements are met.

Section 4.1 Elk Grove-Bruceville Rd.

1. The 2020 5-year Air Monitoring Network Assessment Report recommends installation of a continuous PM_{10} monitor at this site to "increase the efficiency of and optimize the District PM_{10} network." The District installed the continuous PM_{10} monitor in February 2025, and it is operational starting March 1, 2025. More information on this monitor can be found in Appendix A.

Section 4.2 Sacramento-Del Paso Manor

1. Sacramento-Del Paso Manor was established in the 1970s with a small number of monitoring equipment units. The amount of equipment has steadily increased due to PAMS and NCore requirements, and the existing station configuration cannot accommodate any additional equipment needed by the new PAMS requirements in 40 CFR Part 58. Renovation and site expansion are expected to begin mid-

2025. After the station expansion project is completed, the District will replace the existing PAMS VOC canister sampling with a continuous Auto-GC instrument.
2. The District is working with CARB and the U.S. EPA to determine if we can replace our PM_{10} filter-based method with PM_{10} continuous monitoring at this site. PM_{10} continuous monitoring would provide real-time air quality information to the public.

Section 4.3 Near-road site #2

1. 40 CFR Part 58 requires state or local air monitoring organizations to operate a second near-road monitoring site if any traffic count in the metropolitan area surpasses 250,000 in annual average daily traffic. As noted, in the 2025 5-Year Air Monitoring Network Assessment, the Sacramento MSA exceeded traffic volume threshold for a second near-road monitoring site according to 40 CFR Part 58 (2015-2019 traffic volume exceeded the threshold and 2020 traffic volume fell below the threshold; however, 2021 and the most recent available 2022 data show that traffic volumes exceed the threshold). The District is working with U.S. EPA and CARB to determine the appropriate timing, location, and funding for a second near-road monitoring site.

Section 4.4 Replacement for the North Highlands station

1. The District is working with U.S. EPA and CARB to identify a location in northern Sacramento County to replace the former North Highlands air monitoring station, which was quicky closed due to extenuating circumstances (sale of property). Once a new location is secured, the District will start the request for proposal process.

Section 5 Quality Assurance and Other Monitoring Requirements for the PQAO

40 CFR Part 58, Appendix A, requires monitoring activities to satisfy quality assurance criteria. Most of these activities are required and met on a primary quality assurance organization (PQAO) level. Sac Metro Air District is a part of the CARB's PQAO and works with the PQAO to meet the quality assurance requirements. Currently, there are collocated $PM_{2.5}$ FRM and PM_{10} FRM monitors at Sacramento-Del Paso Manor. There is a collocated $PM_{2.5}$ FEM monitor at Folsom-Natoma St. For these collocated monitors, the primary monitor and audit monitor use the same U.S. EPA FRM/FEM method designation.

After receiving an approval from U.S. EPA in April 2020, the District has discontinued the Pb monitor at Del Paso Manor in May 2020. Thus, collocation for lead will not be conducted at this location.

40 CFR Part 58, Appendix D, 4.7.3, requires each State to "install and operate at least one $PM_{2.5}$ site to monitor for regional background and at least one $PM_{2.5}$ site to monitor regional transport." CARB identified Point Reyes National Seashore and San Rafael Wilderness sites as the state's northern and southern $PM_{2.5}$ regional background sites in its 2024 Annual Monitoring Network Report. The report identified Vallejo as the regional transport site for $PM_{2.5}$.

Section 6 Process to Review Changes to $PM_{2.5}$ Monitoring Network

40 CFR Section 58.10(c) requires this annual network plan to "provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor." There is no current plan to relocate or discontinue any $PM_{2.5}$ monitors that impact a violating monitor. Any changes to the $PM_{2.5}$ monitoring network with impact to the location of a violating $PM_{2.5}$ monitor will be documented in this section when triggered by future annual network plan changes.

Section 7 Data Submission Requirements

CARB submitted precision, accuracy, and raw data for all District-operated monitors until the end of 2017. Starting in 2018, Sac Metro Air District has submitted its air monitoring data directly to AQS after conducting its data validation process. The quarterly data submittal process also includes Quality Assurance (QA) data required by 40 CFR Part 58. In an agreement with CARB, Sac Metro Air District will certify all data the District generates and submits. Since CARB continues to weigh and analyze the $PM_{2.5}$ FRM filters for Sac Metro Air District, CARB will continue to submit and certify that data. CARB will also submit and certify the PM coarse data. Copies of the annual data certification provided to U.S. EPA are provided in Appendix C.

- 2024 Annual data certification submitted (O_3 only): January 15, 2025
- 2024 Annual data certification ($PM_{2.5}$ FRM only) submitted: April 7, 2025
- 2024 Annual data certification submitted (non-O_3): April 25, 2025

Appendix A Detailed Site and Monitor Information

Detailed site information covered in this appendix reflects existing air monitoring operation.

Appendix A.1 Sacramento-Bercut Dr.

This is an approved near-road monitoring site. Located one mile from Downtown Sacramento, this site is expected to measure the highest NO_2 concentration due to the emissions from mobile sources on Interstate 5, which is about 20 meters (m) from the site. The site started operation on October 13, 2015.

Table 9 – Sacramento-Bercut Dr. Metadata

Site Name	Sacramento-Bercut Dr.
AQS Site Number	06-067-0015
Geographic Coordinates	38.593328°N, 121.503728°W
Location	On the downwind side of Interstate 5, one mile north-northwest of Downtown Sacramento
Address	100 Bercut Dr., Sacramento, CA 95811
County	Sacramento
Metropolitan Statistical Area	Sacramento-Arden Arcade-Roseville
Distance from Roadway	Interstate 5: 20 m Bercut Dr.: 5 m
Annual Average Daily Traffic (Vehicles/Day)	Interstate 5: 205,000 (California Department of Transportation, 2021) Bercut Dr. at Bannon St.: 3,575 (City of Sacramento, 2019)
Ground Cover	Pavement, with vegetation

Figure 4 – Sacramento-Bercut Dr. Site Photo

Figure 5 – Panoramic Photo Looking North from Sacramento-Bercut Dr.

Figure 6 – Panoramic Photo Looking East from Sacramento-Bercut Dr.

Figure 7 – Panoramic Photo Looking South from Sacramento-Bercut Dr.

Figure 8 – Panoramic Photo Looking West from Sacramento-Bercut Dr.

Figure 9 – Google Earth Satellite Image of Sacramento-Bercut Dr.

Source: Google Earth, imagery date 3/6/2024

The circle in Figure 9 indicates there are no trees within a 10 m radius, which satisfies the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Heights of potential flow obstacles are provided in Table 10.

Table 10 – Object Height Survey at Sacramento-Bercut Dr.

Obstacle	Obstacle Height (OH)	Inlet Height (IH)	2*(OH-IH)	Obstacle Distance (OD)	Meet Criteria? 2*(OH-IH) ≤OD
Gaseous Manifold Inlet					
A: Tree	16.2	4.6	23.2	47.5	Yes
B: Tree	5.9	4.6	2.6	29.0	Yes
C: Tree	12.1	4.6	15.0	29.0	Yes
D: Tree	25.5	4.6	41.8	35.1	No(A)
E: Tree	12.2	4.6	15.2	44.3	Yes
Black Carbon Inlet					
A: Tree	16.4	4.2	24.4	48.5	Yes
B: Tree	5.3	4.2	2.2	28.0	Yes
C: Tree	11.6	4.2	14.8	29.1	Yes
D: Tree	25.0	4.2	41.6	33.1	No(A)
E: Tree	12.0	4.2	15.6	43.3	Yes
Continuous $PM_{2.5}$ (FEM) Sampler					
A: Tree	14.1	4.9	18.4	46.0	Yes
B: Tree	5.3	4.9	0.8	28.0	Yes
C: Tree	12.1	4.9	14.4	31.0	Yes
D: Tree	25.6	4.9	41.4	30.3	No(A)
E: Tree	12.0	4.9	14.2	43.3	Yes

**Units in meters*

(A) Tree H is an old growth heritage tree, as defined by Chapter 12.64 of Sacramento City Code (SCC). It is protected by SCC from removal or significant pruning. Since the tree is directly downwind of the emission source, it has limited scavenging effect and does not interfere with the emission source being monitored. Before the air monitoring site was established, U.S. EPA staff had authorized the District to leave this tree in place (email correspondence with Elfego Felix, U.S. EPA Region 9, on August 6, 2013).

Table 11 – Sacramento-Bercut Dr. Gaseous Instruments Operational Data

Site	Sacramento-Bercut Dr.	Sacramento-Bercut Dr.
Start Date	10/13/2015	10/13/2015
Collecting Agency	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District
Pollutant	NO_2	CO
Parameter Code	42602	42101
Parameter Occurrence	1	1
Manufacturer/Model	TAPI200UP	TAPI 300U
Sampling Method	Instrumental	Instrumental
Method Code	200	593
Analysis Method	Photolytic-Chemiluminescence	Gas Filter Correlation
FRM/FEM/ARM/Other	FEM	FRM
Monitoring Objective	NAAQS comparison, public info, research	NAAQS comparison, public info, research
Statement of Purpose	Monitors near road emission at region's highest fleet equivalent AADT roadway	Monitors near road emission at region's highest fleet equivalent AADT roadway
Monitor Type	SLAMS	SLAMS
Affiliation	Near Road	Near Road
Site Type	Source Oriented	Source Oriented
Spatial Scale	Micro	Micro
Sampling Frequency	Continuous	Continuous
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	1.9	1.9
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	34.8	34.8
Distance from nearest tree drip line (m)	12	12
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable
Unrestricted airflow (deg)	336	336
Probe height (m, agl)	4.6	4.6
Probe material	Teflon	Teflon
Residence time (seconds)	11.8	11.8
Changes in next 18 months?	No	No
Frequency of 1-pt QC Check	Every other day	Every other day
Audit Date(s)	5/14/24	5/14/24

Table 12 – Sacramento-Bercut Dr. Particulate Matter Instruments Operational Data

Site	Sacramento-Bercut Dr.	
Start Date	10/30/2015	12/30/2020
Collecting Agency	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District
Pollutant	Black Carbon	PM2.5
Parameter Code	84313	88101
Parameter Occurrence	1	3
Manufacturer/Model	Magee Scientific M633	Met One 1020 BAM
Sampling Method	Aethalometer	Very sharp cut cyclone
Method Code	894	170
Analysis Method	Optical Absorption	Beta Attenuation
FRM/FEM/ARM/Other	Other	FEM
Monitoring Objective	Public info, research	NAAQS comparison, public info, research
Statement of Purpose	Determines component of PM emission	Monitors near road emission
Monitor Type	SLAMS	SLAMS
Affiliation	Near Road	Near Road
Site Type	Source Oriented	Source Oriented
Spatial Scale	Not applicable	Micro
Sampling Frequency	Continuous	Continuous
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	1.5	2.2
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	34.8	34.8
Distance from nearest tree drip line (m)	12	13
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable
Unrestricted airflow (deg)	336	336
Probe height (m, agl)	4.2	4.8
Probe material	Aluminum	Aluminum
Residence time (seconds)	Not applicable	Not applicable
Changes in next 18 months?	No	No
Frequency of flow rate verification	Monthly	Bi-monthly
Audit Date(s)	Not applicable	5/14/24, 10/22/24

Table 13 – Sacramento-Bercut Dr. Meteorological Instruments Operational Data

Site	Sacramento-Bercut Dr.		
Start Date	10/30/2015	10/30/2015	10/30/2015
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	Outdoor Temperature	Wind Direction	Wind Speed
Parameter Code	62101	61104	61103
Parameter Occurrence	1	1	1
Manufacturer/Model	Climatronics 100093	Climatronics 100076S	Climatronics 100075S
Sampling Method	Instrumental	Instrumental	Instrumental
Method Code	042	020	020
Analysis Method	Machine Average	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other
Monitoring Objective	Public info, research	Public info, research	Public info, research
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	Other	Other	Other
Affiliation	Near Road	Near Road	Near Road
Site Type	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	Not applicable	Not applicable	Not applicable
Distance from flow obstructions not on roof (m)	Not applicable	Not applicable	Not applicable
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	336	336	336
Probe height (m, agl)	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No
Frequency of 1-pt QC Check	Not applicable	Not applicable	Not applicable
Audit Date(s)	5/14/24	5/14/24	5/14/24

Appendix A.2 Sacramento-Branch Center #2

Sacramento-Branch Center #2 is a PM_{10} monitoring site. This site was established in 2006 to replace the former Sacramento-Branch Center site, which was approximately one-quarter mile to the north. The site was moved because nearby trees at the previous location obstructed the airflow, and the former monitoring site did not meet siting requirements.

The objective of this site is to measure the representative PM_{10} concentration, as documented in the original site initiation reports filed in the late 1980s.

