2026-2027 DES
Annual Monitoring Network Plan

July 2026

Clark County Department of Environment and Sustainability
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Executive Summary

This Annual Monitoring Network Plan reports the status of the Clark County air monitoring network in 2026 as required by 40 Code of Federal Regulations (CFR) Part 58. This document describes network operations in 2026 and any plans for future changes.

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ACRONYMS AND ABBREVIATIONS

AADT	annual average daily traffic
AQS	Air Quality System
CAA	Clean Air Act
CBSA	Core-Based Statistical Area
CFR	Code of Federal Regulations
CO	carbon monoxide
DAQ	Division of Air Quality
DES	Department of Environment and Sustainability
EE	Exceptional Event
EPA	U.S. Environmental Protection Agency
FEM	federal equivalent method
FRM	federal reference method
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCore	National Core Multi-Pollutant Monitoring Network
NDOT	Nevada Department of Transportation
NEI	National Emissions Inventory
NO_X	oxides of nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPAP	National Performance Audit Program
O_3	ozone
PAMS	Photochemical Assessment Monitoring Stations
Pb	lead
PEP	Performance Evaluation Program
PM	particulate matter
$PM_{2.5}$	particulate matter 2.5 micrometers in diameter or smaller
PM_{10}	particulate matter 10 micrometers in diameter or smaller
PM coarse	particulate matter between 2.5 to 10 micrometers in diameter
POC	parameter occurrence code
PWEI	Population Weighted Emissions Index
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RA	Regional Administrator
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring System
SO_2	sulfur dioxide
SPM	Special Purpose Monitor
TTP	through-the-probe
VOC	Volatile Organic Compounds

SCIENTIFIC UNITS

m	meters
$\mu g/m^3$	micrograms per cubic meter
s	seconds

1.0 INTRODUCTION

This Annual Monitoring Network Plan (Plan) serves as a review of the current Clark County Department of Environment and Sustainability (DES), Division of Air Quality (DAQ) ambient air monitoring network and as a plan for future network activities. This Plan is written to comply with 40 CFR 58.10 and refers to Appendices A, B, C, D and E of Part 58, where applicable. The DES network includes monitoring sites that can include FRM, FEM and SPM monitors that are part of State and Local Air Monitoring Stations (SLAMS), NCore, Chemical Speciation Network (CSN), Photochemical Ambient Monitoring Station (PAMS) and Near-Road sites.

All sites and monitors meet the technical requirements of 40 CFR 58.11 and Appendices A, B, C, D, and E of Part 58, where applicable. SPM short-term monitors follow QC and QA requirements of 40 CFR 58.11 Appendix A, where applicable. DES has no SPM monitors operating in the monitoring network for over 24 months listed as comparable to the NAAQS. The ozone monitor at the Spring Mountain Youth Camp research site is SPM but is not used for NAAQS comparisons.

DES submitted its 2025 Plan to EPA on June 24, 2025, and received approval of the Plan on December 5, 2025. DES submits all criteria pollutant data quarterly, including precision and accuracy data, to the Air Quality System (AQS). DES submitted its 2025 annual data certification to EPA on February 18, 2026. EPA issued their concurrence for the 2025 data on February 26, 2026.

Two minor changes to the monitoring program are planned for 2026. First is the implementation of newer ultrasonic meteorology instrumentation at each of our SLAMS. Secondly, replacement of 4 shelters and meteorological towers is planned with funds approved from the CAA 103 IRA grant program. None of the instrumentation will be affected by the replacement of the aging shelters and meteorological towers except for a brief interruption while the old trailer is removed, the new trailer is installed and wired, then the instrumentation returned to service in the new shelters. Expected downtime for shelter/tower replacement is less than two weeks per site. The information for each monitoring site in the DES network specified in 40 CFR 58.10(b) is provided in subsequent sections of this Plan. This information includes updated population and design values, and recent pollutant levels measured in the network. The last five-year network assessment mentioned in 40 CFR 58.10(d) was completed and submitted to EPA on June 30, 2025.

The DES ambient air quality surveillance program follows these approved quality program plans:

1. Quality Management Plan (QMP) dated April 23, 2024.
2. Quality Assurance Project Plan (QAPP) for Ambient and NCore Air Quality Monitoring, revision 2, dated May 5, 2026.
3. QAPP for the Photochemical Assessment Monitoring Stations (PAMS) Required Site Network for Speciated Volatile Organic Compounds, Carbonyls, and Meteorological Parameters Including Mixing Layer Height, approved December 21, 2020.
4. Criteria Plus QAPP, revision 1, dated March 19, 2025, approved May 12, 2025.

The following information describes the current attainment status with NAAQS. The Las Vegas Intrastate Air Quality Control Region is identified in 40 CFR 81.80 to be Clark County, in the State

of Nevada. The attainment status for the State of Nevada is in 40 CFR 81.329, presented by pollutants with geographic descriptions:

- 2010 Sulfur Dioxide (SO_2) NAAQS: Attainment/Unclassifiable.
- Carbon Monoxide (CO): Las Vegas Area: Attainment since 2010, the remainder of Clark County: Unclassifiable/Attainment.
- Particulate Matter (PM) as PM_{10}: Las Vegas planning area, attainment since November 5, 2014; the rest of Clark County is Attainment/Unclassifiable.
- Fine Particulate Matter as $PM_{2.5}$ for the 2012 Annual NAAQS and the 2006 24-hr NAAQS: both are Attainment/Unclassifiable.
- 2010 Nitrogen Dioxide (NO_2) 1-hr Standard: Attainment/Unclassifiable.
- 2015 Ozone (O_3) 8-hour NAAQS in Las Vegas, hydrographic area 212 (HA 212): serious nonattainment as of January 21, 2025; the remainder of Clark County is Attainment/Unclassifiable.
- 2008 Lead (Pb) NAAQS: Attainment/Unclassifiable.

Currently, the Las Vegas Valley (defined as Hydrographic Area (HA) 212) in Clark County is designated as serious nonattainment for the 2015 ozone NAAQS and attainment/unclassifiable for all other criteria pollutants. Portions of Clark County are subject to maintenance plans for the PM_{10}, CO, and 1997 O_3 NAAQS. To address CO, DES submitted a CO State Implementation Plan (SIP) in 2000 that described the control measures and technologies required to bring the Las Vegas Valley into compliance with the CO NAAQS. The CO SIP was approved by EPA, effective October 21, 2004 (69 FR 56351). A Federal Register notice denoting EPA's determination of attainment of the CO NAAQS within the valley was issued in June 2005 (70 FR 31353). In 2008, DES submitted a Request for Re-designation and Maintenance Plan for the CO NAAQS, which was approved by EPA, effective September 27, 2010 (75 FR 59090). In June 2019, DES submitted a Second 10-Year CO Limited Maintenance Plan, which was approved by EPA on October 22, 2021, with an effective date of November 22, 2021 (86 FR 58579).

The Las Vegas Valley (HA 212) attained the PM_{10} standard by December 31, 2006, and EPA issued a "Finding of Attainment" in August 2010 (75 FR 45485). In 2012, DES submitted a Request for Redesignation and Maintenance Plan for the PM_{10} NAAQS, which EPA approved in October 2014, with an effective date of November 5, 2014 (79 FR 60078).

In 1978, EPA designated the Las Vegas Valley (HA 212) as a nonattainment area for the one-hour photochemical oxidant NAAQS (43 FR 8962). Subsequently, EPA revised the photochemical oxidant standard to an ozone NAAQS. In 1986, EPA re-designated the Las Vegas Valley to attainment for the one-hour ozone NAAQS (51 FR 41788).

In 2004, that portion of Clark County that lies in HAs 164A, 164B, 165, 166, 167, 212, 213, 214, 216, 217, and 218, but excluding the Moapa River Indian Reservation and the Fort Mojave Indian Reservation, was designated nonattainment for the 1997 8-hour ozone NAAQS (69 FR 55956). All other areas of the county were designated attainment/unclassifiable. In 2012, the entire county was designated attainment/unclassifiable under the 2008 8-hour ozone NAAQS (77 FR 30088). In

2013, EPA re-designated those portions of Clark County that had been previously designated nonattainment under the 1997 standard to attainment subject to a ten-year maintenance plan (78 FR 1149). In January 2022, DES submitted a Second 10-Year Maintenance Plan for the 1997 ozone NAAQS, which was approved by EPA on April 5, 2024, with an effective date of May 6, 2024 (89 FR 23916).

In 2018, EPA designated the Las Vegas Valley (HA 212) marginal nonattainment for the 2015 ozone NAAQS (83 FR 25776). On January 5, 2023, EPA determined that the Las Vegas Valley failed to attain the 2015 O_3 NAAQS by the applicable marginal nonattainment date and reclassified the area as a moderate nonattainment area (88 FR 775). On December 14, 2024, EPA determined that the Las Vegas Valley failed to attain the 2015 ozone NAAQS by the applicable marginal nonattainment date and reclassified the area as a serious nonattainment area (89 FR 103657).

As required by 40 CFR 58.50, Clark County's air quality data is delivered to the public in a timely manner through the DES website, social media websites, community outreach events, news releases, topic-specific social media campaigns, and the AirNow and Enviroflash programs. DES also provides customized data reports to the public upon request. DES operates visibility cameras from a tall building in the southern Las Vegas valley; photographs are recorded every 15 minutes during daylight hours and are displayed in near real-time on the DES website.

Section 2 of this Plan covers the monitoring network design, including the pollutant-specific requirements. Section 3 has site descriptions including the representative spatial scales and purposes. Clark County maps with the monitoring site locations categorized by pollutants are presented in Section 4 of this Plan. Both narrative and graphical descriptions show the wide spatial coverage of monitors throughout Clark County.

2.0 MONITORING PROGRAM

The Clark County air quality monitoring network design meets or exceeds the 2025 minimum requirements of 40 CFR Part 58, Appendix D (hereinafter, "Appendix D"). Appendix D includes:

- Section 2 general monitoring requirements;
- Section 3 design criteria for NCore multipollutant sites;
- Section 4 pollutant-specific requirements for State and Local Ambient Monitoring Sites (SLAMS), including the near-road criteria in Section 4.3.2; and
- Section 5 requirements for the Photochemical Assessment Monitoring Stations (PAMS).

To better characterize ambient air quality given the large area, population, diverse topography, and land use of Clark County, DES recognizes Section 1.1.2 of Appendix D: "The total number of monitoring sites that will serve the variety of data needs will be substantially higher than these minimum requirements provide." DES operates two near-road sites, the Rancho-Teddy site and the Casino Center site. The Jerome Mack monitoring site is the DES NCore and PAMS site.