Table 14 – Sacramento-Branch Center #2 Metadata

Site Name	Sacramento-Branch Center #2
AQS Site Number	06-067-0284
Geographic Coordinates	38.551290°N, 121.336590°W
Location	Rooftop of building in the middle of County Maintenance Yard, located 10 miles east-southeast of downtown Sacramento.
Address	3847 Branch Center Road, Sacramento, CA 95827
County	Sacramento
Metropolitan Statistical Area	Sacramento–Arden-Arcade–Roseville, CA
Distance from Roadway	62 m
Annual Average Daily Traffic (Vehicles/Day)	Bradshaw Rd South of Old Placerville Rd.: 36,504 (SACDOT, 7/6/2022)
Ground Cover	Paved

Figure 10 – Sacramento-Branch Center #2 Site Photo

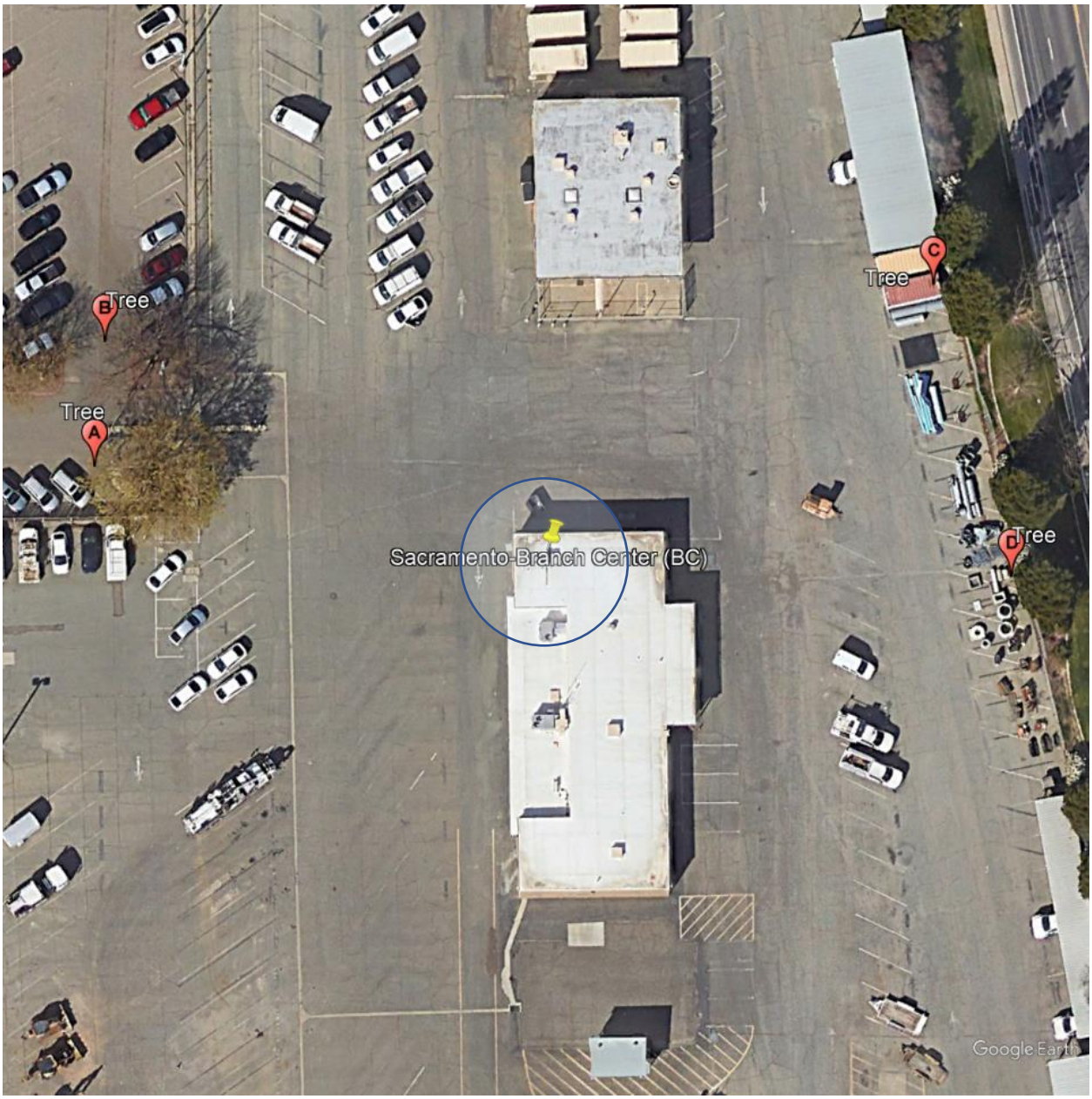
Figure 11 – Panoramic Photo Looking North from Sacramento-Branch Center #2

Figure 12 – Panoramic Photo Looking East from Sacramento-Branch Center #2

Figure 13 – Panoramic Photo Looking South from Sacramento-Branch Center #2

Figure 14 – Panoramic Photo Looking West from Sacramento-Branch Center #2

Figure 15 – Google Earth satellite image of Sacramento-Branch Center #2



Source: Google Earth, imagery date: 2/15/2022

The circle in Figure 15 indicates no trees exist within a 10 m radius, which satisfy a siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Heights of the trees are provided in Table 15. Object C and D mark the tallest tree northeast and southeast of the station, respectively.

Table 15 – Object Height Survey at Sacramento-Branch Center #2

Obstacle	Obstacle Height (OH)	Inlet Height (IH)	2*(OH-IH)	Obstacle Distance (OD)	Meet Criteria? 2*(OH-IH) ≤OD
PM_{10} (FRM) Sampler					
A: Tree	9.8	6.2	7.2	41.8	Yes
B: Tree	10.2	6.2	8.0	46.8	Yes
C: Tree	23.1	6.2	33.8	52.3	Yes
D: Tree	19.8	6.2	27.2	51.2	Yes

**Units in meters*

Table 16 – Sacramento-Branch Center Particulate Matter Instrument Operational Data

Site	Sacramento-Branch Center
Start Date	4/1/2006
Collecting Agency	Sac Metro Air District
Analytical Lab	Sac Metro Air District
Reporting Agency	Sac Metro Air District
Pollutant	PM_{10}
Parameter Code	81102, 85101
Parameter Occurrence	1
Manufacturer/Model	Sierra Anderson 1200
Sampling Method	Hi Volume
Method Code	063
Analysis Method	Gravimetric
FRM/FEM/ARM/Other	FRM
Monitoring Objective	NAAQS comparison, public info
Statement of Purpose	Measures PM_{10} concentration
Monitor Type	SLAMS
Affiliation	None
Site Type	Highest concentration
Spatial Scale	Neighborhood
Sampling Frequency	1 in 6 days
Sampling Season	Year Round
Distance from Supporting Structure or Roof	2.0
Distance from flow obstructions on roof (m)	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction
Distance from nearest tree drip line (m)	39
Distance to furnace or incinerator flue (m)	No furnace/flue
Distance between collocated PM monitors (m)	Not collocated
Unrestricted airflow (deg)	360
Probe height (m, agl)	6.2
Probe material	Not applicable
Residence time (seconds)	Not applicable
Changes in next 18 months?	No
Frequency of flow rate verification	Monthly
Audit Date(s)	4/24/24,10/21/24

Appendix A.3 Elk Grove-Bruceville Rd.

The Bruceville Rd. air monitoring site is in a rural area 4 miles south of Elk Grove, CA, and 20 miles south of Downtown Sacramento. It was initiated in 1992 to replace the former Sacramento-Meadowview Road O_3 monitoring site.

This site is the upwind O_3 and ozone precursor monitoring site for the Sac Metro Air District's network. Under the legacy PAMS network, it was a Type I site. It is now one of the two additional PAMS enhanced monitoring sites.

Table 17 – Elk Grove-Bruceville Rd. Metadata

Site Name	Elk Grove-Bruceville Rd.
AQS Site Number	06-067-0011
Geographic Coordinates	38.302560°N, 121.420830°W
Location	Rural area located 4 miles south of Elk Grove, CA.
Address	12490 Bruceville Rd, Elk Grove, CA 95758
County	Sacramento
Metropolitan Statistical Area	Sacramento—Arden-Arcade—Roseville, CA
Distance from Roadway	76 m
Annual Average Daily Traffic (Vehicles/Day)	Bruceville Rd north of Lambert Rd.: 3,677 (SACDOT, 9/15/2022)
Ground Cover	Vegetated

Figure 16 – Elk Grove-Bruceville Rd. Site Photo

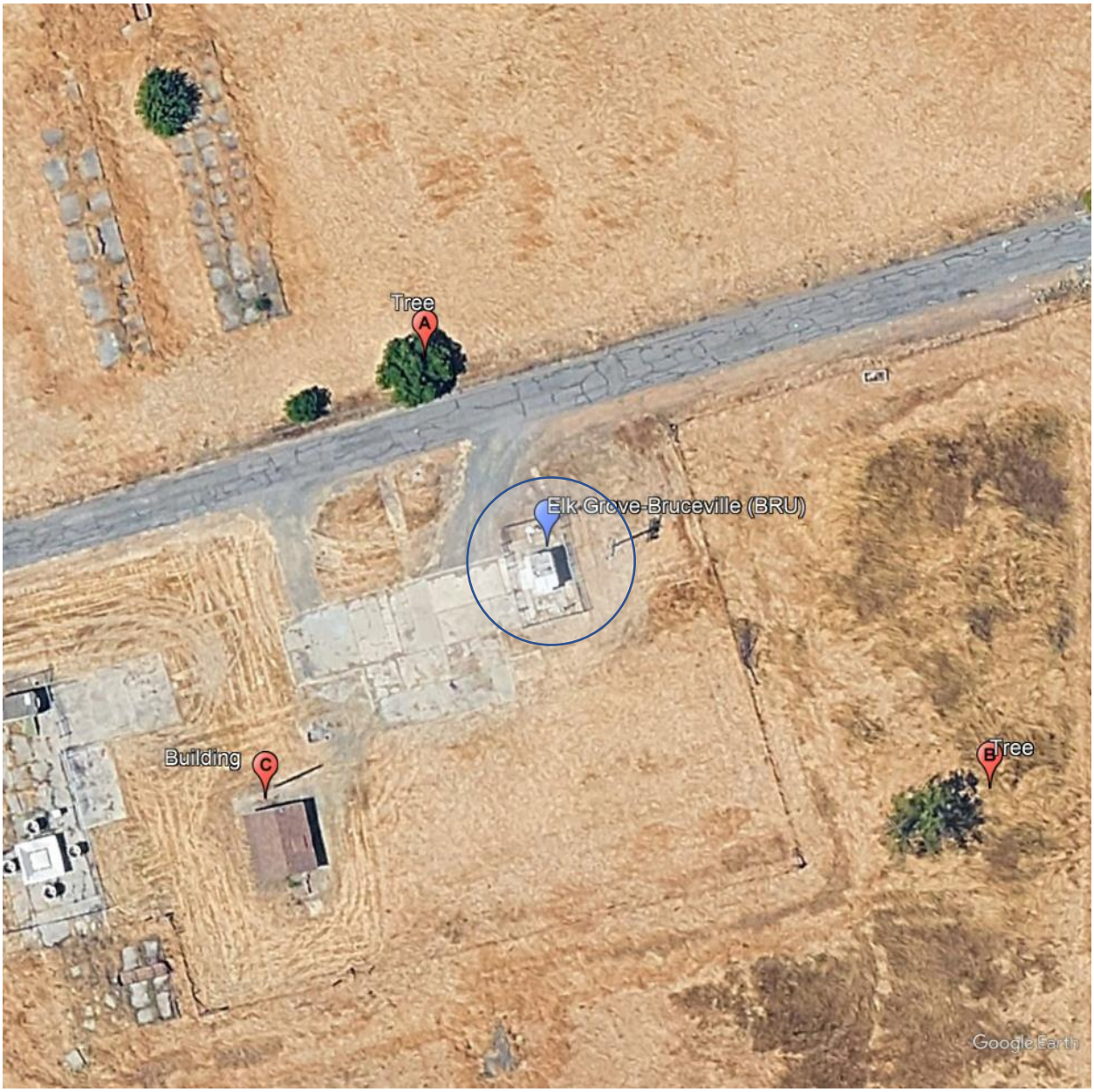
Figure 17 – Panoramic Photo Looking North from Elk Grove-Bruceville Rd.

Figure 18 – Panoramic Photo Looking East from Elk Grove-Bruceville Rd.

Figure 19 – Panoramic Photo Looking South from Elk Grove-Bruceville Rd.

Figure 20 – Panoramic Photo Looking West from Elk Grove-Bruceville Rd.

Figure 21 – Google Earth satellite image of Elk Grove-Bruceville Rd.



Source: Google Earth, imagery date: 6/27/2024

The circle in Figure 21 indicates no trees exist within a 10 m radius, which satisfy the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Heights of the trees are provided in Table 18.

Table 18 – Object Height Survey at Elk Grove-Bruceville Rd.

Obstacle	Obstacle Height (OH)	Inlet Height (IH)	2*(OH-IH)	Obstacle Distance (OD)	Meet Criteria? 2*(OH-IH) ≤OD
Gaseous Manifold Inlet					
A: Tree	5.0	4.6	0.8	24.0	Yes
B: Tree	8.4	4.6	7.6	48.9	Yes
C: Tree	3.0	4.6	-3.2	37.9	Yes
Continuous $PM_{2.5}$ (non-FEM) Sampler					
A: Tree	5.0	5.4	-0.8	24.0	Yes
B: Tree	8.3	5.4	5.8	47.9	Yes
C: Tree	3.0	5.4	-4.8	37.9	Yes
Continuous PM_{10} Sampler					
A: Tree	5.3	5.3	0.0	21.0	Yes
B: Tree	8.5	5.3	6.4	50.9	Yes
C: Tree	3.0	5.3	-4.6	37.9	Yes

**Units in meters*

Table 19 – Elk Grove-Bruceville Rd. Gaseous Instruments Operational Data

Site	Elk Grove-Bruceville Rd.		
Start Date	7/1/1992	7/1/1992	7/1/1996
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	O_3	NO_2	Total NMHC
Parameter Code	44201	42602	43102
Parameter Occurrence	1	1	1
Manufacturer/Model	TAPI 400E	TAPI200UP	TEI 55C
Sampling Method	Instrumental	Instrumental	Instrumental
Method Code	087	200	164
Analysis Method	Ultraviolet Absorption	Photolytic-Chemiluminescence	Flame Ionization Detector
FRM/FEM/ARM/Other	FEM	FEM	Other
Monitoring Objective	NAAQS comparison, public info	NAAQS comparison, public info	Public info, research
Statement of Purpose	Measures background O_3 concentration at upwind site	Measures background ozone precursor concentration	Measures background ozone precursor concentration
Monitor Type	SLAMS	SLAMS	SLAMS
Affiliation	PAMS	PAMS	PAMS
Site Type	Upwind/Background	Upwind/Background	Upwind/Background
Spatial Scale	Urban	Urban	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	1.2	1.2	1.2
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	24	24	24
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360
Probe height (m, agl)	4.5	4.5	4.5
Probe material	FEP Teflon	FEP Teflon	FEP Teflon
Residence time (seconds)	18.1	11.8	16.9
Changes in next 18 months?	No	No	No
Frequency of 1-pt QC Check	Every other day	Every other day	Every other day
Audit Date(s)	5/15/24	10/29/24	N/A[(A)]

[(A)] U.S. EPA Region 9 approved the temporary shut down on 12/1/17

Table 20 – Elk Grove-Bruceville Rd. Particulate Matter Instrument Operational Data

Site	Elk Grove-Bruceville Rd.	Elk Grove-Bruceville Rd.
Start Date	1/30/2003	3/1/2025
Collecting Agency	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District
Pollutant	$PM_{2.5}$	PM_{10}
Parameter Code	88501	81102, 85101
Parameter Occurrence	3	3
Manufacturer/Model	Met One 1020 BAM	Met One 1020 BAM
Sampling Method	Very sharp cut cyclone	Louvered PM_{10} inlet
Method Code	731	122
Analysis Method	Beta Attenuation	Beta Attenuation
FRM/FEM/ARM/Other	Other	FEM
Monitoring Objective	Public info [(A)]	NAAQS comparison, public info
Statement of Purpose	Measures background concentration and transport of $PM_{2.5}$ from San Joaquin Valley for $PM_{2.5}$ forecasting	Measures general concentration
Monitor Type	SPM	SLAMS
Affiliation	None	None
Site Type	General/Background	General/Background
Spatial Scale	Urban	Urban
Sampling Frequency	Continuous	Continuous
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	2.1	2.0
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction
Distance from nearest tree drip line (m)	24.0	23.0
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not collocated	Not collocated
Unrestricted airflow (deg)	360	360
Probe height (m, agl)	5.4	5.3
Probe material	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable
Changes in next 18 months?	No	No
Frequency of flow rate verification	Bi-monthly	Monthly
Audit Date(s)	5/15/24, 10/22/24	New monitor

[(A)] This $PM_{2.5}$ monitor is operating as a non-FEM sampler

Table 21 – Elk Grove-Bruceville Rd. Meteorological Instruments Operational Data

Site	Elk Grove-Bruceville Rd.			
Start Date	8/1/1996	8/1/1996	7/1/1997	8/1/1997
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air	Sac Metro Air District
Pollutant	Outdoor Temperature	Relative Humidity	Barometric Pressure	Precipitation
Parameter Code	62101	62201	64101	65102
Parameter Occurrence	1	1	1	1
Manufacturer/Model	Met One 060A-2	Met One 083E-0-6	Met One 092	Met One 370C
Sampling Method	Instrumental	Instrumental	Instrumental	Bucket
Method Code	042	012	011	011
Analysis Method	Machine Average	Hygroscopic Plastic Film	Aneroid	Continuous or Incremental
FRM/FEM/ARM/Other	Other	Other	Other	Other
Monitoring Objective	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	Other	Other	Other	Other
Affiliation	PAMS	PAMS	PAMS	PAMS
Site Type	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	2.3
Probe material	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No
Frequency of 1-pt QC Check	N/A	N/A	N/A	N/A
Audit Date(s)	5/15/24	Not applicable	5/15/24	Not applicable

Table 22 – Elk Grove-Bruceville Rd. Meteorological Instruments Operational Data

Site	Elk Grove-Bruceville Rd.			
Start Date	8/1/1996	8/1/1997	8/1/1996	8/1/1996
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	Solar Radiation	UV Radiation	Wind Direction	Wind Speed
Parameter Code	63301	63302	61104	61103
Parameter Occurrence	1	1	1	1
Manufacturer/Model	Campbell Scientific CMP-6	Kipp & Zonen CUV-5	Climatronics 100076S	Climatronics 100075S
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	011	011	020	020
Analysis Method	Pyranometer	UV Radiometer (Photometer)	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other
Monitoring Objective	Public info	Public info	Public info, research	Public info, research
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	Other	Other	Other	Other
Affiliation	PAMS	PAMS	PAMS	PAMS
Site Type	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No
Frequency of 1-pt QC Check	N/A	N/A	N/A	N/A
Audit Date(s)	Not applicable	Not applicable	5/15/24	5/15/24

Table 23 – Elk Grove-Bruceville Rd. Meteorological Instruments Operational Data

Site	Elk Grove-Bruceville Rd.
Start Date	1/17/2018
Collecting Agency	Sac Metro Air District
Analytical Lab	N/A
Reporting Agency	N/A
Pollutant	Mixing Height
Parameter Code	Not applicable
Parameter Occurrence	Not applicable
Manufacturer/Model	Vaisala Ceilometer CL51
Sampling Method	Not applicable
Method Code	Not applicable
Analysis Method	Light Detection and Ranging
FRM/FEM/ARM/Other	Other
Monitoring Objective	Public info, research
Statement of Purpose	Measures representative upper level meteorology
Monitor Type	Other
Affiliation	PAMS
Site Type	Not applicable
Spatial Scale	Not applicable
Sampling Frequency	Continuous
Sampling Season	Year Round
Distance from Supporting Structure or Roof	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction
Distance from nearest tree drip line (m)	> 20 m
Distance to furnace or incinerator flue (m)	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable
Unrestricted airflow (deg)	360
Probe height (m, agl)	Not applicable
Probe material	Not applicable
Residence time (seconds)	Not applicable
Changes in next 18 months?	No
Frequency of 1-pt QC Check	N/A
Audit Date(s)	N/A

Appendix A.4 Sacramento-Del Paso Manor

This air monitoring site was initiated in 1979 and eventually became the largest air monitoring site in the Sacramento Valley Air Basin. This site is also one of the largest in Northern California, in terms of the number of parameters measured. In October 2009, U.S. EPA Region 9 approved Sacramento-Del Paso Manor as an NCore site. This is one of six NCore sites operating in California. Also, Sacramento-Del Paso Manor is a design value site for $PM_{2.5}$, which means that this site has the highest $PM_{2.5}$ design value in the $PM_{2.5}$ non-attainment area.

Located just downwind of Downtown Sacramento, Sacramento-Del Paso Manor was a PAMS Type II primary site under the legacy PAMS network. It is now one of the 43 national PAMS sites required under the 2015 revision to the O_3 standard.

Speciation monitors at this site are part of the Chemical Speciation Network and Speciated Trends Network. A URG3000N sampler was installed in April 2009. The Met One Spiral Aerosol Speciation Sampler has been in service for many years.

Table 24 – Sacramento-Del Paso Manor Metadata

Site Name	Sacramento-Del Paso Manor
AQS Site Number	06-067-0006
Geographic Coordinates	38.613740°N, 121.368040°W
Location	Neighborhood park located 7 miles east-northeast of downtown Sacramento.
Address	2701 Avalon Drive, Sacramento, CA 95821
County	Sacramento
Metropolitan Statistical Area	Sacramento–Arden-Arcade–Roseville, CA
Distance from Roadway	56 m
Annual Average Daily Traffic (Vehicles/Day)	Avalon Dr. south of El Camino Ave: 519 (SACDOT, 11/13/2019)
Ground Cover	Vegetated

Figure 22 – Sacramento-Del Paso Manor Site Photo

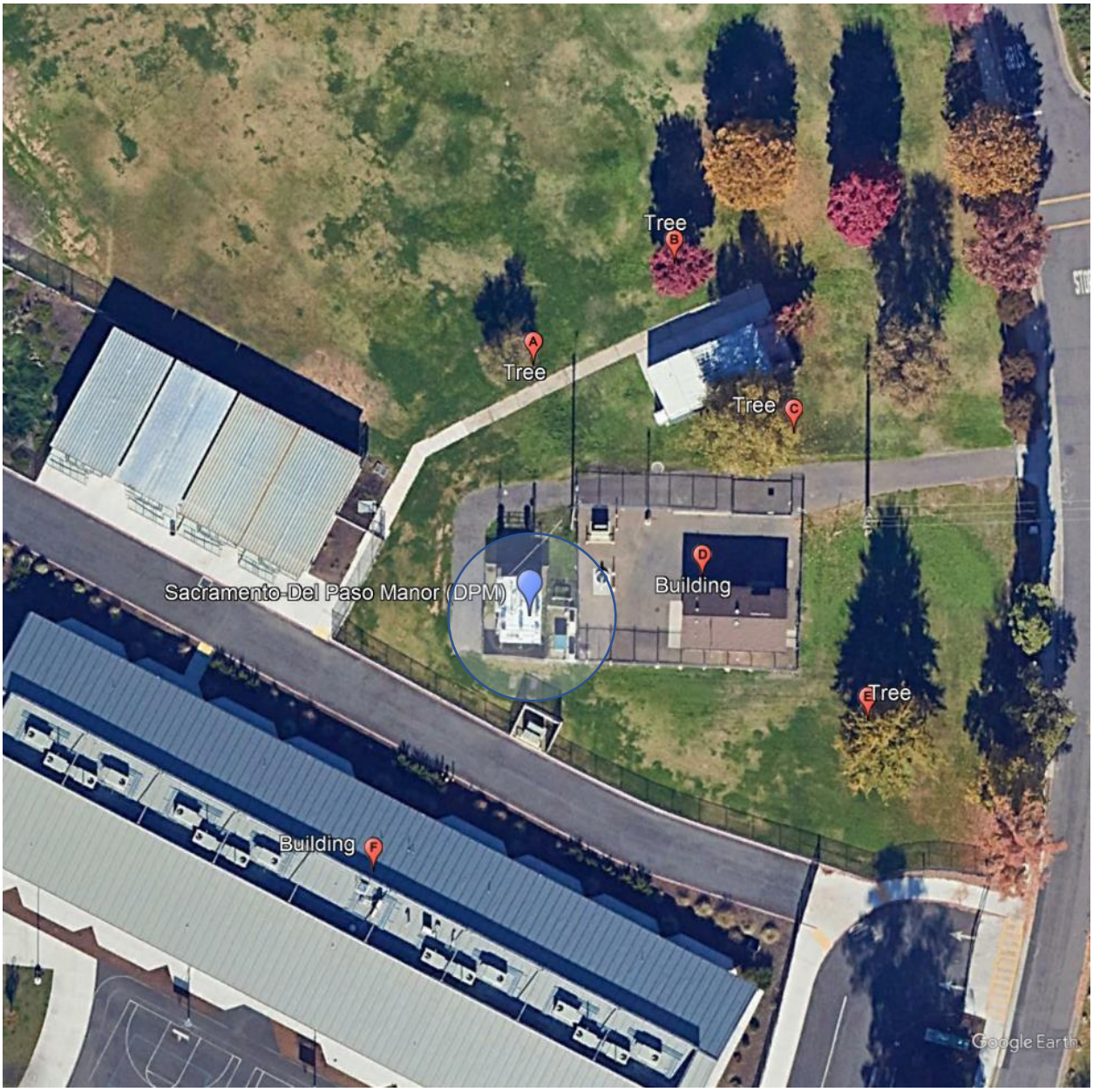
Figure 23 – Panoramic Photo Looking North from Sacramento-Del Paso Manor

Figure 24 – Panoramic Photo Looking East from Sacramento-Del Paso Manor

Figure 25 – Panoramic Photo Looking South from Sacramento-Del Paso Manor

Figure 26 – Panoramic Photo Looking West from Sacramento-Del Paso Manor

Figure 27 – Google Earth Satellite Image of Sacramento-Del Paso Manor



Source: Google Earth, imagery date: 11/23/2023

The circle in Figure 27 indicates no trees exist within a 10 m radius, which satisfy the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Heights of the trees and other potential obstacles are provided in Table 25.