Population information is relevant to some pollutants. Some network criteria tables in Appendix D have criteria for Metropolitan Statistical Area (MSA) populations over 1,000,000 people. An MSA is a metropolitan type of Core-Based Statistical Area (CBSA). MSA and CBSA are terms from the EPA Air Quality System (AQS). CBSA code 29820 is "Las Vegas-Henderson-North Las Vegas, NV"; it encompasses all of Clark County.

Population estimates for 2025 are 2,505,000 for Clark County. Population census information, including estimates, was obtained from the Clark County Department of Comprehensive Planning 2025-2060 Population Forecasts report issued in May 2025.

Table 2-1 of this Plan shows the 18 DES air monitoring sites by name and EPA AQS identifier, and the parameters monitored at each site.

Table 2-1. Summary of DES Air Monitoring Network for 2025-2026

Site, AQS ID	Ozone	NO_2	CO	$PM_{2.5}$ FRM	$PM_{2.5}$ FEM	PM_{10} FEM	Met Data[4]
Virgin Valley 32-003-0024	SLAMS[1]				SLAMS	SLAMS	Met
Apex 32-003-0025[1]	SLAMS						Met
Paul Meyer 32-003-0043	SLAMS				SLAMS	SLAMS	Met
Mountains Edge 32-003-0044	SLAMS				SLAMS	SLAMS	Met
Walter Johnson 32-003-0071	SLAMS				SLAMS	SLAMS	Met
Palo Verde 32-003-0073	SLAMS				SLAMS	SLAMS	Met
Joe Neal 32-003-0075	SLAMS	SLAMS			SLAMS	SLAMS	Met
Green Valley 32-003-0298	SLAMS				SLAMS	SLAMS	Met
Liberty H.S. 32-003-0299	SLAMS				SLAMS	SLAMS	Met
Jerome Mack 32-003-0540[2, 3]	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	Met
Sunrise Acres 32-003-0561		SLAMS	SLAMS	collocated for FEM	SLAMS	SLAMS	Met
Garrett Jr. H.S. 32-003-0602	SLAMS				SLAMS	SLAMS	Met
Jean 32-003-1019	SLAMS				SLAMS	SLAMS	Met
Rancho-Teddy 32-003-1501[5]		SLAMS	SLAMS		SLAMS		Met
Casino Center 32-003-1502[5]		SLAMS					Met
Walnut Center 32-003-2003	SLAMS	SLAMS	SLAMS		SLAMS	SLAMS	Met
Spring Mtn Youth Camp 32-003-7771[1]	SPM[1]						
Indian Springs[1], 32-003-7772	SLAMS[1]						
Total sites: 18	**15**	**6**	**4**	**2**	**14**	**13**	**16**

[1] ozone seasonal only (Apr-Sept)
[2] additional for NCore: NO/NO_y, SO_2, PMc, speciated $PM_{2.5}$; Relative humidity, plus barometric pressure, rain
[3] added for PAMS: June-August: VOC and carbonyls; year-round: solar, UV, and mixing height.
[4] wind speed, wind direction, air temperature
[5] near road

2.1 Ozone Monitoring Design

SLAMS ozone monitoring sites requirements (Appendix D, Section 4.1) include the most recent 3-year design value concentrations. Table 2-2 provides the 2025 8-hr Design Values for ozone monitoring sites. The values range from 66 parts per billion by volume (ppb) to 73 ppb. The highest value for 2025 occurred at the Mountain's Edge site which is in the southwestern portion of the Las Vegas Valley, in HA 212, and the Joe Neal site, which is in the northwestern portion of the Las Vegas Valley, also in HA 212.

Table 2-2. Ozone design values

8-hr Design Value [ppb] 2023-2025	Site (name, AQS Identifier)
66	Virgin Valley (32-003-0024)
67	Apex (32-003-0025)
72	Paul Meyer (32-003-0043)
73	Mountains Edge (32-003-0044)
72	Walter Johnson (32-003-0071)
72	Palo Verde (32-003-0073)
73	Joe Neal (32-003-0075)
72	Green Valley (32-003-0298)
70	Liberty H.S. (32-003-0299)
67	Jerome Mack (32-003-0540)
69	Garrett Jr. H.S. (32-003-0602)
70	Jean (32-003-1019)
72	Walnut (32-003-2003)
Not applicable[1]	Spring Mtn Youth Camp (32-003-7771)
70	Indian Springs (32-003-7772)

[1] No design value. The site is seasonally operated as a SPM site.

Table 2-3 summarizes these results and the subsequent identification of the minimum number of required sites. This value exceeds 85% of the 8-hour ozone NAAQS, so the requirement from Table D-2 of Appendix D is two sites.

Table 2-3. Ozone Monitoring Site Requirements

8-hr Design Value [ppb] DV Years 2023-2025	Design Value site (name, AQS ID)	# Required Sites	# Active Sites	# Additional Sites Needed
73	Mountains Edge 32-003-0044	2	15	0

Table 2-1 of this Plan shows the distribution of ozone monitors in the DES network. Nine sites are in the Las Vegas Valley. The Jerome Mack site is also operated as the NCore and PAMS site for

the network. Two of the six sites outside the Las Vegas Valley are approved for seasonal operation from April 1 through September 30, Apex and Indian Springs. The Spring Mountain Youth Camp is operated seasonally as a Special Purpose Monitor (SPM). Data from this SPM site is intended to support Exceptional Events analyses and air quality forecasting purposes. Consistent with the SPM classification, measurements at this site are made for special studies only and not used for NAAQS determinations or other regulatory purposes.

The ozone monitoring sites are located considering population distribution and expansion in the Las Vegas Valley, occurrences of higher ozone concentrations, and improved understanding of weather patterns and external influences causing higher ozone concentrations.

2.2 Carbon Monoxide Monitoring Design

Two of the CO monitoring design criteria in Appendix D, Section 4.2 apply to the DES network. Section 4.2.1(a) requires one CO monitor to operate collocated with a near-road NO_2 monitor, which is met with monitoring at the Rancho-Teddy site. Section 4.2.2 has additional monitoring that may be required at the discretion of the Regional Administrator. This includes to characterize "CO concentrations in areas that are subject to high ground level CO concentrations particularly due to topographical or meteorological impacts." Local topography and airflow appear to be related to the relatively higher CO concentrations that have previously occurred in the central Las Vegas Valley east of the original downtown Las Vegas. The Sunrise Acres and Jerome Mack sites are in this area. The predecessor to the Walnut site, J.D. Smith site, was also in this area.

Another CO design criterion is in Section 3(b) of Appendix D, Design Criteria for NCore Sites. This requirement is fulfilled with the Jerome Mack site.

The DES monitoring sites are identified in Table 2-1, noting the four sites with CO monitoring. See Table 2-4 for the minimum monitoring requirements.

In addition to the SLAMS sites with CO monitoring, the Paul Meyer, Joe Neal, Green Valley and Spring Mountain sites included SPM CO monitors in 2023. The Spring Mountain monitoring continued through the monitoring season of 2025 and will continue for the 2026 ozone season solely for research purposes.

Table 2-4 summarizes these results and the subsequent identification of the minimum number of required sites. The requirement from Section 4.2.1 of Appendix D is one CO monitor, collocated with the Near-Road NO2 monitor.

Table 2-4. Minimum Monitoring Requirements for CO

Required Monitors	Monitoring Sites	# Additional Monitors Needed
Near-road: 1	Rancho-Teddy 32-003-1501	0
NCore: 1	Jerome Mack 32-003-540	0
Regional Administrator (RA) sites: 2	Sunrise Acres 32-003-0561 Walnut 32-003-2003	0

Notes: Monitors required for SIP or maintenance plan: CO monitoring in the Las Vegas Valley is expected for ongoing demonstration of the CO Maintenance Plan.
EPA RA-required monitors per 40 CFR 58, App. D, Sec. 4.2.2: 0
This network meets the minimum monitoring requirement for the referenced criteria pollutant.

2.3 Nitrogen Dioxide Monitoring Design

NO_2 monitoring requirements in Appendix D, Section 4.3, include the near-road requirements in Section 4.3.2, area-wide requirements in Section 4.3.3, and Regional Administrator Required Monitoring in Section 4.3.4. The requirements do not include traffic information.

The DES monitoring sites are identified in Table 2-1, noting the sites with NO_2 monitoring. Table 2-5 shows how the DES network meets these requirements. DES operates six NO_2 SLAMS monitors.

The one-hour NAAQS value for NO_2 is 100 parts per billion by volume (ppb). Design values calculated for the six DES sites with NO_2 monitors for 2025 range from 36 to 50 ppb.

Table 2-5. Minimum Monitoring Requirements for NO_2

Required Monitors	Monitoring Sites	# Additional Monitors Needed
Near-road: 2	Rancho-Teddy 32-003-1501 Casino Center 32-003-1502	0
NCore: 1	Jerome Mack 32-003-0540	0
Area-wide: 2	Joe Neal 32-003-0075 Walnut 32-003-2003	0
RA sites: 1	Sunrise Acres 32-003-0561	0

2.4 Sulfur Dioxide Monitoring Design

SO_2 monitoring requirements in Appendix D, Section 4.4.2 use the Population Weighted Emissions Index (PWEI) criterion for SO_2 monitoring. PWEI is the product of the population number times the aggregate county-level emissions in tons per year divided by one million. If the value is less than 5,000, no SO_2 monitoring would be required under Section 4.4.2.

The NCore monitoring requirements in Appendix D, Section 4.4.4 include SO_2 monitoring. NCore monitoring is performed at the Jerome Mack (32-003-0540) monitoring site, as shown in Table 2-6. No Regional Administrator monitoring is required.

Table 2-6. Minimum Monitoring Requirements for SO_2

Population & Census Year	Total SO_2 [tons/year]	PWEI [million persons-tons per year]	# Required Monitors	# Active Monitors	# Additional Monitors Needed
2,505,000 2025 (est.)	1,334	3,342	1 (NCore)	1	0

2.5 PM_{10} Monitoring Design

PM_{10} monitoring requirements are in Appendix D, Section 4.6, Table D-4. The minimum number of sites depends on population and how the maximum 24-hour concentration relates to the PM_{10} 24-hour NAAQS. The population for 2025 is estimated at 2,505,000. Table 2-7 shows the result for Clark County.

Table 2-1 of this Plan lists the distribution of thirteen PM_{10} monitors in the DES network operated

for SLAMS and NCore purposes. The map of sites with PM_{10} monitors in the DES network in Section 4 of this Plan shows the broad spatial distribution of monitors.