Table 25 – Object Height Survey at Sacramento-Del Paso Manor

Obstacle	Obstacle Height (OH)	Inlet Height (IH)	2*(OH-IH)	Obstacle Distance (OD)	Meet Criteria? 2*(OH-IH) ≤OD
Gaseous Manifold Inlet					
A: Tree	4.5	5.4	-1.8	27.0	Yes
B: Tree	8.4	5.4	6.0	39.8	Yes
C: Tree	11.9	5.4	13.0	30.2	Yes
D: Building	5.0	5.4	-0.8	16.0	Yes
E: Tree	14.6	5.4	18.4	38.8	Yes
F: Building	6.1	5.4	1.4	34.0	Yes
Reactive Oxides of Nitrogen Inlet					
A: Tree	5.0	10.0	-10.0	29.0	Yes
B: Tree	8.4	10.0	-3.2	39.8	Yes
C: Tree	11.6	10.0	3.2	31.3	Yes
D: Building	5.0	10.0	-10.0	15.0	Yes
E: Tree	15.1	10.0	10.2	40.8	Yes
F: Building	6.2	10.0	-7.6	37.0	Yes
Black Carbon Inlet					
A: Tree	4.5	5.2	-1.4	27.0	Yes
B: Tree	8.3	5.2	6.2	37.9	Yes
C: Tree	11.9	5.2	13.4	30.2	Yes
D: Building	5.0	5.2	-0.4	17.0	Yes
E: Tree	15.1	5.2	19.8	40.8	Yes
F: Building	6.2	5.2	2.0	36.0	Yes
PM_{10} (FRM) Sampler – Primary					
A: Tree	5.4	5.3	0.2	26.0	Yes
B: Tree	7.5	5.3	4.4	35.9	Yes
C: Tree	11.7	5.3	12.8	29.2	Yes
D: Building	5.0	5.3	-0.6	15.0	Yes
E: Tree	14.4	5.3	18.2	40.9	Yes
F: Building	6.2	5.3	1.8	37.0	Yes
PM_{10} (FRM) Sampler – Collocated					
A: Tree	5.0	5.3	-0.6	27.0	Yes
B: Tree	9.7	5.3	8.8	38.7	Yes
C: Tree	12.2	5.3	13.8	29.1	Yes
D: Building	5.0	5.3	-0.6	20.0	Yes
E: Tree	15.1	5.3	19.6	40.9	Yes
F: Building	6.2	5.3	1.8	37.0	Yes
24-hr $PM_{2.5}$ (FRM) Sampler – Primary					
A: Tree	4.5	5.4	-1.8	28.0	Yes
B: Tree	8.5	5.4	6.2	40.8	Yes
C: Tree	11.8	5.4	12.8	32.3	Yes
D: Building	5.0	5.4	-0.8	15.0	Yes
E: Tree	14.4	5.4	18.0	40.9	Yes
F: Building	6.6	5.4	2.4	32.0	Yes

**Units in meters*

Table 25 (Continue)

Obstacle	Obstacle Height (OH)	Inlet Height (IH)	2*(OH-IH)	Obstacle Distance (OD)	Meet Criteria? 2*(OH-IH) ≤OD
24-hr $PM_{2.5}$ (FRM) Sampler – Collocated					
A: Tree	3.9	5.4	-3.0	29.0	Yes
B: Tree	8.6	5.4	6.4	41.8	Yes
C: Tree	11.4	5.4	12.0	30.3	Yes
D: Building	5.0	5.4	-0.8	17.0	Yes
E: Tree	14.6	5.4	18.4	38.8	Yes
F: Building	6.6	5.4	2.4	32.0	Yes
PM_{10} (FRM) Sampler – PM Coarse					
A: Tree	3.9	5.4	-3.0	29.0	Yes
B: Tree	7.9	5.4	5.0	41.9	Yes
C: Tree	11.7	5.4	12.6	29.2	Yes
D: Building	5.0	5.4	-0.8	15.0	Yes
E: Tree	14.6	5.4	18.4	38.8	Yes
F: Building	6.7	5.4	2.6	34.0	Yes
Continuous $PM_{2.5}$ (FEM) Sampler					
A: Tree	5.0	5.4	-0.8	30.0	Yes
B: Tree	8.6	5.4	6.4	41.8	Yes
C: Tree	11.2	5.4	11.6	29.3	Yes
D: Building	5.0	5.4	-0.8	18.0	Yes
E: Tree	15.3	5.4	19.8	38.6	Yes
F: Building	6.7	5.4	2.6	33.0	Yes
$PM_{2.5}$ Speciation Sampler					
A: Tree	5.0	5.1	-0.2	29.0	Yes
B: Tree	8.5	5.1	6.8	40.8	Yes
C: Tree	11.0	5.1	11.8	28.4	Yes
D: Building	5.0	5.1	-0.2	20.0	Yes
E: Tree	14.8	5.1	19.4	42.9	Yes
F: Building	6.8	5.1	3.4	35.0	Yes
Carbon Speciation Sampler					
A: Tree	5.0	5.4	-0.8	29.0	Yes
B: Tree	8.7	5.4	6.6	42.8	Yes
C: Tree	12.2	5.4	13.6	34.2	Yes
D: Building	5.0	5.4	-0.8	19.0	Yes
E: Tree	15.4	5.4	20.0	41.7	Yes
F: Building	6.6	5.4	2.4	31.0	Yes

**Units in meters*

Table 26 – Sacramento-Del Paso Manor Gaseous Instruments Operational Data

Site	Sacramento-Del Paso Manor			
Start Date	1/1/1981	1/1/1981	1/1/1980	1/1/1983
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	O_3	CO	NO_2	NOY
Parameter Code	44201	42101	42602	42600
Parameter Occurrence	1	1	1	1
Manufacturer/Model	TAPI 400	TAPI 300U	TAPI200UP	TEI 42I-Y
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	087	593	200	574
Analysis Method	Ultraviolet Absorption	Gas Filter Correlation	Photolytic-Chemiluminescence	Chemiluminescence
FRM/FEM/ARM/Other	FEM	FRM	FEM	Other
Monitoring Objective	NAAQS comparison, public info, research	NAAQS comparison, public info, research	NAAQS comparison, public info, research	Public info, research
Statement of Purpose	Measures elevated summer O_3 levels near the downwind edge of the central business district	Measures representative wintertime CO concentration in populated area	Measures O_3 precursor emission near downwind edge of central business district	Measures representative concentration in populated area
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	NCore, PAMS	NCore	NCore, PAMS	NCore
Site Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Spatial Scale	Neighborhood	Neighborhood	Neighborhood	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	2.1	2.1	2.1	Not applicable
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	30	30	30	27
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	5.4	5.4	5.4	10.0
Probe material	FEP Teflon	FEP Teflon	FEP Teflon	FEP Teflon
Residence time (seconds)	10.6	6.9	9.6	4.0
Changes in next 18 months?	No	No	No	No
Frequency of 1-pt QC Check	Every fourth day	Every fourth day	Every fourth day	Every fourth day
Audit Date(s)	8/7/24	8/7/24	8/7/24	Not applicable

Table 27 – Sacramento-Del Paso Manor Gaseous Instruments Operational Data

Site	Sacramento-Del Paso Manor			
Start Date	1/1/1980	8/1/1994	9/22/2000	1/1/2001
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	AAC Lab	AAC Lab
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	SO_2	Total NMHC	Speciated VOC	Carbonyl
Parameter Code	42401	43102	43102	Multiple
Parameter Occurrence	1 (1 hr.), 2 (5-min.)	2	1	1
Manufacturer/Model	TAPI 100U	TEI 55C	Xontech 910A/912	Xontech 925
Sampling Method	Instrumental	Instrumental	6L Pressurized Canister	DNPH Silica gel
Method Code	600	164	123	202
Analysis Method	Ultraviolet Fluorescence	Flame Ionization Detector	Dual Flame Ionization Detector	(multiple)
FRM/FEM/ARM/Other	FEM	Other	Other	Other
Monitoring Objective	NAAQS comparison, public info, research	Public info, research	Research	Research
Statement of Purpose	Measures representative concentration in populated area	Measures O_3 precursor emission near downwind edge of central business district	Measures O_3 precursor emission near downwind edge of central business district	Measures O_3 precursor emission near downwind edge of central business district
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	NCore	PAMS	PAMS	PAMS
Site Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Spatial Scale	Urban	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	1 in 3 days	1 in 3 days
Sampling Season	Year Round	Year Round	July thru Sep	July thru Sep
Distance from Supporting Structure or Roof	2.1	2.1	2.2	2.2
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	30	28	30	30
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	5.4	5.4	5.5	5.5
Probe material	FEP Teflon	FEP Teflon	Stainless Steel	Stainless Steel
Residence time (seconds)	9.2	17.0	3.0	3.0
Changes in next 18 months?	No	No	Yes	No
Frequency of 1-pt QC Check	Every fourth day	Every fourth day	Pre- and post-seasonally check	Pre- and post-seasonally check
Audit Date(s)	8/7/24	Temporary shutdown[A]	Not applicable [B]	Not applicable [B]

[A] U.S. EPA Region 9 approved the temporary shut down on 12/1/17 and this monitor is being replaced by an AutoGC monitor; for more information, see Section 3.2

[B] These instruments are malfunctioning and awaiting replacement after the 2025 station renovation

Table 28 – Sacramento-Del Paso Manor Particulate Matter Instruments Operational Data

Site	Sacramento-Del Paso Manor			
Start Date	1/1/1998	12/21/2020	1/1/1986	1/1/1986
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	Black Carbon	PM2.5	PM_{10} (Primary monitor)	PM_{10} (Audit monitor)
Parameter Code	84313	88101	81102, 85101	81102, 85101
Parameter Occurrence	1	3	1	2
Manufacturer/Model	Magee Scientific M633	Met One BAM1020 BAM	Sierra Anderson 1200	Sierra Anderson 1200
Sampling Method	Aethalometer	Very sharp cut cyclone	Hi Volume	Hi Volume
Method Code	894	170	063	063
Analysis Method	Optical Absorption	Beta Attenuation	Gravimetric	Gravimetric
FRM/FEM/ARM/Other	Other	FEM	FRM	FRM
Monitoring Objective	Research	NAAQS comparison, public info, research	NAAQS comparison, public info, research	NAAQS comparison
Statement of Purpose	Originally installed for CRPAQS study in 1999(A)	Measures wintertime elevated PM level from motor vehicles and residential wood combustion		Collocated for QA purpose and provides substitute data if necessary
Monitor Type	SPM	SLAMS	SLAMS	SLAMS
Affiliation	None	NCore	None	None
Site Type	Population Exposure	Highest concentration, population exposure	Population Exposure	Population Exposure
Spatial Scale	Not applicable	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous	1 in 6 days	1 in 6 days
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	1.9	2.1	2.0	2.0
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	30	29	23	25
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	2.2 m	2.2 m
Unrestricted airflow (deg)	360	336	360	360
Probe height (m, agl)	5.2	5.4	5.3	5.3
Probe material	Aluminum	Aluminum	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	Yes	Yes
Frequency of flow rate verification	Monthly	Bi-monthly	Monthly	Monthly
Audit Date(s)	Not applicable	2/14/24, 8/7/24	2/14/24, 8/8/24	2/14/24, 8/8/24

(A) California Regional Particulate Air Quality Study

Table 29 – Sacramento-Del Paso Manor Particulate Matter Instruments Operational Data

Site	Sacramento-Del Paso Manor		
Start Date	1/1/1999	2/1/1999	2/1/2000
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	CARB	CARB	RTI
Reporting Agency	CARB	CARB	RTI
Pollutant	$PM_{2.5}$ (Primary monitor)	$PM_{2.5}$ (Audit monitor)	$PM_{2.5}$ Mass Speciated
Parameter Code	88101	88101	88502
Parameter Occurrence	1	2	5
Manufacturer/Model	R & P 2025	R & P 2025	Met One SASS
Sampling Method	Very sharp cut cyclone	Very sharp cut cyclone	Sharp cut cyclone
Method Code	145	145	810
Analysis Method	Gravimetric	Gravimetric	Gravimetric
FRM/FEM/ARM/Other	FRM	FRM	Other
Monitoring Objective	NAAQS Comparison, research, public info	NAAQS Comparison	Research
Statement of Purpose	Measures wintertime elevated PM level from motor vehicles and residential wood combustion	Collocated for QA purpose and provides substitute data if necessary	Provides speciation data on urban PM emission
Monitor Type	SLAMS	SLAMS	SLAMS
Affiliation	NCore	NCore	CSN STN,
Site Type	Highest concentration, population exposure	Highest concentration, population exposure	Highest concentration, population exposure
Spatial Scale	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Daily	1 in 12 days	1 in 3 days
Sampling Season	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	2.1	2.1	2.1
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	31	31	25
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	1.6 m	1.6 m	Not applicable
Unrestricted airflow (deg)	360	360	360
Probe height (m, agl)	5.4	5.4	5.4
Probe material	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No
Frequency of flow rate verification	Monthly	Monthly	Monthly
Audit Date(s)	2/14/24, 8/7/24	2/14/24, 8/7/24	6/12/24, 11/27/24

Table 30 – Sacramento-Del Paso Manor Particulate Matter Instruments Operational Data

Site	Sacramento-Del Paso Manor	
Start Date	4/1/2009	4/1/2012
Collecting Agency	Sac Metro Air District	Sac Metro Air District
Analytical Lab	RTI	CARB
Reporting Agency	RTI	CARB
Pollutant	OC & EC	PM10
Parameter Code	(multiple)[A]	85101
Parameter Occurrence	5	7
Manufacturer/Model	URG 3000N	Partisol 2025i
Sampling Method	Quartz filter and cyclone inlet	Very sharp cut cyclone
Method Code	842, 826	127
Analysis Method	(multiple)	Gravimetric
FRM/FEM/ARM/Other	Other	FRM
Monitoring Objective	Research	Public info, research
Statement of Purpose	Provides speciation data on urban PM emission	Measures PM mass to provide $PM_{10-2.5}$ data
Monitor Type	SLAMS	Other
Affiliation	CSN STN, NCore	None
Site Type	Highest concentration	Population Exposure
Spatial Scale	Neighborhood	Neighborhood
Sampling Frequency	1 in 3 days	1 in 3 days
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	2.1	2.1
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction
Distance from nearest tree drip line (m)	27	26
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360
Probe height (m, agl)	5.4	5.4
Probe material	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable
Changes in next 18 months?	No	No
Frequency of flow rate verification	Monthly	Monthly
Audit Date(s)	6/12/24, 11/27/24	8/7/24

[A] 88355, 88357, 88370, 88374, 88375, 88376, 88377, 88378, 88380, 88383, 88384, 88385, 88388

Table 31 – Sacramento-Del Paso Manor Meteorological Instruments Operational Data

Site	Sacramento-Del Paso Manor				
Start Date	8/1/1994	8/1/1994	9/1/1994	8/1/1994	8/1/1994
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Reporting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Pollutant	Outdoor Temperature	Relative Humidity	Solar Radiation	Wind Direction	Wind Speed
Parameter Code	62101	62201	63301	61104	61103
Parameter Occurrence	1	1	1	1	1
Manufacturer/Model	Met One 060A-2	Met One 083E-0-6	Eppley Lab 8-48	Climatronics 100076	Climatronics 100075
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	042	012	011	020	020
Analysis Method	Machine Average	Hygroscopic Plastic Film	Pyranometer	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Monitoring Objective	Public info, research	Public info, research	Public info	Public info, research	Public info, research
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	SLAMS	SLAMS	Other	Other	Other
Affiliation	NCore, PAMS				
Site Type	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No	No
Frequency of 1-pt QC Check	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Audit Date(s)	8/16/23[(A)]	Not applicable	Not applicable	8/16/23[(A)]	8/16/23[(A)]

[(A)] These instruments could not be audited due to obstruction from temporary fencing related to the upcoming site renovation

Appendix A.5 Folsom-Natoma St.

This site has been in operation since 1996. This site replaced the former Folsom-Leidesdorff Street site. Approximately 20 miles northeast of Downtown Sacramento, Folsom-Natoma St. site is the maximum summertime O_3 monitoring site within Sacramento County for days with prevailing afternoon southwesterly winds. This was a PAMS Type III site under the legacy PAMS network. It is now one of the two additional PAMS enhanced monitoring sites.

From mid-2019 through most of 2020, this air monitoring station was demolished and re-constructed to replace the 20-30 years old wooden shelter. The new shelter now sits in the footprint of the old shelter.

Table 32 – Folsom-Natoma St. Metadata

Site Name	Folsom-Natoma Street
AQS Site Number	06-067-0012
Geographic Coordinates	38.683304°N, 121.164457°W
Location	Folsom City Hall (parking lot), located 20 miles east-northeast of downtown Sacramento.
Address	50 Natoma Street, Folsom, CA 95630
County	Sacramento
Metropolitan Statistical Area	Sacramento–Arden-Arcade–Roseville, CA
Distance from Roadway	206 m
Annual Average Daily Traffic (Vehicles/Day)	Natoma St. at Coloma St (intersection total): 14,628 (City of Folsom, 2017)
Ground Cover	Vegetated

Figure 28 – Folsom-Natoma St. Site Photo

Figure 29 – Panoramic Photo Looking North from Folsom-Natoma St.

Figure 30 – Panoramic Photo Looking East from Folsom-Natoma St.

Figure 31 – Panoramic Photo Looking South from Folsom-Natoma St.

Figure 32 – Panoramic Photo Looking West from Folsom-Natoma St.

Figure 33 – Google Earth Satellite Image of Folsom-Natoma St.

Source: Google Earth, imagery date: 1/28/2024

The circle over Folsom-Natoma St. in Figure 33 indicates no trees exist within a 10 m radius, which satisfy the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Heights of the trees and other potential obstacles are provided in Table 33.

Table 33 – Object Height Survey At Folsom-Natoma St.

Obstacle	Obstacle Height (OH)	Inlet Height (IH)	2*(OH-IH)	Obstacle Distance (OD)	Meet Criteria? 2*(OH-IH) ≤OD
Gaseous Manifold Inlet					
A: Tower	N/A	5.5	N/A	N/A	N/A[(A)]
B: Building	2.6	5.5	-5.8	10.8	Yes
C: Building	2.7	5.5	-5.6	8.7	Yes
D: Building	2.7	5.5	-5.6	4.5	Yes
E: Building	3.3	5.5	-4.4	9.9	Yes
F: Tree	7.5	5.5	4.0	16.8	Yes
G: Tree	6.4	5.5	1.8	30.0	Yes
H: Tree	8.8	5.5	6.6	24.7	Yes
I: Tree	6.9	5.5	2.8	29.9	Yes
Continuous $PM_{2.5}$ (FEM) Sampler – Primary					
A: Tower	N/A	5.5	N/A	N/A	N/A[(A)]
B: Building	2.4	5.4	-6.0	9.7	Yes
C: Building	2.6	5.4	-5.6	7.7	Yes
D: Building	2.5	5.4	-5.8	4.4	Yes
E: Building	3.4	5.4	-4.0	8.9	Yes
F: Tree	7.4	5.4	4.0	20.8	Yes
G: Tree	7.6	5.4	4.4	30.9	Yes
H: Tree	8.8	5.4	6.8	24.7	Yes
I: Tree	7.0	5.4	3.2	24.9	Yes
Continuous $PM_{2.5}$ (FEM) Sampler – Collocated					
A: Tower	N/A	5.5	N/A	N/A	N/A[(A)]
B: Building	3.5	5.4	-3.8	6.9	Yes
C: Building	2.6	5.4	-5.6	9.7	Yes
D: Building	2.4	5.4	-6.0	9.7	Yes
E: Building	2.7	5.4	-5.4	5.6	Yes
F: Tree	7.5	5.4	4.2	18.8	Yes
G: Tree	7.1	5.4	3.4	31.9	Yes
H: Tree	8.5	5.4	6.2	25.7	Yes
I: Tree	7.2	5.4	3.6	26.9	Yes

**Units in meters*

[(A)]This open lattice tower does not affect air flow

Table 34 – Folsom-Natoma St. Gaseous Instruments Operational Data

Site	Folsom-Natoma St.		
Start Date	7/1/1996	7/1/1996	7/1/1996
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	O_3	NO_2	Total NMHC
Parameter Code	44201	42602	43102
Parameter Occurrence	1	1	1
Manufacturer/Model	TAPI 400E	TAPI200UP	TEI 55C
Sampling Method	Instrumental	Instrumental	Instrumental
Method Code	087	200	164
Analysis Method	Ultraviolet Absorption	Photolytic-Chemiluminescence	Flame Ionization Detector
FRM/FEM/ARM/Other	FEM	FEM	Other
Monitoring Objective	NAAQS comparison, public info	NAAQS comparison, public info	Public info, research
Statement of Purpose	Measure highest summer O_3 level downwind of urban area	Measures concentration downwind of urban area	Measures concentration downwind of urban area
Monitor Type	SLAMS	SLAMS	SLAMS
Affiliation	PAMS	PAMS	PAMS
Site Type	Max O_3 Concentration, Population Exposure	Highest concentration	Highest concentration
Spatial Scale	Neighborhood	Neighborhood	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	2.3	2.3	2.3
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	20	20	15.5
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360
Probe height (m, agl)	5.5	5.5	5.5
Probe material	FEP Teflon	FEP Teflon	FEP Teflon
Residence time (seconds)	19.6	19.1	13.7
Changes in next 18 months?	No	No	No
Frequency of 1-pt QC Check	Every other day	Every other day	Every other day
Audit Date(s)	5/1/24	5/1/24	Temp. shutdown[(A)]

[(A)] U.S. EPA Region 9 approved the temporary shut down on 12/1/17

Table 35 – Folsom-Natoma St. Particulate Matter Instruments Operational Data

Site	Folsom-Natoma St.	
Start Date	4/1/2013	7/1/2015
Collecting Agency	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District
Pollutant	$PM_{2.5}$ (Primary monitor)	$PM_{2.5}$ (Audit monitor)
Parameter Code	88101	88101
Parameter Occurrence	3	4
Manufacturer/Model	Met One 1020 BAM	Met One 1020 BAM
Sampling Method	Very sharp cut cyclone	Very sharp cut cyclone
Method Code	170	170
Analysis Method	Beta Attenuation	Beta Attenuation
FRM/FEM/ARM/Other	FEM	FEM
Monitoring Objective	NAAQS comparison, public info, research	NAAQS comparison, public info, research
Statement of Purpose	Measures representative concentration	Collocated for QA purpose and provides substitute data if necessary
Monitor Type	SLAMS	SLAMS
Affiliation	None	None
Site Type	Population Exposure	Population Exposure
Spatial Scale	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	2.2	2.2
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction
Distance from nearest tree drip line (m)	18	16
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	1.8	1.8
Unrestricted airflow (deg)	360	360
Probe height (m, agl)	5.4	5.4
Probe material	Aluminum	Aluminum
Residence time (seconds)	Not applicable	Not applicable
Changes in next 18 months?	No	No
Frequency of flow rate verification	Bi-monthly	Bi-monthly
Audit Date(s)	5/1/24, 10/23/24	5/1/24, 10/23/24

Table 36 – Folsom-Natoma St. Meteorological Instruments Operational Data

Site	Folsom-Natoma St.				
Start Date	7/1/1996	7/1/1996	7/1/1996	7/1/1996	7/1/1996
Collecting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Analytical Lab	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Reporting Agency	SMAQMD	SMAQMD	SMAQMD	SMAQMD	SMAQMD
Pollutant	Outdoor Temperature	Relative Humidity	Solar Radiation	Wind Direction	Wind Speed
Parameter Code	62101	62201	63301	61104	61103
Parameter Occurrence	1	1	1	1	1
Manufacturer/Model	Met One T-200	Met One 083E-0-6	Prede PCM-01N	Met One 020D	Met One 010C
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	042	012	011	020	020
Analysis Method	Machine Average	Hygroscopic Plastic Film	Pyranometer	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Monitoring Objective	Public info	Public info	Public info	Public info, research	Public info, research
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	PAMS	PAMS	PAMS	PAMS	PAMS
Site Type	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No	No
Frequency of 1-pt QC Check	N/A	N/A	N/A	N/A	N/A
Audit Date(s)	5/1/24	Not applicable	Not applicable	5/1/24	5/1/24

Appendix A.6 Sloughhouse

Sloughhouse is located in a rural area 16.5 miles southeast of Downtown Sacramento. It was established in 1997 as a seasonal (April-October) O_3 special purpose monitoring site to measure elevated O_3 concentrations under northwesterly winds. Sloughhouse was sited to cover "data gaps" in the O_3 monitoring network, which supports the Spare the Air program and summer AQI forecasting. It became a permanent, year-round monitoring site in May 2011 after meeting federal siting criteria.

From November 2008 through February 2013, seasonal (November–February) $PM_{2.5}$ data was collected with a special purpose monitor (Met One Instruments e-BAM). In November 2013, a non-FEM $PM_{2.5}$ sampler was installed to improve data quality. The sampling season was also increased to year round. In June 2017, a FEM $PM_{2.5}$ sampler replaced the non-FEM sampler.