Table 2-7. Minimum Monitoring Requirements for PM_{10}

Maximum 24-Hour Concentration for 2025 [µg/m^3]	Site AQS ID	Required Monitors	# Active Sites	# Additional Sites Needed
175.1	Sunrise Acres (32-003-0561)	6-10	13	0

2.6 Fine Particulate Matter as $PM_{2.5}$ Monitoring Design

Design criteria for fine particulate matter are in Appendix D, Section 4.7. The criteria include design values and specific monitoring objectives. Some criteria utilize the population estimate for Clark County in 2025, which is 2,505,000.

Requirements for the minimum number of SLAMS monitoring sites are taken from Table D-5 in Section 4.7.1(a) of 40 CFR 58, Appendix D. Table 2-8 below, shows the highest Clark County 3-year (2023 – 2025) design value of $PM_{2.5}$. The maximum daily and annual design values results in the required number of $PM_{2.5}$ SLAMS sites as three based on the Design Value criterion for MSA population over 1,000,000.

Table 2-8. Minimum Monitoring Requirements for $PM_{2.5}$ SLAMS Sites

Highest Annual Design Value [µg/m3]	Annual Design Value site (name, AQS ID)	85% of NAAQS [µg/m3]	# Required SLAMS Sites	# Active SLAMS Sites	# Additional SLAMS Sites Needed
Annual			3	14	0
8.3	Jerome Mack 32-003-0540	7.65			
24 Hour					
28	Sunrise Acres 32-003-0561	29.75			

Specific design criteria are in Appendix D, Section 4.7.1(b).

- Sites must represent area-wide air quality. Table 2-1 and the network map showing $PM_{2.5}$ sites in Figure 22 show the area-wide coverage of the $PM_{2.5}$ monitors.

- This section also requires at least one monitoring site be at the neighborhood or larger scale in an area of maximum concentration. The Sunrise Acres and Jerome Mack sites both fulfill this requirement.
- It also requires for a CBSA over 1,000,000 persons (which includes the Las Vegas MSA) that one $PM_{2.5}$ monitor be collocated at a near-road NO_2 site. The Rancho-Teddy site meets this requirement.
- The $PM_{2.5}$ monitor at the Rancho-Teddy site satisfies the collocation requirement with a near-road NO_2 monitor.
- The specific criteria applied to individual sites are addressed in Section 3 of this Plan.

Appendix D, Section 4.7.2 requires operating continuous $PM_{2.5}$ monitors equal to at least one-half (round up) the minimum required sites listed in table D-5. All fourteen sites measuring $PM_{2.5}$ include continuous monitors.

Appendix D, Section 4.7.3 requires at least one $PM_{2.5}$ monitor for regional background and one for regional transport. The three sites outside the Las Vegas valley with $PM_{2.5}$ monitors provide both regional background and regional transport, depending on wind direction on a given day. These are Virgin Valley in Mesquite, Garrett in Boulder City, and Jean in a rural area south of the valley.

Appendix D, Section 4.7.4 requires chemical speciation monitoring. $PM_{2.5}$ samplers for chemical speciation monitoring are located at the Jerome Mack site, which is an NCore site.

40 CFR 58, Appendix A, Section 3.2.3.2 requires collocated monitors for both the FRM and FEM method monitors in the network; one of these must be an FRM monitor. The POC1 primary and POC2 collocated FRM monitors meet the FRM requirement. The FRM monitor at Sunrise Acres is collocated with a POC3 FEM monitor. The second collocated monitor required for this method is the POC4 monitor at the Palo Verde site. Table 2-9 is a summary of these results.

Table 2-9. Required Collocated Monitors

Method Code	# Primary Monitors	# Required Collocated Monitors	# Active Collocated Monitors
638	13	2	2
545	1	1	1

2.7 Coarse Particulate Matter ($PM_{10-2.5}$) Monitoring Design

Coarse particulate matter ($PM_{10-2.5}$) monitoring requirements are in 40 CFR 58, Appendix D, Section 4.8. The only requirement for $PM_{10-2.5}$ is included with other parameters required for NCore monitoring, as discussed in Section 2.9 of this Plan. DES measures $PM_{10-2.5}$ at the Jerome Mack site.

2.8 Lead Monitoring Design

Lead monitoring requirements are in Appendix D, Section 4.5. Monitoring criteria include

proximity to sources that are expected to contribute to higher concentrations than the applicable NAAQS criteria, and for certain airports as shown in Table D-3A of Appendix D. Neither criterion applies to Clark County; therefore, DES lead monitoring was discontinued in 2016. The National Emissions Inventory (NEI) modeled lead emissions in Clark County during 2023 as 3,154 lbs.

2.9 NCore Monitoring Design

NCore monitoring requirements are in Appendix D, Section 3(b). DES operates an FRM filter-based and FEM continuous $PM_{2.5}$ monitors, filter-based speciated $PM_{2.5}$, as part of the CSN, continuous $PM_{10-2.5}$ particle mass, O_3, SO_2, CO, NO_2, NO and NO_Y, wind speed, wind direction, relative humidity, and ambient temperature at the Jerome Mack site.

2.10 Photochemical Assessment Monitoring Station (PAMS) Design

PAMS monitoring requirements are in Appendix D, Section 5. The Jerome Mack site fulfills the PAMS site requirements, including Sections 5(b)(1) through 5(b)(13). Routine PAMS season operations have continued since beginning in 2022 and will continue through this reporting period.

3.0 2024 SITE TABLES

This section details the specific information about the sites and monitors. The AQS site ID is shown with the name. Photographs of the site station settings are included following the tables.

3.1 Virgin Valley

The Virgin Valley High School site is approximately 80 miles north of Las Vegas and monitors O_3, PM_{10} and $PM_{2.5}$. The site sits along a transport and exit corridor connecting jurisdictional boundaries between the City of Mesquite in Clark County Nevada and the Arizona border and serves as an indicator of population exposure to pollutants. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Virgin Valley
AQS ID	32-003-0024
GPS coordinates	+36.815897°, -114.050347°
Street Address	820 Valley View Dr., Mesquite, NV
County	Clark
Distance to roadways (meters)	Valley View Dr.: 39; Hillside Dr.: 124; Interstate 15: 402
Traffic count (AADT, year)[1]	Valley View Dr.: < 3,000 (est.); Hillside Dr.: 4,450; Interstate 15: 26,100 (2020)
Groundcover	Dirt and paved
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	Primary	Primary
Parameter code	44201	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure and regional transport	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 640X	Teledyne 640X

Method code	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting Agency	DES	DES	DES
Analytical Lab	N/A	N/A	N/A
Reporting Agency	DES	DES	DES
Spatial scale (e.g. micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	01/01/2021	01/01/2021	01/01/2021
Current sampling frequency	continuous	continuous	continuous
Required sampling frequency	continuous	continuous	continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m)	3.6	4.9	4.9
Distance from supporting structure (m)	1.2	2.4	2.4
Distance from obstructions on roof (m)	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	75m, same height	75m, same height	75m, same height
Distance from tree driplines (m)	11	11	11
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	N/A
Residence time for reactive gases (seconds)	4	N/A	N/A
Changes within the next 18 months? (Y/N)	N	N	N
Suitable comparison annual PM2.5? (Y/N)	N/A	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	N/A	N/A

Annual PE for gaseous	3/25/2026	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	3/11/2026, 11/25/2025	3/11/2026, 11/25/2025

Figure 3-1. Virgin Valley

3.2 Apex

The objective of the Apex site located approximately 25 miles northeast of Las Vegas in the Apex Valley is to monitor O_3 transport, operating as a seasonal site in April through September based on annual waivers from EPA Region 9. Since the site typically is downwind from Las Vegas, it serves as an indicator of pollutant transport flow out of the Las Vegas Valley. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Apex
AQS ID	32-003-0025
GPS coordinates	36.40493, -114.8799
Street Address	Apex Valley, Sec 7, T18S, R64E, Government lot sixteen (16)
County	Clark
Distance to roadways (meters)	Interstate 15: 230
Traffic count (AADT, year)[1]	Interstate 15: 24,900 (2021)
Groundcover	Native desert
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1
Type	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS
Site type(s)	Regional transport
Monitor type	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	Teledyne N/T400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	DES
Analytical Lab	N/A

Reporting Agency	DES
Spatial scale (e.g. micro, neighborhood)	Regional
Monitoring start date	06/01/2023
Current sampling frequency	continuous
Required sampling frequency	continuous
Sampling season	04/01-09/30
Probe height (m)	4
Distance from supporting structure (m)	1.2
Distance from obstructions on roof (m)	N/A
Distance from obstructions not on roof. (m)	N/A
Distance from tree driplines (m)	N/A
Distance to furnace or incinerator flue (m)	N/A
Distance between QA (m).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	4
Changes within the next 18 months? (Y/N)	N
Suitable comparison annual PM2.5? (Y/N)	N/A
Flow rate verification manual PM samplers	N/A
Flow rate verific. automated PM analyzers	N/A
One-point QC check for gaseous instruments	bi-weekly
Annual PE for gaseous	3/31/2026
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A

Figure 3-2. Apex

3.3 Paul Meyer

The objective of the Paul Meyer site in the Paul Meyer Park in southwest Las Vegas is to monitor O_3, PM_{10} and $PM_{2.5}$. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Paul Meyer
AQS ID	32-003-0043
GPS coordinates	+36.106389°, -115.253333°
Street Address	4525 New Forest Dr., Las Vegas, NV 89147
County	Clark
Distance to roadways (meters)	New Forest Dr.: 102; South Tenaya Way: 160
Traffic count (AADT, year)[1]	New Forest Dr.: 3,000 (est.); South Tenaya Way: 3,400 (2020)
Groundcover	Concrete, grass
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	Primary	Primary
Parameter code	44201	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 640X	Teledyne 640X
Method code	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting Agency	DES	Same	Same
Analytical Lab	N/A	N/A	N/A
Reporting Agency	DES	Same	Same

Spatial scale (e.g. micro, neighborhood)	Neighborhood	Same	Same
Monitoring start date	07/01/1998	01/01/1998	01/01/2017
Current sampling frequency	continuous	continuous	continuous
Required sampling frequency	continuous	continuous	continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m)	4.3	4.6	4.6
Distance from supporting structure (m)	1.6	1.9	1.9
Distance from obstructions on roof (m)	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	23	23	23
Distance from tree driplines (m)	11.9	10.8	10.8
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	N/A
Residence time for reactive gases (seconds)	4	N/A	N/A
Changes within the next 18 months? (Y/N)	N	N	N
Suitable comparison annual PM2.5? (Y/N)	N/A	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	N/A	N/A
Annual PE for gaseous	4/29/2026	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	3/31/2026, New instrument	3/31/2026, New instrument

Figure 3-3. Paul Meyer

3.4 Mountains Edge

The Mountains Edge site is in the Mountains Edge Park. It was established to fill a spatial gap in the southwest Las Vegas Valley. The site measures O_3, PM_{10} and $PM_{2.5}$. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Mountains Edge
AQS ID	32-003-0044
GPS coordinates	+36.004787°, -115.267671°
Street Address	8101 W Mountains Edge Pkwy, Las Vegas, NV
County	Clark
Distance to roadways (meters)	Mountains Edge Pkwy.: 46;
Traffic count (AADT, year)[1]	Mountains Edge Pkwy.: 5,200 (2020)
Groundcover	Asphalt, gravel and grass
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	Primary	Primary
Parameter code	44201	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 640X	Teledyne 640X
Method code	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting Agency	DES	Same	Same
Analytical Lab	N/A	N/A	N/A
Reporting Agency	DES	DES	DES
Spatial scale (e.g. micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood

Monitoring start date	10/01/2020	10/01/2020	10/01/2020
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m)	4.6	4.7	4.7
Distance from supporting structure (m)	1.9	2	2
Distance from obstructions on roof (m)	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	35m horiz. same height (park)	Same	Same
Distance from tree driplines (m)	13.5	13.5	13.5
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	N/A
Residence time for reactive gases (seconds)	4	N/A	N/A
Changes within the next 18 months? (Y/N)	N	N	N
Suitable comparison annual PM2.5? (Y/N)	N/A	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	N/A	N/A
Annual PE for gaseous	3/4/2026	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	4/9/2026, 10/7/2025	4/9/2026, 10/7/2025

Figure 3-4. Mountains Edge

3.5 Walter Johnson

The primary objective of the Walter Johnson site, located on the west side of Las Vegas, is to monitor O_3, PM_{10} and $PM_{2.5}$. Due to topography at this location, the summertime loft brings high O_3 and precursor levels toward this site from the east end of the Las Vegas Valley. Meteorological measurements at the Walter Johnson site include wind speed, wind direction, and ambient temperature.

Local site name	Walter Johnson
AQS ID	32-003-0071
GPS coordinates	+36.169760°, -115.263038°
Street Address	7701 Ducharme Ave., Las Vegas, NV 89145
County	Clark
Distance to roadways (meters)	Villa Monterey Drive: 13.0; Ducharme Ave. 46; S. Buffalo Drive: 270
Traffic count (AADT, year)[1]	Villa Monterey Drive: 3,000 (est.); Ducharme Ave: 5,000 (est.) S. Buffalo Drive: 28,600 (2020)
Groundcover	Asphalt and grass
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	Primary	Primary
Parameter code	44201	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 640X	Teledyne 640X
Method code	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting Agency	DES	Same	Same

Analytical Lab	N/A	N/A	N/A
Reporting Agency	DES	DES	DES
Spatial scale (e.g. micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	08/01/1998	01/01/2020	09/12/2017
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m)	4.3	5	5
Distance from supporting structure (m)	1.5	2.2	2.2
Distance from obstructions on roof (m)	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	15m hor., 5m vertical	15m hor., 5m vertical	15m hor., 5m vertical
Distance from tree driplines (m)	17.8	16.6	16.6
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	N/A
Residence time for reactive gases (seconds)	4	N/A	N/A
Changes within the next 18 months? (Y/N)	N	N	N
Suitable comparison annual PM2.5? (Y/N)	N/A	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	N/A	N/A
Annual PE for gaseous	3/26/2026	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	4/8/2026, 11/5/2025	4/8/2026, 11/5/2025

Figure 3-5. Walter Johnson

3.6 Palo Verde

The objective of the Palo Verde site, located at the Palo Verde High School on the far west side of Las Vegas, is to monitor O_3, PM_{10} and $PM_{2.5}$; it includes a collocated $PM_{2.5}$ monitor. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Palo Verde
AQS ID	32-003-0073
GPS coordinates	+36.173415°, -115.332728°
Street Address	333 Pavilion Center Dr., Las Vegas, NV 89144
County	Clark
Distance to roadways (meters)	Pavilion Center Dr.: 15
Traffic count (AADT, year)[1]	Pavilion Center Dr.: 7,000 (est.) (2020)
Groundcover	Asphalt and grass
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	$PM_{2.5}$, 3	$PM_{2.5}$, 4	PM_{10}, 1
Type	N/A	Primary	QA collocated	Primary
Parameter code	44201	88101	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure	Population exposure	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 640X	Teledyne 640X	Teledyne 640X
Method code	087	638	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM
Collecting Agency	DES	Same	Same	Same
Analytical Lab	N/A	N/A	N/A	N/A

Reporting Agency	DES	Same	Same	Same
Spatial scale (e.g. micro, neighborhood)	Neighborhood	Same	Same	Same
Monitoring start date	07/01/1998	01/01/2020	10/01/2021	09/12/2017
Current sampling frequency	Continuous	Same	Same	Same
Required sampling frequency	Continuous	Same	Same	Same
Sampling season	01/01-12/31	Same	Same	Same
Probe height (m)	3.7	4.7	4.7	4.7
Distance from supporting structure (m)	1.4	2.3	2.3	2.3
Distance from obstructions on roof (m)	N/A	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	20m horiz., 2m vertical (parking cover)	Same	Same	Same
Distance from tree driplines (m)	16	16	16	16
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	2.0	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	N/A	N/A	N/A
Residence time for reactive gases (seconds)	4	N/A	N/A	N/A
Changes within the next 18 months? (Y/N)	N	N	N	N
Suitable comparison annual PM2.5? (Y/N)	N/A	Y	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	monthly	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	N/A	N/A	N/A
Annual PE for gaseous	3/5/2026	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	4/15/2026, 11/7/2025	4/15/2026, 11/7/2025	4/15/2026, 11/7/2025

Figure 3-6. Palo Verde

3.7 Joe Neal

The objective of the Joe Neal site, located between the Joe Neal Middle School and the Esther Neal Park in northwest Las Vegas, is to monitor O_3 and nitrogen dioxide (NO_2) in an area of typically high ozone concentrations, and to support DES modeling efforts. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Joe Neal
AQS ID	32-003-0075
GPS coordinates	+36.270592°, -115.238282°
Street Address	6651 W. Azure Way, Las Vegas, NV 89130
County	Clark
Distance to roadways (meters)	Rebecca: 12.6; Tropical: 130
Traffic count (AADT, year)[1]	Rebecca: 3,000 (est.); Tropical 3,850; (2020)
Groundcover	Asphalt, dirt and grass
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	NO_2, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	N/A	Primary	Primary
Parameter code	44201	42602	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure	Population exposure, research	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 500U	Teledyne 640X	Teledyne 640X
Method code	087	212	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM
Collecting Agency	DES	DES	DES	DES
Analytical Lab	N/A	N/A	N/A	N/A

Reporting Agency	DES	DES	DES	DES
Spatial scale (e.g. micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	07/01/2000	10/01/2015		
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m)	3.9	3.9	4.9	4.9
Distance from supporting structure (m)	1.3	1.3	2.5	2.4
Distance from obstructions on roof (m)	N/A	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	110m horiz., 5m vertical	110m horiz., 5m vertical	110m horiz., 5m vertical	110m horiz., 5m vertical
Distance from tree driplines (m)	17	17	17	17
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	N/A	N/A
Residence time for reactive gases (sec)	4	4	N/A	N/A
Changes in next 18 months? (Y/N)	N	N	N	N
Suitable comparison annual PM2.5? (Y/N)	N/A	N/A	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	N/A	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	bi-weekly	N/A	N/A
Annual PE for gaseous	3/11/2026	12/12/2025	N/A	N/A

Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	N/A	4/29/2026, 10/15/2025	4/29/2026, 10/15/2025

Figure 3-7. Joe Neal

3.8 Green Valley

The Green Valley site in the Arroyo Grande Sports Complex in Henderson was established in 2015 to monitor O_3, PM_{10} and $PM_{2.5}$. Meteorological measurements at the Green Valley site include wind speed, wind direction, and ambient temperature.

Local site name	Green Valley
AQS ID	32-003-0298
GPS coordinates	+36.048705°, -115.052942°
Street Address	298 Arroyo Grande Blvd., Henderson, NV 89014
County	Clark
Distance to roadways (meters)	Santiago Drive: 18; Arroyo Grande Blvd: 198
Traffic count (AADT, year)[1]	Santiago Drive: 3,800 (est.); Arroyo Grande Blvd: 9,550 (2020)
Groundcover	Asphalt and grass
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	Primary	Primary
Parameter code	44201	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure, regional transport	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 640X	Teledyne 640X
Method code	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting Agency	DES	Same	Same
Analytical Lab	N/A	N/A	N/A
Reporting Agency	DES	DES	DES

Spatial scale (e.g. micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	07/01/2015	06/02/2015	06/02/2015
Current sampling frequency	Continuous	Same	Same
Required sampling frequency	Continuous	Same	Same
Sampling season	01/01-12/31	Same	Same
Probe height (m)	4.5	4.8	4.8
Distance from supporting structure (m)	1.7	2	2
Distance from obstructions on roof (m)	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	15m horizontal, 5m vertical (trees)	Same	Same
Distance from tree driplines (m)	13	10.5	10.5
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	N/A
Residence time for reactive gases (seconds)	4	N/A	N/A
Changes within the next 18 months? (Y/N)	N	N	N
Suitable comparison annual PM2.5? (Y/N)	N/A	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	N/A	N/A
Annual PE for gaseous	3/17/2026	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	4/6/2026, 10/29/2025	4/6/2026, 10/29/2025

Figure 3-8. Green Valley

3.9 Liberty High School

The Liberty High School site was established to fill a spatial gap in the central Las Vegas Valley. The site measures O_3, PM_{10} and $PM_{2.5}$. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Liberty High School
AQS ID	32-003-0299
GPS coordinates	+35.987908°, -115.148885°
Street Address	3700 Liberty Heights Ave. Henderson, NV
County	Clark
Distance to roadways (meters)	Liberty Heights Ave: 16; Chaparral Rd: 16; Bermuda Rd: 575
Traffic count (AADT, year)[1]	Liberty Heights Ave: 1,000 (est.); Chaparral Rd: 1,000 (est.); Bermuda Rd: 6,550 (2020)
Groundcover	Asphalt and grass
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	Primary	Primary
Parameter code	44201	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS, public information	NAAQS
Site type(s)	Pop. exposure, regional. transport	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 640X	Teledyne 640X
Method code	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting Agency	DES	Same	Same
Analytical Lab	N/A	N/A	N/A

Reporting Agency	DES	Same	Same
Spatial scale (e.g. micro, neighborhood)	Neighborhood	Same	Same
Monitoring start date	05/01/2021	05/01/2021	05/01/2021
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m)	4.3	4.8	4.8
Distance from supporting structure (m)	1.6	2.2	2.2
Distance from obstructions on roof (m)	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	38m horizontal, 3m vertical (house)	Same	Same
Distance from tree driplines (m)	41	41	41
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	N/A
Residence time for reactive gases (seconds)	4	N/A	N/A
Changes within the next 18 months? (Y/N)	N	N	N
Suitable comparison annual PM2.5? (Y/N)	N/A	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	N/A	N/A
Annual PE for gaseous	3/4/2026	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	4/20/2026, 11/3/2025	4/20/2026, 11/3/2025

Figure 3-9. Liberty HS

3.10 Jerome Mack

The Jerome Mack site in east Las Vegas is the Clark County NCore and PAMS site and monitors O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, solar radiation, meteorological parameters, and rainfall. The objective is to monitor the air quality and meteorological parameters required by these programs.