Table 37 – Sloughhouse Metadata

Site Name	Sloughhouse
AQS Site Number	06-067-5003
Geographic Coordinates	38.494475°N, W121.211131°
Location	Fire Station in rural area located 16.5 miles east-southeast of downtown Sacramento.
Address	7250 Sloughhouse Road, Sloughhouse, CA 95683
County	Sacramento
Metropolitan Statistical Area	Sacramento–Arden-Arcade–Roseville, CA
Distance from Roadway	27 m
Annual Average Daily Traffic (Vehicles/Day)	Sloughhouse Rd south of Jackson Rd: 1,000 (Estimated)
Ground Cover	Vegetated

Figure 34 – Sloughhouse Site Photo

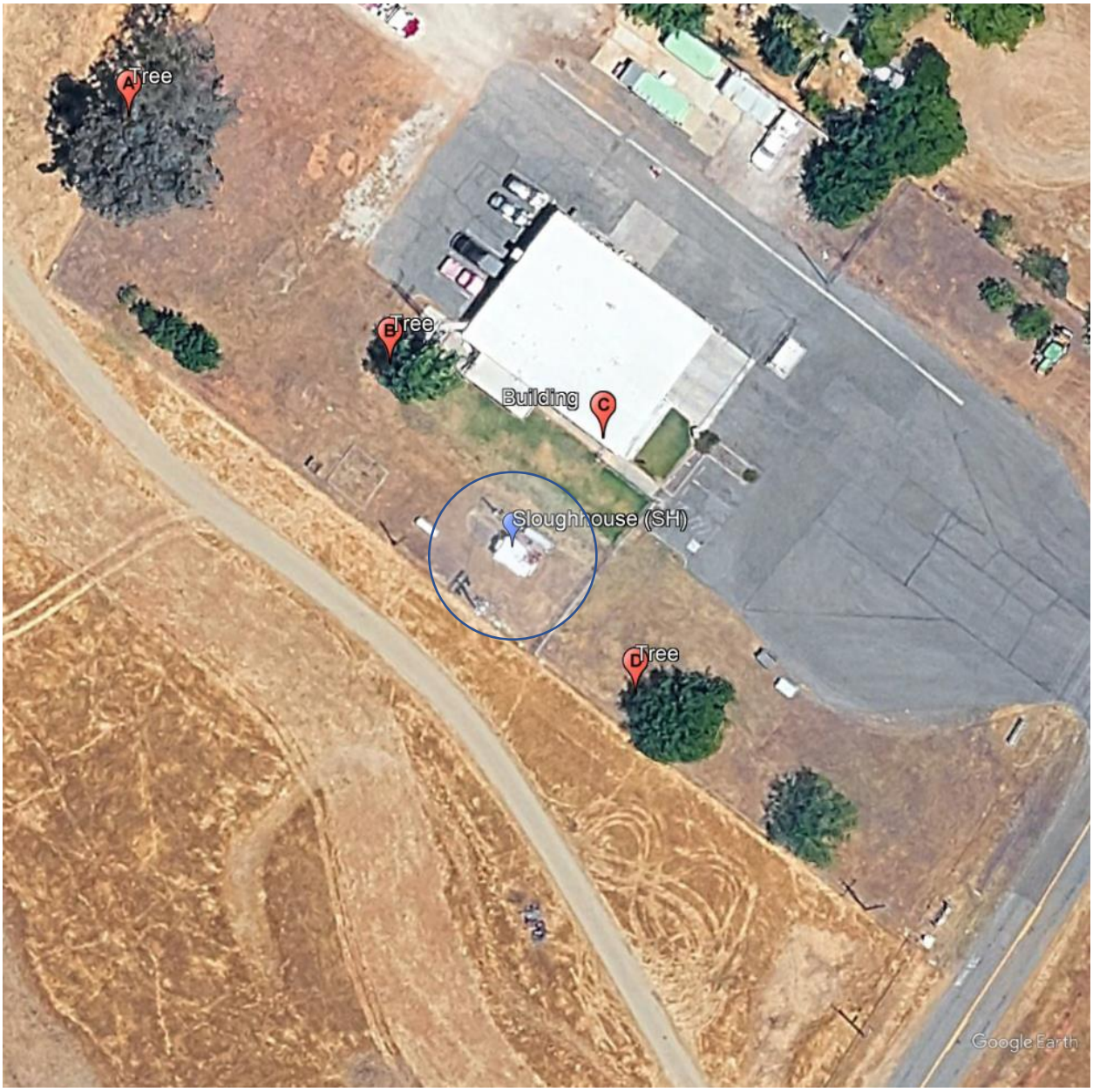
Figure 35 – Panoramic Photo Looking North from Sloughhouse

Figure 36 – Panoramic Photo Looking East from Sloughhouse

Figure 37 – Panoramic Photo Looking South from Sloughhouse

Figure 38 – Panoramic Photo Looking West from Sloughhouse

Figure 39 – Google Earth Satellite Image of Sloughhouse



Source: Google Earth, imagery date: 6/7/2024

The circle in Figure 39 indicates no trees exist within a 10 m radius, which satisfy the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Height of the trees and buildings are provided in Table 38.

Table 38 – Object Height Survey at Sloughhouse

Obstacle	Obstacle Height (OH)	Inlet Height (IH)	2*(OH-IH)	Obstacle Distance (OD)	Meet Criteria? 2*(OH-IH) ≤OD
Gaseous Manifold Inlet					
A: Tree	17.0	4.9	24.2	52.6	Yes
B: Tree	13.1	4.9	16.4	22.6	Yes
C: Building	1.7	4.9	-6.4	14.7	Yes
D: Tree	6.1	4.9	2.4	23.0	Yes
Continuous $PM_{2.5}$ (FEM) Sampler					
A: Tree	16.1	5.4	21.4	52.8	Yes
B: Tree	12.0	5.4	13.2	20.8	Yes
C: Building	1.6	5.4	-7.6	15.2	Yes
D: Tree	6.5	5.4	2.2	22.9	Yes

**Units in meters*

Table 39 – Sloughhouse Gaseous and Meteorological Instruments Operational Data

Site	Sloughhouse		
Start Date	7/1/1997	7/1/1997	7/1/1997
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	O_3	Wind Direction	Wind Speed
Parameter Code	44201	61104	61103
Parameter Occurrence	1	1	1
Manufacturer/Model	TAPI 400E	Met One 020D	Met One 010C
Sampling Method	Instrumental	Instrumental	Instrumental
Method Code	087	020	020
Analysis Method	Ultraviolet Absorption	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	FEM	Other	Other
Monitoring Objective	NAAQS comparison, public info	Public info	Public info
Statement of Purpose	Measures elevated O_3 concentration under northwesterly wind	Measures representative meteorology	Measures representative meteorology
Monitor Type	SLAMS	Other	Other
Affiliation	None	None	None
Site Type	Max O_3 concentration	Not applicable	Not applicable
Spatial Scale	Neighborhood	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	1.7	2.8	2.8
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	20	20	20
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable
Distance with nearest PM monitor (m)	1.5 m (lo vol)	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360
Probe height (m, agl)	5.0	6.1	6.1
Probe material	FEP Teflon	Not applicable	Not applicable
Residence time (seconds)	8.0	Not applicable	Not applicable
Changes in next 18 months?	No	No	No
Frequency of 1-pt QC Check	Every other day	N/A	N/A
Audit Date(s)	4/24/24, 6/11/24 (re-audit)	4/24/24	4/24/24

Table 40 – Sloughhouse Particulate Matter Instrument Operational Data

Site	Sloughhouse
Start Date	5/1/2017
Collecting Agency	Sac Metro Air District
Analytical Lab	N/A
Reporting Agency	CARB
Pollutant	$PM_{2.5}$
Parameter Code	88101
Parameter Occurrence	3
Manufacturer/Model	Met One 1020 BAM
Sampling Method	Very sharp cut cyclone
Method Code	170
Analysis Method	Beta Attenuation
FRM/FEM/ARM/Other	FEM
Monitoring Objective	NAAQS comparison, public info, research
Statement of Purpose	Measures rural, background $PM_{2.5}$ concentration
Monitor Type	SLAMS
Affiliation	None
Site Type	Upwind/Background
Spatial Scale	Urban
Sampling Frequency	Continuous
Sampling Season	Year Round
Distance from Supporting Structure or Roof	2.2
Distance from flow obstructions on roof (m)	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction
Distance from nearest tree drip line (m)	18
Distance to furnace or incinerator flue (m)	No furnace/flue
Distance between collocated PM monitors (m)	Not collocated
Distance with nearest PM monitor (m)	Not applicable
Unrestricted airflow (deg)	360
Probe height (m, agl)	5.2
Probe material	Not applicable
Residence time (seconds)	Not applicable
Changes in next 18 months?	No
Frequency of flow rate verification	Bi-monthly
Audit Date(s)	4/24/24, 10/23/24

Appendix A.7 Sacramento-T Street

The Sacramento-T Street site is operated by the California Air Resources Board/Monitoring and Laboratory Division/Special Purpose Monitoring Section. This site has been operating since 1989.

Table 41 – Sacramento-T Street Metadata

Site Name	Sacramento-T Street
AQS Site No.	06-067-0010
Geographic Coordinates	38.568440°N, 121.4931190°W
Location	Residential area located in downtown Sacramento
Address	1309 T Street, Sacramento, CA 95814
County	Sacramento
Representative Area (MSA)	Sacramento-Arden, Arcade-Roseville, CA
Distance from roadway	30 m
Annual Average Daily Traffic (Vehicles/Day)	T St. at 13th St.: 4,061 (City of Sacramento, 2019)
Ground Cover	Rooftop site (residential area is paved)

Table 42 – Sacramento-T Street Gaseous Instruments Operational Data

Site	Sacramento-T St.	
Start Date	12/1/1998	4/28/2020
Collecting Agency	CARB	CARB
Analytical Lab	N/A	N/A
Reporting Agency	CARB	CARB
Pollutant	O3	NO2
Parameter Code	44201	42602
Parameter Occurrence	1	1
Manufacturer/Model	TAPI 400E	THERMO 42iQ
Sampling Method	Instrumental	Instrumental
Method Code	087	074
Analysis Method	Ultraviolet Absorption	Chemiluminescence
FRM/FEM/ARM/Other	FEM	FEM
Monitoring Objective	NAAQS comparison, public info	NAAQS comparison, public info
Statement of Purpose	Measures representative concentration in urban area	Measures representative concentration in urban area
Monitor Type	SLAMS	SLAMS
Affiliation	None	None
Site Type	Upwind/Background	Population Exposure
Spatial Scale	Urban	Neighborhood
Sampling Frequency	Continuous	Continuous
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	3.0	3.0
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction
Distance from nearest tree drip line (m)	50.0	50.0
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable
Distance with nearest PM monitor (m)	1.0 – 2.0 m	1.0 – 2.0 m
Unrestricted airflow (deg)	360	360
Probe height (m, agl)	11.7	11.7
Probe material	FEP Teflon	FEP Teflon
Residence time (seconds)	5.4	6.0
Changes in next 18 months?	No	No
Frequency of 1-pt QC Check	Daily	Daily
Audit Date(s)	8/5/24	8/5/24

Table 43 – Sacramento-T Street Particulate Matter Instruments Operational Data

Site	Sacramento-T Street			
Start Date	5/1/2013	1/14/2020	12/11/2020	4/1/2021
Collecting Agency	CARB	CARB	CARB	CARB
Analytical Lab	CARB	CARB	CARB	CARB
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	PM10	PM2.5 Mass	PM2.5	PM2.5
Parameter Code	81102	88502	88101	88101
Parameter Occurrence	4	5	3	2
Manufacturer/Model	Met One 4 Models	Met One SASS	Met One 1020	THERMO 2000i
Sampling Method	Instrumental	Low volume with VSCC	Low volume with VSCC	Low volume with VSCC
Method Code	122	810	170	143
Analysis Method	Beta Attenuation	Gravimetric	Beta Attenuation	Gravimetric
FRM/FEM/ARM/Other	FEM	Other	FEM	FRM
Monitoring Objective	NAAQS comparison, public info	Research	NAAQS comparison, public info	NAAQS comparison, public info
Statement of Purpose	Measures representative concentration in urban area	Provide speciation data of urban emission	Measures representative concentration in urban area	Measures representative concentration in urban area
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	None	None	None	None
Site Type	Population Exposure	Highest concentration	Population Exposure, highest	Population exposure
Spatial Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	1 in 6 days	Continuous	1 in 12 days
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	2.0	2.0	2.0	2.0
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	50.0	50.0	50.0	50.0
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	1.0 – 2.0 m	1.0 – 2.0 m	1.0 – 2.0 m	1.0 – 2.0 m
Distance with nearest PM monitor (m)	1.0 – 2.0 m	1.0 – 2.0 m	1.0 – 2.0 m	1.0 – 2.0 m
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No
Frequency of flow rate verification	Bi-Monthly	Monthly	Bi-Monthly	Monthly
Audit Date(s)	2/8/24, 8/5/24	Not applicable	2/8/24, 8/5/24	2/8/24, 8/5/24

Table 44 – Sacramento-T Street Meteorological Instruments Operational Data

Site	Sacramento-T Street			
Start Date	7/1/2015	7/1/2015	2/1/1992	2/1/1992
Collecting Agency	CARB	CARB	CARB	CARB
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Outdoor Temperature	Relative Humidity	Wind Direction	Wind Speed
Parameter Code	62101	62201	61104	61103
Parameter Occurrence	2	2	1	1
Manufacturer/Model	Vaisala OT/RH	Vaisala OT/RH	RM Young Model	RM Young Model
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	059	059	066	066
Analysis Method	Vaisala HMP155	Vaisala HMP155	Ultrasonic Anemometer	Ultrasonic Anemometer
FRM/FEM/ARM/Other	Other	Other	Other	Other
Monitoring Objective	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	Other	Other	Other	Other
Affiliation	None	None	None	None
Site Type	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	9.0	9.0	9.0	9.0
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	50.0	50.0	50.0	50.0
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Distance with nearest PM monitor (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	15.0	15.0	15.0	15.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No
Frequency of flow rate verification	N/A	N/A	N/A	N/A
Audit Date(s)	Not applicable	Not applicable	Not applicable	Not applicable