Local site name	Jerome Mack
AQS ID	32-003-0540
GPS coordinates	+36.141875°, -115.078742°
Street Address	4250 Karen Avenue, Las Vegas, NV 89121
County	Clark
Distance to roadways (meters)	Sahara: 244; Lamb: 351; Karen: 130
Traffic count (AADT, year)[1]	Sahara: 27,700; Lamb: 26,000; Karen: 3,000 (est.) (2020)
Groundcover	Asphalt and grass
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	CO, 1 trace	NO_2, 1 True	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	N/A	N/A	Primary	Primary
Parameter code	42101	42602	44201	88101	81102
Basic monitoring objective(s) NAAQS: comparison	NAAQS, research	NAAQS, research	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure
Monitor type	SLAMS/trace	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NCore	NCore/PAMS	NCore/PAMS	NCore	NCore
Instrument (T: Teledyne)	T300U	T500U	T: N/T 400	T640X	T640X
Method code	593	212	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FEM
Collecting Agency	DES	DES	DES	DES	DES
Analytical Lab	N/A	N/A	N/A	N/A	N/A

Reporting Agency	DES	DES	DES	DES	DES
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	01/01/2011	05/01/2017	01/01/2011		
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m	3.4	3.4	3.4	5.2	5.2
Supporting structure (m)	1.1	1.1	1.1	2	2
Obstructions on roof. (m)	N/A	N/A	N/A	N/A	N/A
Obstructions not on roof. (m)					
Distance tree driplines (m)	15	15	15	16	16
Furnace or incinerator flue (m)	N/A	N/A	N/A	N/A	N/A
Distance QA colloc. (m).	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow	360	360	360	360	360
Probe material	Teflon	Teflon	Teflon	N/A	N/A
Residence time (sec)	4	4	4	N/A	N/A
Changes 18 months? (Y/N)	N	N	N	N	N
Comparison annual $PM_{2.5}$?)	N/A	N/A	N/A	Y	N/A
Flow rate verif. manual PM	N/A	N/A	N/A	N/A	N/A
Flow rate verif. automated PM	N/A	N/A	N/A	monthly	N/A
One-point QC check gas inst.	bi-weekly	bi-weekly	bi-weekly	N/A	N/A
Annual PE for gaseous	9/18/2025	9/17/2025	5/21/2025	N/A	N/A

Flow rate audits PM	N/A	N/A	N/A	4/7/2026, 10/30/2025	4/7/2026, 10/30/2025
Pollutant, POC	NO, 1	NOy, 1	SO_2, 1	PMcoarse, 3	$PM_{2.5}$ 1 and 2
Type	N/A	N/A	N/A	Primary	Primary (1) QA colloc. (2)
Parameter code	42101	42602	44201	86101	88101
Basic monitoring objective(s) NAAQS: comparison	Research	Research	NAAQS	Research	NAAQS, QA
Site type(s)	Population exposure	Population exposure	Population exposure	Population exposure	QA
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NCore/PAMS	NCore/PAMS	NCore	NCore	NCore
Instrument (T: Teledyne)	T: 200	T: 200	T: 100	T: 640X	MetOne ESEQ
Method code	699	699	600	640	221
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FRM
Collecting Agency	DES	DES	DES	DES	DES
Analytical Lab	N/A	N/A	N/A	N/A	DES
Reporting Agency	DES	DES	DES	DES	DES
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	01/01/2011	01/01/2011	01/01/2011		
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	1:3
Required sampling frequency	Continuous	Continuous	Continuous	Continuous	1:3
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m	7	7	3.4	5.2	3.1
Supporting structure (m)	1	1	1.1	2	3.1
Obstructions on roof. (m)	N/A	N/A	N/A	N/A	N/A

Obstructions not on roof. (m)					
Distance tree driplines (m)	15	15	15	16	16
Furnace or incinerator flue (m)	N/A	N/A	N/A	N/A	N/A
Distance QA colloc. (m).	N/A	N/A	N/A	N/A	3.6
Unrestricted airflow	360	360	360	360	360
Probe material	Teflon	Teflon	Teflon	N/A	N/A
Residence time (sec)	4	4	4	N/A	N/A
Changes 18 months? (Y/N)	N	N	N	N	N
Comparison annual $PM_{2.5}$?)	N/A	N/A	N/A	Y	N/A
Flow rate verif. manual PM	N/A	N/A	N/A	N/A	Monthly
Flow rate verif. automated PM	N/A	N/A	N/A	Monthly	N/A
One-point QC check gas inst.	bi-weekly	bi-weekly	bi-weekly	N/A	N/A
Annual PE for gaseous	9/24/2025	9/24/2025	9/23/2025	N/A	N/A
Flow rate audits PM	N/A	N/A	N/A	10/30/2025, 2/5/2026	10/30/2025, 2/5/2026
Pollutant, POC	$PM_{2.5}$ 5	$PM_{2.5}$ 5			
Type	Speciated	Speciated			
Parameter code	88502	88355			
Basic monitoring objective(s) NAAQS: comparison	Research	Research			
Site type(s)	Population exposure	Population exposure			
Monitor type	SLAMS	SLAMS			
Network affiliation(s)	NCore	NCore			
Instrument (T: Teledyne)	SSASS	URG			

Method code	811, 812	838			
FRM/FEM/ARM/other	other	other			
Collecting Agency	DES	DES			
Analytical Lab	RTI	RTI			
Reporting Agency	DART/DES	DART/DES			
Spatial scale	Neighborhood	Neighborhood			
Monitoring start date	05/01/2010	05/01/2010			
Current sampling frequency	1:3	1:3			
Required sampling frequency	1:3	1:3			
Sampling season	01/01-12/31	01/01-12/31			
Probe height (m	7	7			
Supporting structure (m)	1.1	1.1			
Obstructions on roof. (m)	N/A	N/A			
Obstructions not on roof. (m)					
Distance tree driplines (m)	15	15			
Furnace or incinerator flue (m)	N/A	N/A			
Distance QA colloc. (m).	N/A	N/A			
Unrestricted airflow	360	360			
Probe material	N/A	N/A			
Residence time (sec)	N/A	N/A			
Changes 18 months? (Y/N)	N	N			
Comparison annual $PM_{2.5}$?)	N	N			
Flow rate verif. manual PM	Monthly	Monthly			
Flow rate verif. automated PM	N/A	N/A			

One-point QC check gas inst.	N/A	N/A			
Annual PE for gaseous	N/A	N/A			
Flow rate audits PM	10/30/2025, 2/5/2026	10/30/2025, 2/5/2026			

Figure 3-10. Jerome Mack

3.11 Sunrise Acres

The objective of the Sunrise Acres site is to monitor CO, NO_2, PM_{10} and $PM_{2.5}$. DES conducts area wide NO_2 monitoring, which meets RA 40 requirements outlined in 40 CFR 58, App. D, Sec. 4.3.4 at this site. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Sunrise Acres
AQS ID	32-003-0561
GPS coordinates	+36.163962°, -115.113930°
Street Address	2501 Sunrise Ave., Las Vegas, NV 89101
County	Clark
Distance to roadways (meters)	Sunrise Ave: 128; Eastern Ave: 160
Traffic count (AADT, year)[1]	Sunrise Ave: 4,000 (est.); Eastern Ave: 28,500 (2020)
Groundcover	Paved
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	CO, 1	NO_2, 1 True	$PM_{2.5}$ 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	N/A	QA colloc.	Primary	Primary
Parameter code	42101	42602	88101	88101	81102
Basic monitoring objective(s) NAAQS: comparison	NAAQS	NAAQS	NAAQS, QA	NAAQS	NAAQS
Site type(s)	Population exposure	Pop. Expos., highest conc.	QA	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A
Instrument (T: Teledyne)	T300U	T500U	MetOne ESEQ	T640X	T640X
Method code	093	212	221	638	639
FRM/FEM/ARM/other	FEM	FEM	FRM	FEM	FEM
Collecting Agency	DES	DES	DES	DES	DES
Analytical Lab	N/A	N/A	DES	N/A	N/A

Reporting Agency	DES	DES	DES	DES	DES
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	10/01/1996	01/01/2013			
Current sampling frequency	Continuous	Continuous	1:3	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	1:3	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m	3.6	3.6	3.1	4.7	4.7
Supporting structure (m)	1.1	1.1	3.1	2	2
Obstructions on roof. (m)	N/A	N/A	N/A	N/A	N/A
Obstructions not on roof. (m)					
Distance tree driplines (m)	N/A	N/A	N/A	N/A	N/A
Furnace or incinerator flue (m)	N/A	N/A	N/A	N/A	N/A
Distance QA colloc. (m).	N/A	N/A	3.6	N/A	N/A
Unrestricted airflow	360	360	360	360	360
Probe material	Teflon	Teflon	N/A	N/A	N/A
Residence time (sec)	4	4	N/A	N/A	N/A
Changes 18 months? (Y/N)	N	N	N	N	N
Comparison annual $PM_{2.5}$?)	N/A	N/A	N/A	Y	N/A
Flow rate verif. manual PM	N/A	N/A	Monthly	N/A	N/A
Flow rate verif. automated PM	N/A	N/A	N/A	monthly	N/A
One-point QC check gas inst.	bi-weekly	bi-weekly	N/A	N/A	N/A
Annual PE for gaseous	11/08/2024	10/11/2024	N/A	N/A	N/A

Flow rate audits PM	N/A	N/A	2/26/2026, 11/5/2025	2/27/2026, 10/22/2025	2/27/2026, 10/22/2025

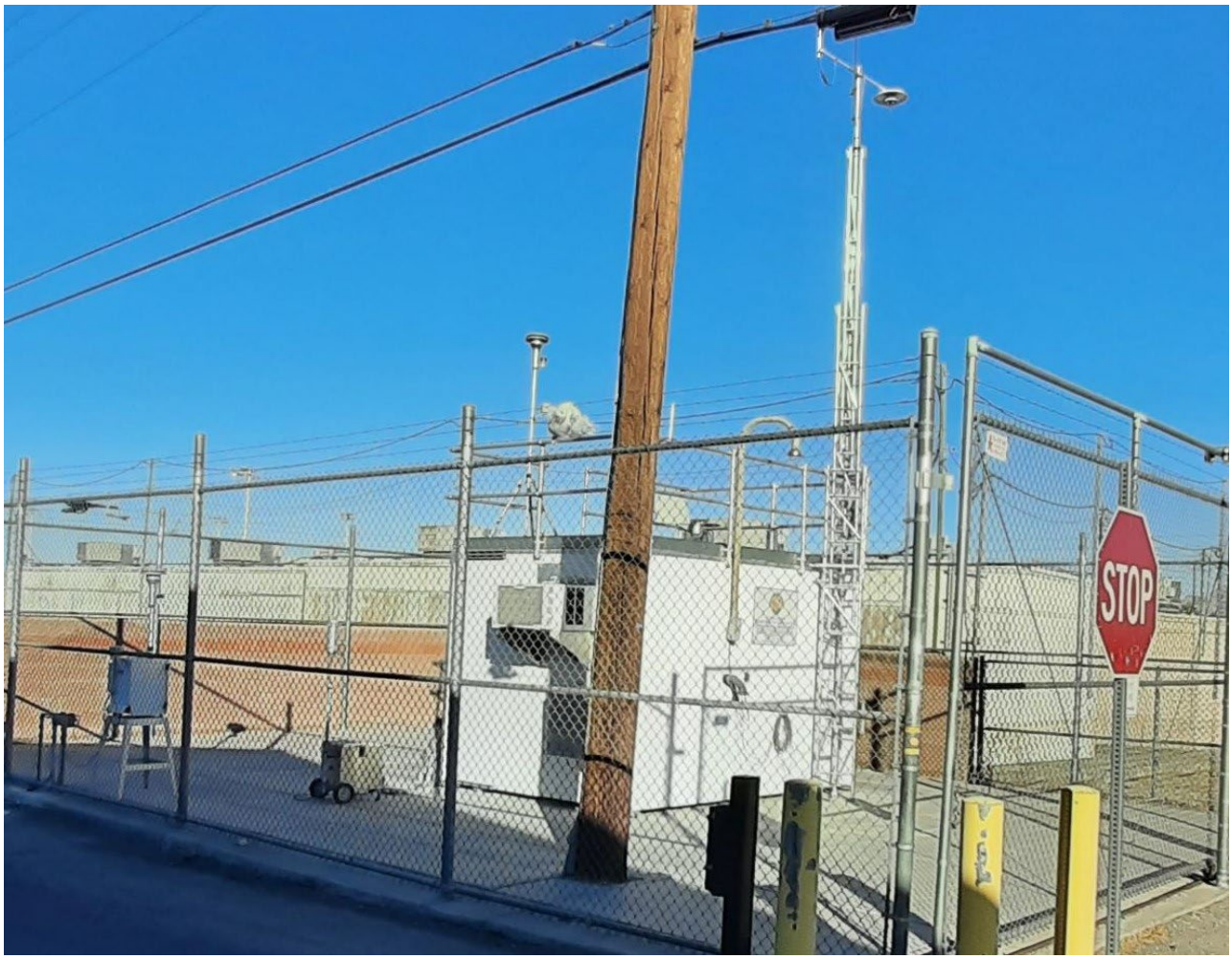

Figure 3-11. Sunrise Acres

3.12 Garrett Junior High School

The Garrett Junior High School is representative of Boulder City on the neighborhood scale. The site measures O_3, PM_{10} and $PM_{2.5}$. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Garrett Junior High School
AQS ID	32-003-0602
GPS coordinates	+35.969848°, -114.835007°
Street Address	1200 Ave G, Boulder City, NV
County	Clark
Distance to roadways (meters)	Adams Blvd: 133 Avenue G: 305
Traffic count (AADT, year)[1]	Adams Blvd: 4,250; Avenue G: 1,550: (2020)
Groundcover	Grass, unpaved, paved
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	Primary	Primary
Parameter code	44201	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 640X	Teledyne 640X
Method code	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting Agency	DES	Same	Same
Analytical Lab	N/A	N/A	N/A
Reporting Agency	DES	DES	DES
Spatial scale (e.g. micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood

Monitoring start date	04/01/2021	04/01/2021	04/01/2021
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m)	4.6	4.7	4.7
Distance from supporting structure (m)	1.9	2	2
Distance from obstructions on roof (m)	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	38m horizontal, 10m vertical	38m horizontal, 10m vertical	38m horizontal, 10m vertical
Distance from tree driplines (m)	50	50	50
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	N/A
Residence time for reactive gases (seconds)	4	N/A	N/A
Changes within the next 18 months? (Y/N)	N	N	N
Suitable comparison annual $PM_{2.5}$? (Y/N)	N/A	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	N/A	N/A
Annual PE for gaseous	3/17/2026	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	3/17/2026, 10/29/2025	3/17/2026, 10/29/2025

Figure 3-12. Garrett Jr HS

3.13 Jean

The Jean site is approximately 30 miles south of Las Vegas. It is an upwind background site for the Las Vegas valley in a rural location, with a primary objective of monitoring ozone transport from Southern California. The area around the site has little vehicle traffic, and the surface is well stabilized. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Jean
AQS ID	32-003-1019
GPS coordinates	+35.785665°, -115.357087°
Street Address	1965 State Route 161, Jean, NV 89019
County	Clark
Distance to roadways (meters)	State Route 161: 1,040
Traffic count (AADT, year)[1]	State Route 161: 1,800 (2020)
Groundcover	Gravel, native desert
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	Primary	Primary
Parameter code	44201	88101	81102
Basic monitoring objective(s)	NAAQS	NAAQS	NAAQS
Site type(s)	Regional transport	Regional transport	Regional transport
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne 640X	Teledyne 640X
Method code	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting Agency	DES	Same	Same
Analytical Lab	N/A	N/A	N/A
Reporting Agency	DES	DES	DES

Spatial scale (e.g. micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	08/01/1998		
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m)	4	4.7	4.7
Distance from supporting structure (m)	1.9	2	2
Distance from obstructions on roof (m)	N/A	N/A	N/A
Distance from obstructions not on roof. (m)	10m hor, 3m ver	Same	Same
Distance from tree driplines (m)	N/A	N/A	N/A
Distance to furnace or incinerator flue (m)	N/A	N/A	N/A
Distance between QA (m).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	N/A	N/A
Residence time for reactive gases (seconds)	4	N/A	N/A
Changes within the next 18 months? (Y/N)	N	N	N
Suitable comparison annual $PM_{2.5}$? (Y/N)	N/A	Y	N/A
Flow rate verification manual PM samplers	N/A	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	monthly	N/A
One-point QC check for gaseous instruments	bi-weekly	N/A	N/A
Annual PE for gaseous	3/24/2026	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	2/25/2026, 10/29/2025	2/25/2026, 10/29/2025

Figure 3-13. Jean

3.14 Rancho & Teddy

Rancho &Teddy is the "near-road" Site 1, located in central Las Vegas at the intersection of South Rancho Drive and Teddy Drive, and monitors CO, NO_2, and $PM_{2.5}$. The site is adjacent to Interstate 15, just south of Sahara Avenue. Meteorological measurements at this site include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Rancho & Teddy
AQS ID	32-003-1501
GPS coordinates	+36.139707°, -115.175654°
Street Address	2755 S. Rancho Drive, Las Vegas, NV
County	Clark
Distance to roadways (meters)	Interstate 15: 13; South Rancho Drive: 8; Teddy Drive: 31
Traffic count (AADT, year)[1]	Interstate 15: 368,167 (2021); South Rancho Drive: 4,000; Teddy Drive: 4,000 (est.) (2020)
Groundcover	Paved and stone
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	CO, 1	NO_2, 1 True	$PM_{2.5}$, 3
Type	N/A	N/A	Primary
Parameter code	42101	42602	88101
Basic monitoring objective(s) NAAQS: comparison	NAAQS	NAAQS	NAAQS
Site type(s)	Highest concentration	Highest concentration	Highest concentration
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation(s)	Near road	Near road	Near road
Instrument (T: Teledyne)	T300U	T500U	T640X
Method code	093	212	638
FRM/FEM/ARM/other	FEM	FEM	FEM
Collecting Agency	DES	DES	DES
Analytical Lab	N/A	N/A	N/A

Reporting Agency	DES	DES	DES
Spatial scale	Microscale	Microscale	Microscale
Monitoring start date			
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m	4.6	4.6	4.9
Supporting structure (m)	1.8	1.8	2.1
Obstructions on roof. (m)	N/A	N/A	N/A
Obstructions not on roof. (m)			
Distance tree driplines (m)	N/A	N/A	N/A
Furnace or incinerator flue (m)	N/A	N/A	N/A
Distance QA colloc. (m).	N/A	N/A	N/A
Unrestricted airflow	360	360	360
Probe material	Teflon	Teflon	N/A
Residence time (sec)	4	4	N/A
Changes 18 months? (Y/N)	N	N	N
Comparison annual $PM_{2.5}$?)	N/A	N/A	Y
Flow rate verif. manual PM	N/A	N/A	N/A
Flow rate verif. automated PM	N/A	N/A	monthly
One-point QC check gas inst.	bi-weekly	bi-weekly	N/A
Annual PE for gaseous	10/1/2025	9/5/2025	N/A
Flow rate audits PM	N/A	N/A	2/12/2026, 10/8/2025

Figure 3-14. Rancho-Teddy

3.15 Casino Center

Casino Center is the "near-road" Site 2, located in central Las Vegas near the intersection of Casino Center and Bonanza Drive, at the main Las Vegas Fire Department station. The site adjacent to U.S. 93/95 (Interstate 11), immediately north of downtown Las Vegas. Meteorological measurements at this site include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Total carbon and carbonaceous aerosols measurements were added during 2024 to support $PM_{2.5}$ characterization studies and Exceptional Event demonstrations. The CASS measurement system consists of a paired a Magee TCA08 analyzer and a Magee AE33 aethalometer. The primary focus is on black carbon, organic carbon, elemental carbon, and total carbon.