Appendix B Minimum Monitoring Requirement Assessment

Table 45 – Number of SLAMS Monitoring Sites Within Sacramento MSA

Pollutant/Type (if applicable)		Required in MSA[A]	Operated by					
			CARB[B]	EDC[C]	PC[D]	SM[E]	YS[F]	Total
O_3		2	6	0	4	4	1	15
CO		3[G]	0	0	0	2	0	2
NO_2	Area-wide	1	3	0	0	3	0	6
	Near-road	2[G]	0	0	0	1	0	1
SO_2		1	0	0	0	1	0	1
Pb	NCore	0	0	0	0	0	0	0
	Source Oriented	0	0	0	0	0	0	0
PM_{10}		2-4	3	0	0	3[H]	2	8
$PM_{2.5}$	FEM/FRM	3	2	0	1	4	1	8
	Continuous[I]	2	3	0	4	5	1	13
$PM_{10-2.5}$		1	0	0	0	1	0	1

Source: U.S. EPA Air Quality System Extract Site/Monitor Report (AMP 500), accessed on 21 April 2025
[A] Number of monitors required in Sacramento MSA
[B] CARB – California Air Resources Board
[C] EDC – El Dorado County Air Quality Management District
[D] PC – Placer County Air Pollution Control District
[E] SM – Sacramento Metropolitan Air Quality Management District
[F] YS – Yolo-Solano Air Quality Management District
[G] The District is working with EPA and CARB to investigate potential sites, determine appropriate timeline, and funding to implement a 2nd near-road monitor
[H] Monitor was installed in March 2025

Appendix C Data Certification Letters to U.S. EPA and CARB

Figure 40 – 2024 Data Certification Letter to U.S. EPA, Page 1

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

April 25, 2025

Josh Cook
Regional Administrator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105

RE: 2024 Data Certification

Dear Josh Cook:

Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) operates Federal Reference Method and Federal Equivalent Method monitors at its State and Local Air Monitoring Stations and Special Purpose Monitor sites. We are responsible for submitting and certifying our air quality data to the U.S. Environmental Protection Agency Air Quality System in accordance with Title 40, Code of Federal Regulation, Part 58 (40 CFR Part 58).

This letter certifies Sac Metro Air District's 2024 data on criteria air pollutants is complete and accurate to the best of our knowledge, taking into consideration the quality assurance findings. Along with this letter, we are submitting the Certification Evaluation and Concurrence report (AMP600) and Quicklook report (AMP450NC) with focus on the SO_2 5-minute average data.

Sac Metro Air District is concurring with some of the AQS recommendations found in AMP600. Exceptions are noted in Table 1 in this letter; Sac Metro Air District recommends certifying these data despite findings in AMP600.

Note that California Air Resources Board (CARB) continues to support Sac Metro Air District by submitting and certifying data for all particulate matter (PM) gravimetric filters weighed and analyzed by CARB's laboratory. Namely, these are the $PM_{2.5}$ filters collected at Sacramento-Del Paso Manor (DPM). It also includes the PM_{10} filters collected at DPM for determining $PM_{10-2.5}$.

Also, the data certification package for 2024 O_3 data was submitted to U.S. EPA Region 9 on January 16, 2025.

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Figure 41 – 2024 Data Certification Letter to U.S. EPA, Page 2

If you have any questions regarding Sac Metro Air District's data or certification report, please contact Ms. Janice Lam Snyder, Program Manager of Monitoring, Planning, and Rules Division at 916-491-0929 or jlam@airquality.org.

Sincerely,

Mark S. Loutzenhiser

Mark Loutzenhiser
Director, Monitoring, Planning, and Rules Division

Enclosures: Certification Evaluation and Concurrence (AMP600)
Quicklook All Parameters (AMP450NC)

cc: Dena Vallano, U.S. Environmental Protection Agency Region IX
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Fletcher Glover, U.S. Environmental Protection Agency Region IX
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Shaye Hong, U.S. Environmental Protection Agency Region IX
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Michael Benjamin, California Air Resources Board
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Jin Xu, California Air Resources Board
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Craig Anderson, California Air Resources Board
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Nichole Lambinicio
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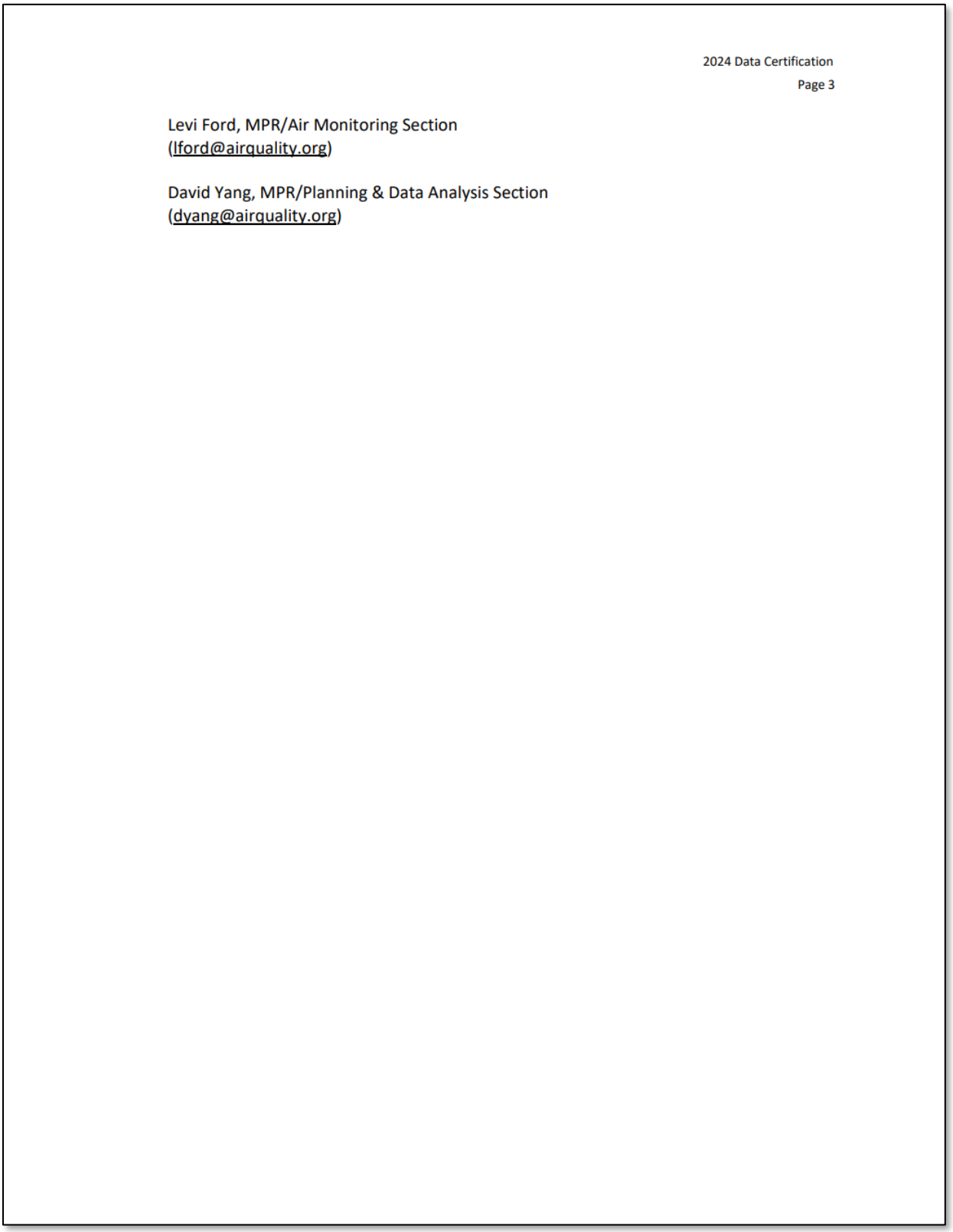
Janice Lam Snyder, Monitoring, Planning, and Rules Division
(jlam@airquality.org)

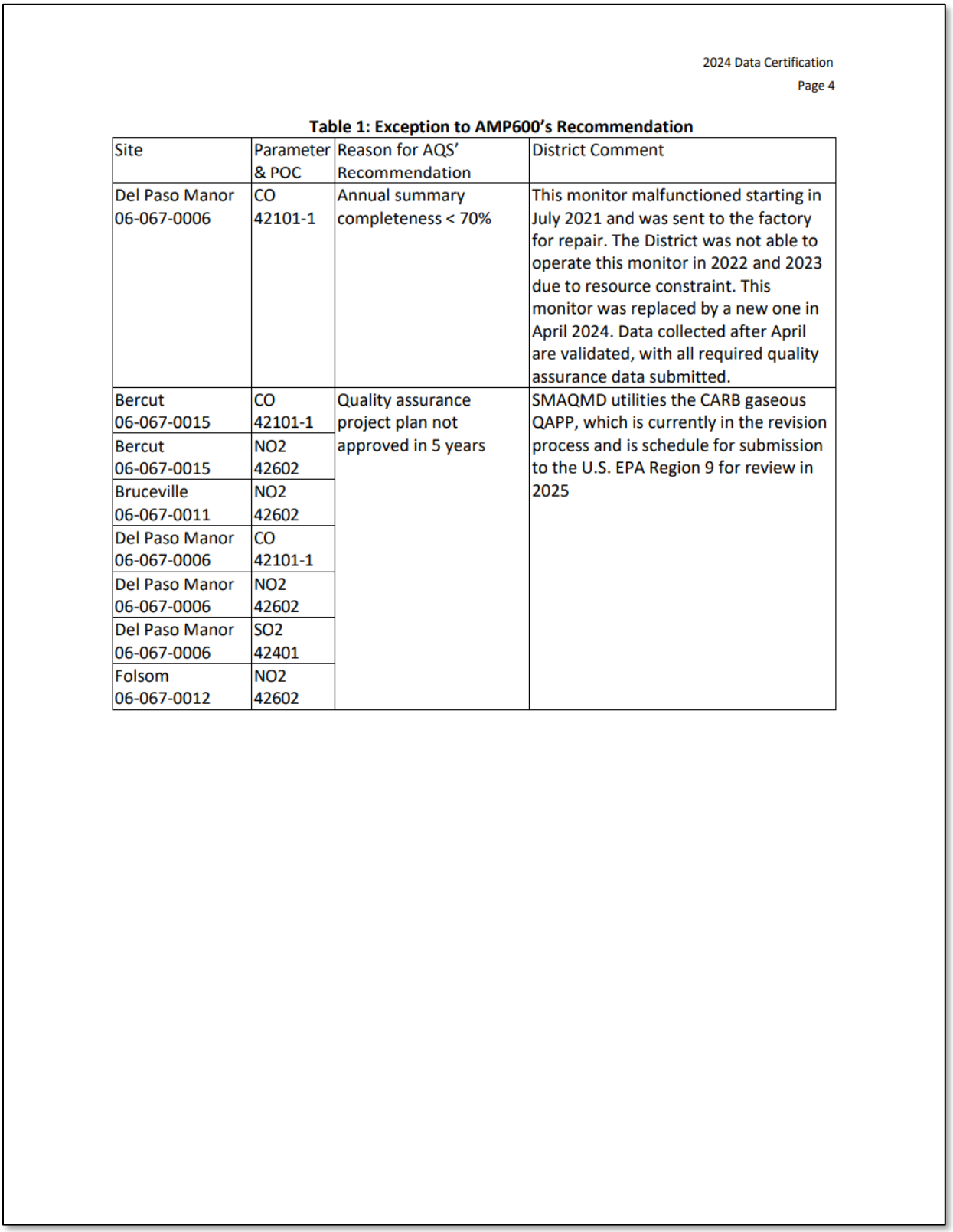
Figure 42 – 2024 Data Certification Letter to U.S. EPA, Page 3



Levi Ford, MPR/Air Monitoring Section
(lford@airquality.org)

David Yang, MPR/Planning & Data Analysis Section
(dyang@airquality.org)

Figure 43 – 2024 Data Certification Letter to U.S. EPA, Page 4



2024 Data Certification
Page 4

Table 1: Exception to AMP600's Recommendation

Site	Parameter & POC	Reason for AQS' Recommendation	District Comment
Del Paso Manor 06-067-0006	CO 42101-1	Annual summary completeness < 70%	This monitor malfunctioned starting in July 2021 and was sent to the factory for repair. The District was not able to operate this monitor in 2022 and 2023 due to resource constraint. This monitor was replaced by a new one in April 2024. Data collected after April are validated, with all required quality assurance data submitted.
Bercut 06-067-0015	CO 42101-1	Quality assurance project plan not approved in 5 years	SMAQMD utilities the CARB gaseous QAPP, which is currently in the revision process and is schedule for submission to the U.S. EPA Region 9 for review in 2025
Bercut 06-067-0015	NO2 42602		
Bruceville 06-067-0011	NO2 42602		
Del Paso Manor 06-067-0006	CO 42101-1		
Del Paso Manor 06-067-0006	NO2 42602		
Del Paso Manor 06-067-0006	SO2 42401		
Folsom 06-067-0012	NO2 42602		

The full 19-page data certification package to U.S. EPA is available for public review upon request.

Figure 44 – 2024 O_3 Data Certification Letter to U.S. EPA, Page 1

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

January 15, 2025

Martha Guzman
Regional Administrator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105

RE: 2025 Ozone Data Certification

Dear Martha Guzman:

Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) operates Federal Reference Method and Federal Equivalent Method monitors at its State and Local Air Monitoring Stations and Special Purpose Monitor sites. We are responsible for submitting and certifying our air quality data to the U.S. Environmental Protection Agency Air Quality System in accordance with Title 40, Code of Federal Regulation, Part 58 (40 CFR Part 58).

This letter certifies Sac Metro Air District's 2024 ozone data on criteria air pollutants is complete and accurate to the best of our knowledge, taking into consideration the quality assurance findings. Along with this letter, we are submitting the Certification Evaluation and Concurrence report (AMP600).

Sac Metro Air District is concurring with most of the AQS recommendations found in AMP600. Exceptions are noted in Table 1 in this letter; Sac Metro Air District recommends certifying these data despite findings in AMP600.

Data certification for other parameters collected by Sac Metro Air District will be provided at a later date. Ozone data is given priority to allow determination of attainment status. If you have any questions regarding Sac Metro Air District's data or certification report, please contact Ms. Janice Lam Snyder, Program Manager of Monitoring, Planning, and Rules Division at 916-491-0929 or jlam@airquality.org.

Sincerely,

Mark S. Loutzenhiser

Mark Loutzenhiser
Division Manager, Monitoring, Planning, and Rules Division

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Figure 45 – 2024 O_3 Data Certification Letter to U.S. EPA, Page 2

Enclosures: Certification Evaluation and Concurrence (AMP600)
Quicklook All Parameters (AMP450NC)

cc: Gwen Yoshimura, U.S. Environmental Protection Agency Region IX
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Shaye Hong, U.S. Environmental Protection Agency Region IX
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Michael Benjamin, California Air Resources Board
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Jin Xu, California Air Resources Board
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Craig Anderson, California Air Resources Board
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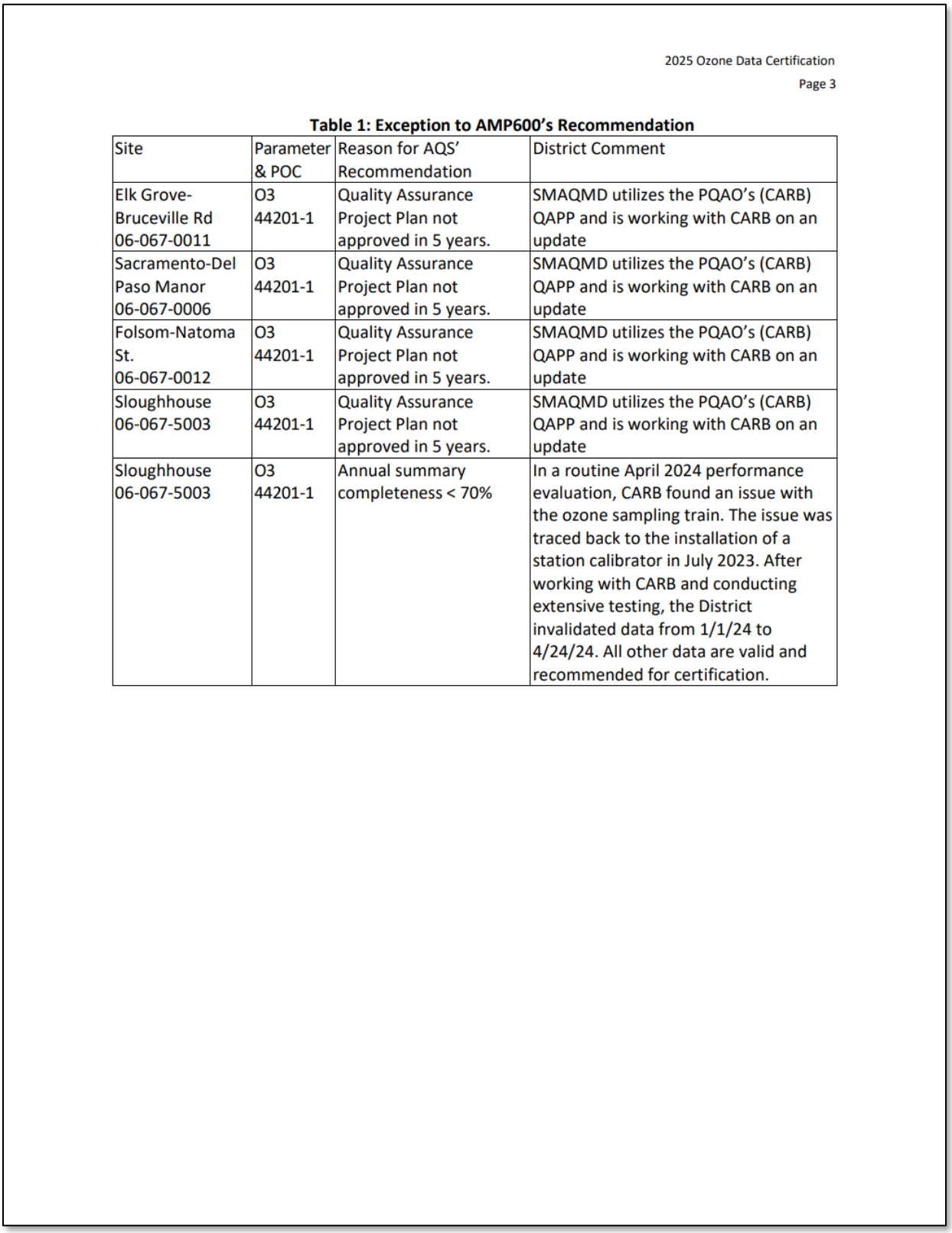
Figure 46 – 2024 O_3 Data Certification Letter to U.S. EPA, Page 3



2025 Ozone Data Certification
Page 3

Table 1: Exception to AMP600's Recommendation

Site	Parameter & POC	Reason for AQS' Recommendation	District Comment
Elk Grove-Bruceville Rd 06-067-0011	O3 44201-1	Quality Assurance Project Plan not approved in 5 years.	SMAQMD utilizes the PQAO's (CARB) QAPP and is working with CARB on an update
Sacramento-Del Paso Manor 06-067-0006	O3 44201-1	Quality Assurance Project Plan not approved in 5 years.	SMAQMD utilizes the PQAO's (CARB) QAPP and is working with CARB on an update
Folsom-Natoma St. 06-067-0012	O3 44201-1	Quality Assurance Project Plan not approved in 5 years.	SMAQMD utilizes the PQAO's (CARB) QAPP and is working with CARB on an update
Sloughhouse 06-067-5003	O3 44201-1	Quality Assurance Project Plan not approved in 5 years.	SMAQMD utilizes the PQAO's (CARB) QAPP and is working with CARB on an update
Sloughhouse 06-067-5003	O3 44201-1	Annual summary completeness < 70%	In a routine April 2024 performance evaluation, CARB found an issue with the ozone sampling train. The issue was traced back to the installation of a station calibrator in July 2023. After working with CARB and conducting extensive testing, the District invalidated data from 1/1/24 to 4/24/24. All other data are valid and recommended for certification.

The full 8-page O_3 data certification package to U.S. EPA is available for public review upon request.

Figure 47 – 2024 Data Certification Letter to CARB, Page 1

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

April 7, 2025

Jin Xu
Manager, Air Quality Analysis Section
California Air Resources Board
Air Quality Planning and Science Division
P.O. Box 2815
Sacramento, CA 95812

RE: 2024 Data Certification

Dear Jin Xu:

Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) and California Air Resources Board (CARB) shares responsibility in collecting and analyzing particulate matter (PM) gravimetric filters in Sacramento County, California. It includes $PM_{2.5}$ filters collected at Sacramento-Del Paso Manor (DPM). It also includes the PM_{10} filters collected at DPM for determining $PM_{10-2.5}$.

In support of the requirements in Title 40, Code of Federal Regulation (40 CFR), Part 58, this letter certifies that the District has reviewed the ambient concentration data and the quality assurance data for 2024 and attests that the ambient Del Paso Manor $PM_{2.5}$ (06-067-0006, 88101, POC 1 and POC 2) and PM coarse (06-067-0006, 86101, POC 7) data are accurate and complete to the best of our knowledge, taking into consideration the quality assurance findings. We recommend the data for certification. Please note that the PM10 sampler needed for PM coarse data malfunctioned January through April 2024.

If you have any questions, please contact Ms. Janice Lam Snyder, Program Manager of Monitoring, Planning, and rules at 916-491-0929 or jlam@airquality.org.

Sincerely,

Mark S. Loutzenhiser

Mark Loutzenhiser
Director, Monitoring, Planning, and Rules

Enclosures: Certification Evaluation and Concurrence (AMP600)
Quicklook All Parameters (AMP450NC)

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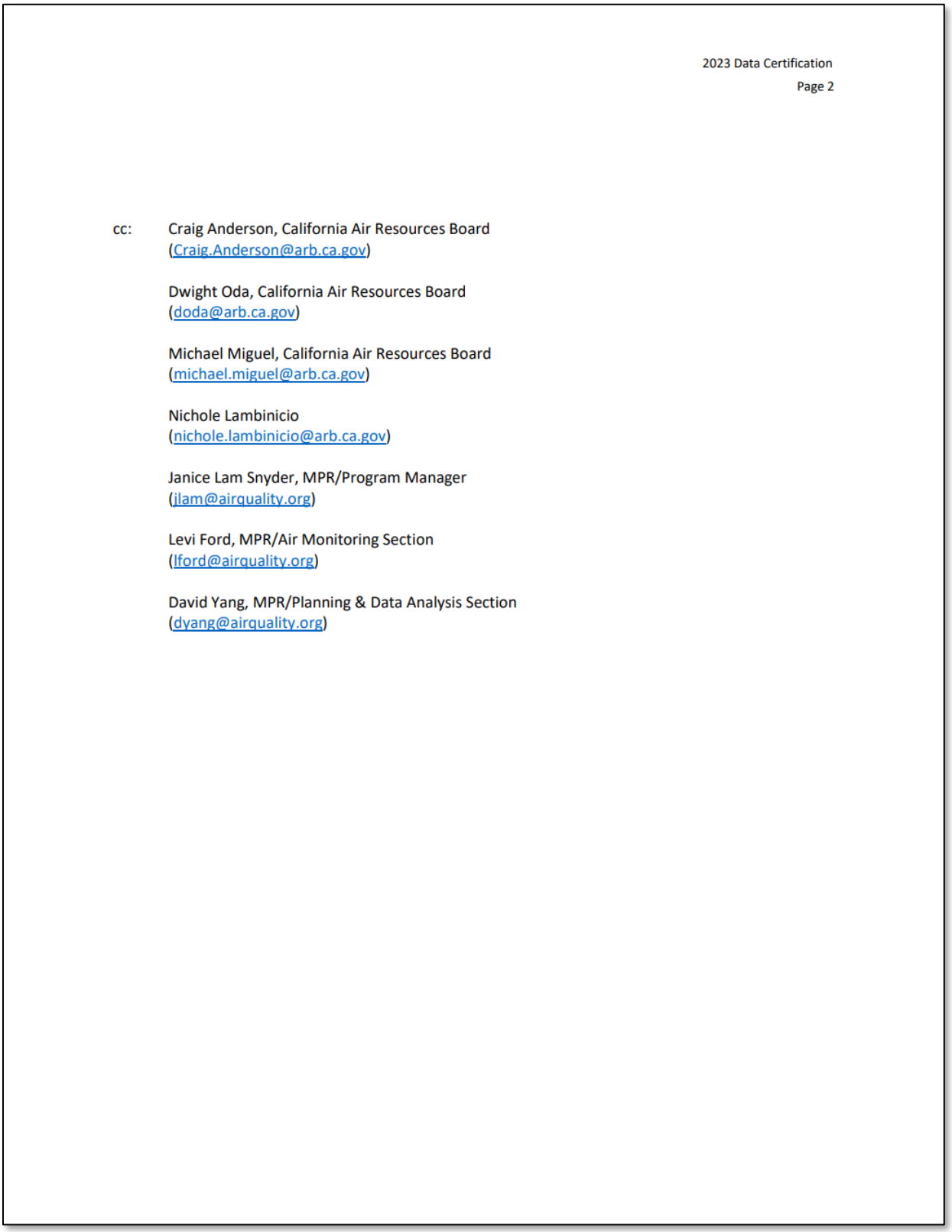
Figure 48 – 2024 Data Certification Letter to CARB, Page 2



2023 Data Certification
Page 2

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David Yang, MPR/Planning & Data Analysis Section
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The full 13-page data certification package to CARB is available for public review upon request.