Local site name	Casino Center
AQS ID	32-003-1502
GPS coordinates	+36.174365°, -115.139770°
Street Address	500 N. Casino Center Boulevard, Las Vegas, NV
County	Clark
Distance to roadways (meters)	U.S. 93/95: 16; N. Casino Center Boulevard 120; Bonanza Road:180
Traffic count (AADT, year)[1]	U.S. 93/95: 154,000; N. Casino Center Boulevard 4,300; Bonanza Road: 14,000 (2020)
Groundcover	Paved and stone
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	NO_2, 1 True	Carbonaceous aerosol	Total carbon
Type	N/A	N/A	N/A
Parameter code	42602	88313 (BC)	tbd
Basic monitoring objective(s) NAAQS: comparison	NAAQS		
Site type(s)	Highest concentration		
Monitor type	SLAMS		
Network affiliation(s)	Near road		
Instrument (T: Teledyne)	T500U	Magee AE33	Magee TCA08

Method code	212		
FRM/FEM/ARM/other	FEM		
Collecting Agency	DES	DES	DES
Analytical Lab	N/A	N/A	N/A
Reporting Agency	DES	DES	DES
Spatial scale	Microscale	Microscale	Microscale
Monitoring start date	07/01/2016		
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	N/A	N/A
Sampling season	01/01-12/31		
Probe height (m	4.9		
Supporting structure (m)	2.2		
Obstructions on roof. (m)	N/A		
Obstructions not on roof. (m)			
Distance tree driplines (m)	N/A		
Furnace or incinerator flue (m)	N/A		
Distance QA colloc. (m).	N/A		
Unrestricted airflow	360		
Probe material	Teflon		
Residence time (sec)	4		
Changes 18 months? (Y/N)	N		
Comparison annual $PM_{2.5}$?)	N/A		
Flow rate verif. manual PM	N/A		
Flow rate verif. automated PM	N/A		
One-point QC check gas inst.	bi-weekly		
Annual PE for gaseous	9/9/2025		
Flow rate audits PM	N/A		

Figure 3-15. Casino Center

3.16 Walnut Community Center

The Walnut Community Center site in northeastern Las Vegas Valley monitors the CO, NO_2, O_3, $PM_{2.5}$, and PM_{10}. Meteorological measurements at this site include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Walnut Community Center
AQS ID	32-003-2003
GPS coordinates	+36.214465°, -115.091437°
Street Address	3075 N Walnut Rd, Las Vegas, NV 89115
County	Clark
Distance to roadways (meters)	Cecile Ave. 21, W. Walnut Rd.
Traffic count (AADT, year)[1]	Cecile Ave. 1,000 (est.), W. Walnut Rd.: 4,000
Groundcover	Asphalt and grass
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	CO, 1 trace	NO_2, 1 True	Ozone, 1	$PM_{2.5}$, 3	PM_{10}, 1
Type	N/A	N/A	N/A	Primary	Primary
Parameter code	42101	42602	44201	88101	81102
Basic monitoring objective(s) NAAQS: comparison	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS
Site type(s)	Population exposure	Population exposure	Population exposure	Population exposure	Population exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A
Instrument (T: Teledyne)	T300U	T500U	T: N/T 400	T640X	T640X
Method code	093	212	087	638	639
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FEM
Collecting Agency	DES	DES	DES	DES	DES
Analytical Lab	N/A	N/A	N/A	N/A	N/A

Reporting Agency	DES	DES	DES	DES	DES
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	06/01/2021	06/01/2021	06/01/2021	06/01/2021	06/01/2021
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (m	4.5	4.5	4.5	4.9	4.9
Supporting structure (m)	1.8	1.8	1.8	2.2	2.2
Obstructions on roof. (m)	N/A	N/A	N/A	N/A	N/A
Obstructions not on roof. (m)	11 hor, 2 vert	11 hor, 2 vert	11 hor, 2 vert	11 hor, 2 vert	11 hor, 2 vert
Distance tree driplines (m)	11	11	11	11	11
Furnace or incinerator flue (m)	N/A	N/A	N/A	N/A	N/A
Distance QA colloc. (m).	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow	360	360	360	360	360
Probe material	Teflon	Teflon	Teflon	N/A	N/A
Residence time (sec)	4	4	4	N/A	N/A
Changes 18 months? (Y/N)	N	N	N	N	N
Comparison annual $PM_{2.5}$?)	N/A	N/A	N/A	Y	N/A
Flow rate verif. manual PM	N/A	N/A	N/A	N/A	N/A
Flow rate verif. automated PM	N/A	N/A	N/A	monthly	N/A
One-point QC check gas inst.	bi-weekly	bi-weekly	bi-weekly	N/A	N/A
Annual PE for gaseous	10/1/2025	9/11/2025	3/10/2026	N/A	N/A

Flow rate audits PM	N/A	N/A	N/A	2/26/2026, 10/22/2025	2/26/2026, 10/22/2025

Figure 3-16. Walnut Community Center

3.17 Indian Springs

The objective of the Indian Springs site located 45 miles northwest of Las Vegas is to monitor O_3 transport, which could be as an upwind or a downwind site relative to the Las Vegas valley. It operates as a seasonal site in April through September based on annual waivers from EPA Region 9. Meteorological measurements include wind speed, wind direction, and ambient temperature, all at 10-meters above ground level.

Local site name	Indian Springs
AQS ID	32-003-07772
GPS coordinates	+36.569333°, -115.676651°
Street Address	668 Gretta Ln., Indian Springs, NV
County	Clark
Distance to roadways (meters)	Gretta Ln: 97
Traffic count (AADT, year)[1]	< 1,000 (2020)
Groundcover	Native desert
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1
Type	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS
Site type(s)	Regional transport
Monitor type	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	Teledyne N/T400
Method code	087
FRM/FEM/ARM/other	FEM
Collecting Agency	DES
Analytical Lab	N/A
Reporting Agency	DES

Spatial scale (e.g. micro, neighborhood)	Regional
Monitoring start date	05/11/2010
Current sampling frequency	continuous
Required sampling frequency	continuous
Sampling season	04/01-09/30
Probe height (meters)	5
Distance from supporting structure (meters)	1.9
Distance from obstructions on roof (meters)	
Distance from obstructions not on roof. (meters)	
Distance from tree driplines (meters)	
Distance to furnace or incinerator flue (m)	N/A
Distance between QA (meters).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	4
Changes within the next 18 months? (Y/N)	N
Suitable comparison annual PM2.5? (Y/N)	N/A
Flow rate verification manual PM samplers	N/A
Flow rate verific. automated PM analyzers	N/A
One-point QC check for gaseous instruments	bi-weekly
Annual PE for gaseous	4/28/2026
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A

Figure 3-17. Indian Springs

3.18 Spring Mountain Youth Camp

The Spring Mountain Youth Camp (SMYC) site is a non-regulatory Special Purpose Monitoring (SPM) Site on the east side of the Spring Mountains; 8,400 feet above mean sea level operated solely for research purposes during the April through September ozone season. The site is 42 kilometers (26 miles) northwest of central Las Vegas. The primary pollutant monitored is ozone. Trace-level CO is also monitored during some seasons to assist with the identification of stratospheric intrusions and pollutant mixing heights, and to assist with model validation.

Local site name	Spring Mountain Youth Camp
AQS ID	32-003-7771
GPS coordinates	+ 36.318889 °, - 115.585278 °
Street Address	2400 Angel Peak Place
County	Clark
Distance to roadways (meters)	30
Traffic count (AADT, year)[1]	< 500 (est.) (2023)
Groundcover	Gravel, concrete
Representative statistical area name	Las Vegas-Henderson-Paradise, NV MSA

Pollutant, POC	Ozone, 1	CO, 1 trace
Type	N/A	N/A
Parameter code	44201	42101
Basic monitoring objective(s)	Research	Research
Site type(s)	Regional transport	Regional transport
Monitor type	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	Teledyne N/T400	Teledyne N/T300
Method code	087	593
FRM/FEM/ARM/other	FEM	FEM
Collecting Agency	DES	DES
Analytical Lab	N/A	N/A

Reporting Agency	DES	DES
Spatial scale (e.g. micro, neighborhood)	Regional	Regional
Monitoring start date	05/10/2010	
Current sampling frequency	continuous	continuous
Required sampling frequency	continuous	continuous
Sampling season	04/01-09/30	04/01-09/30
Probe height (meters)	6	6
Distance from supporting structure (meters)	2	2
Distance from obstructions on roof (meters)		
Distance from obstructions not on roof. (meters)		
Distance from tree driplines (meters)		
Distance to furnace or incinerator flue (m)	N/A	
Distance between QA (meters).	N/A	
Unrestricted airflow (degrees)		
Probe material for reactive gases	Teflon	Teflon
Residence time for reactive gases (seconds)	7.4	3.5
Changes within the next 18 months? (Y/N)	N	N
Suitable comparison annual PM2.5? (Y/N)	N/A	N/A
Flow rate verification manual PM samplers	N/A	N/A
Flow rate verific. automated PM analyzers	N/A	N/A
One-point QC check for gaseous instruments	bi-weekly	bi-weekly
Annual PE for gaseous	N/A	N/A
Date of two semi-annual flow rate audits conducted past calendar year PM monitors	N/A	N/A

Figure 3-18. Spring Mountain Youth Camp

4.0 MAPS OF CRITERIA POLLUTANT MONITORING STATIONS IN 2025

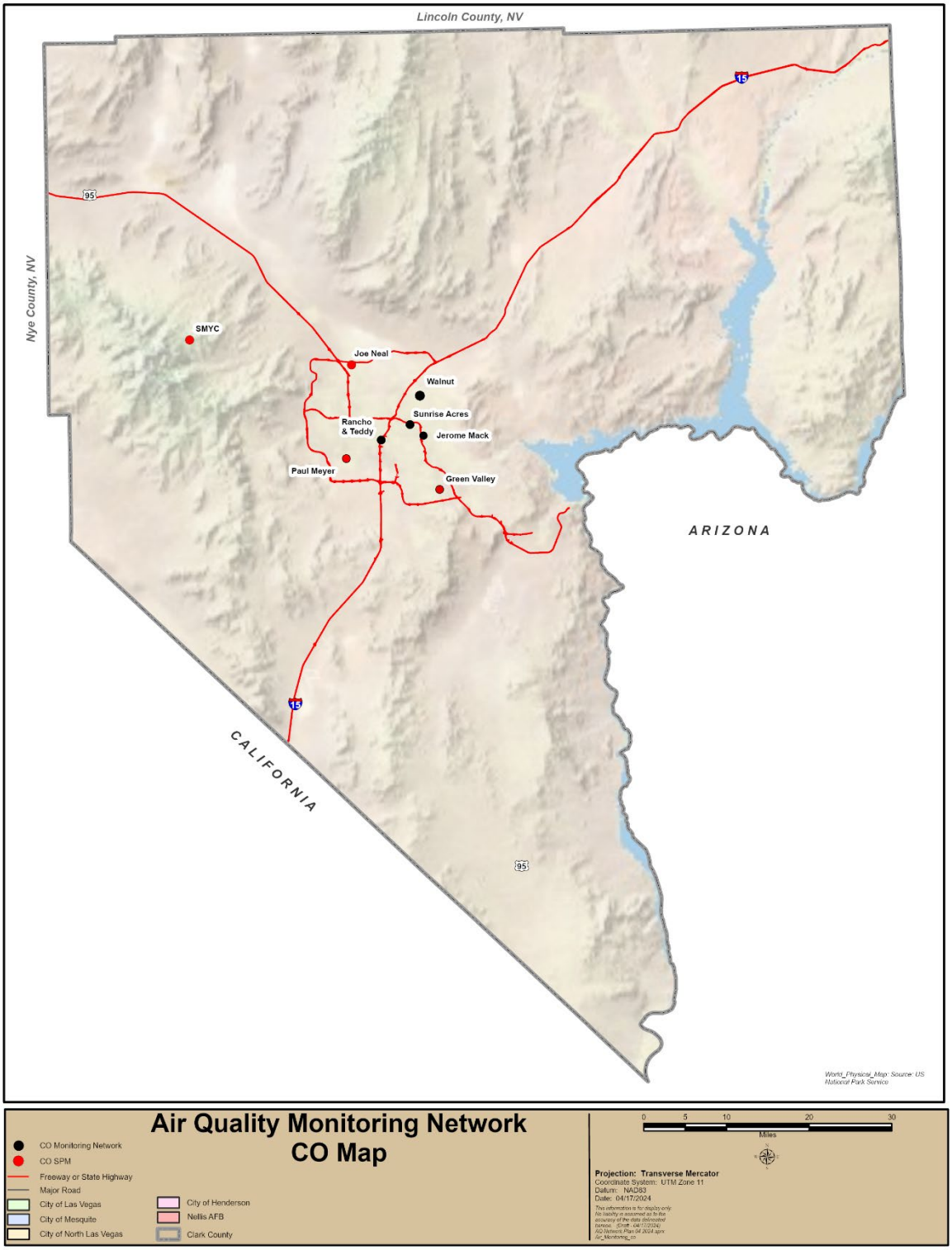

Figure 4-1: CO Monitors

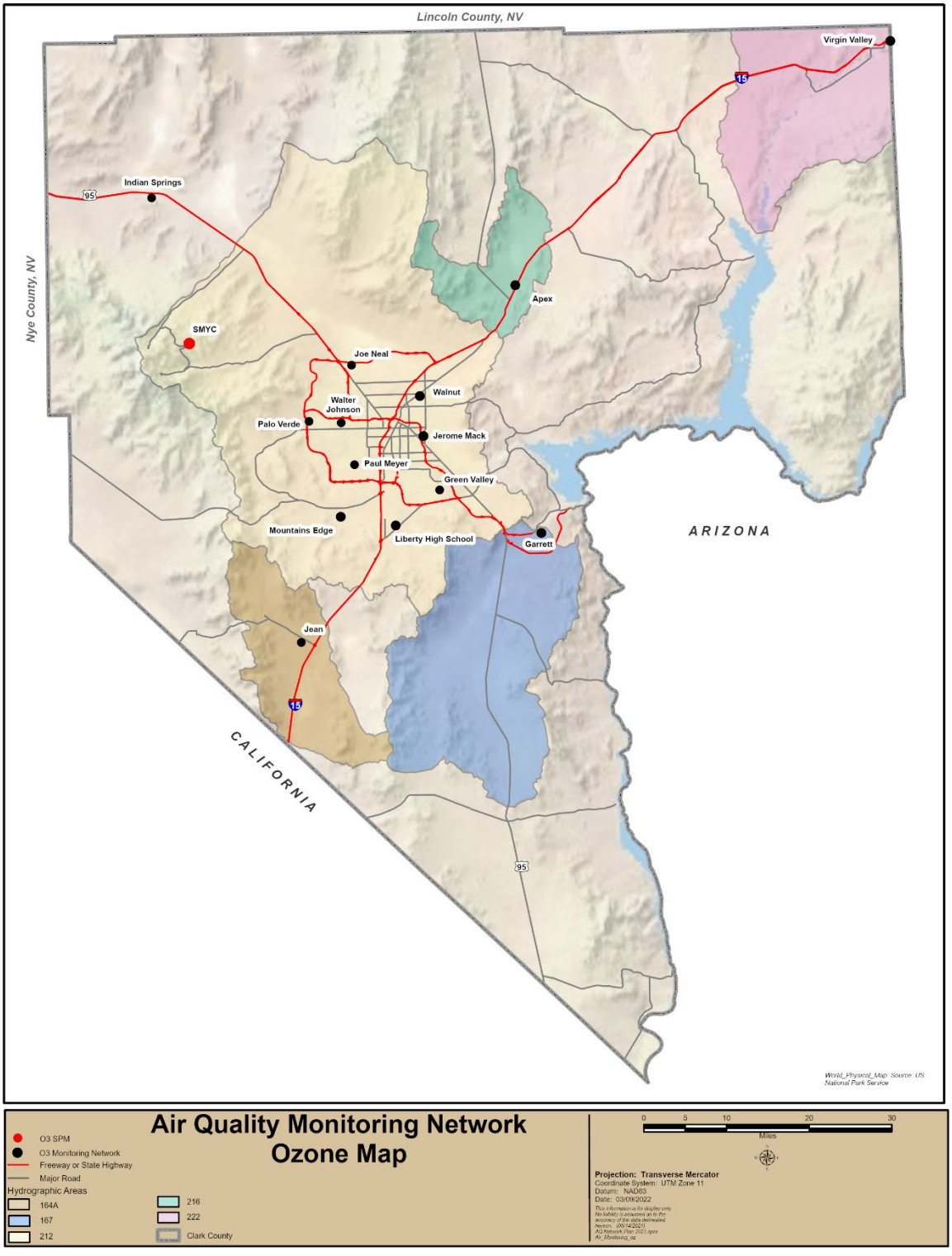

Figure 4-2: O_3 Monitors

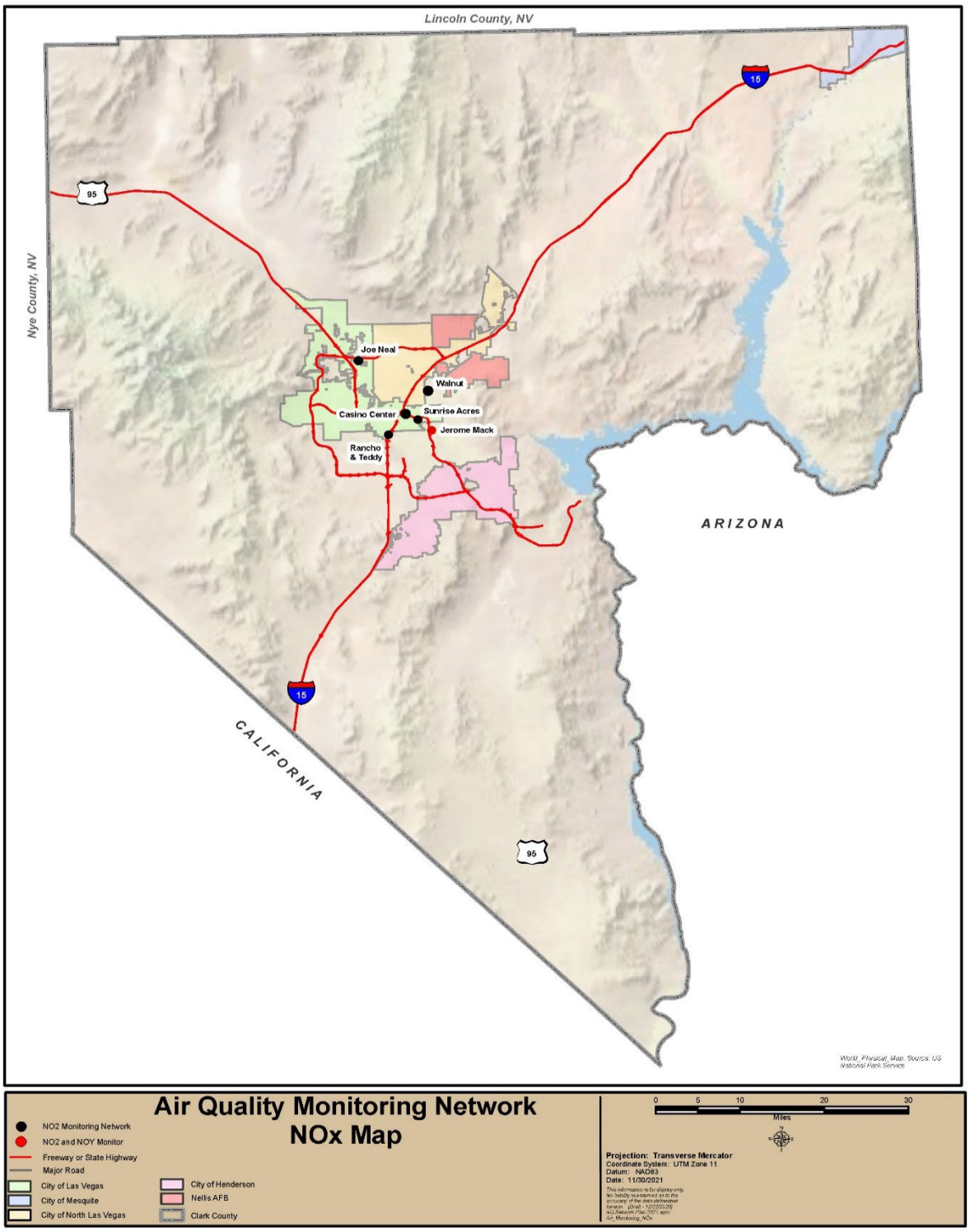

Figure 4-3: NO_2 Monitors

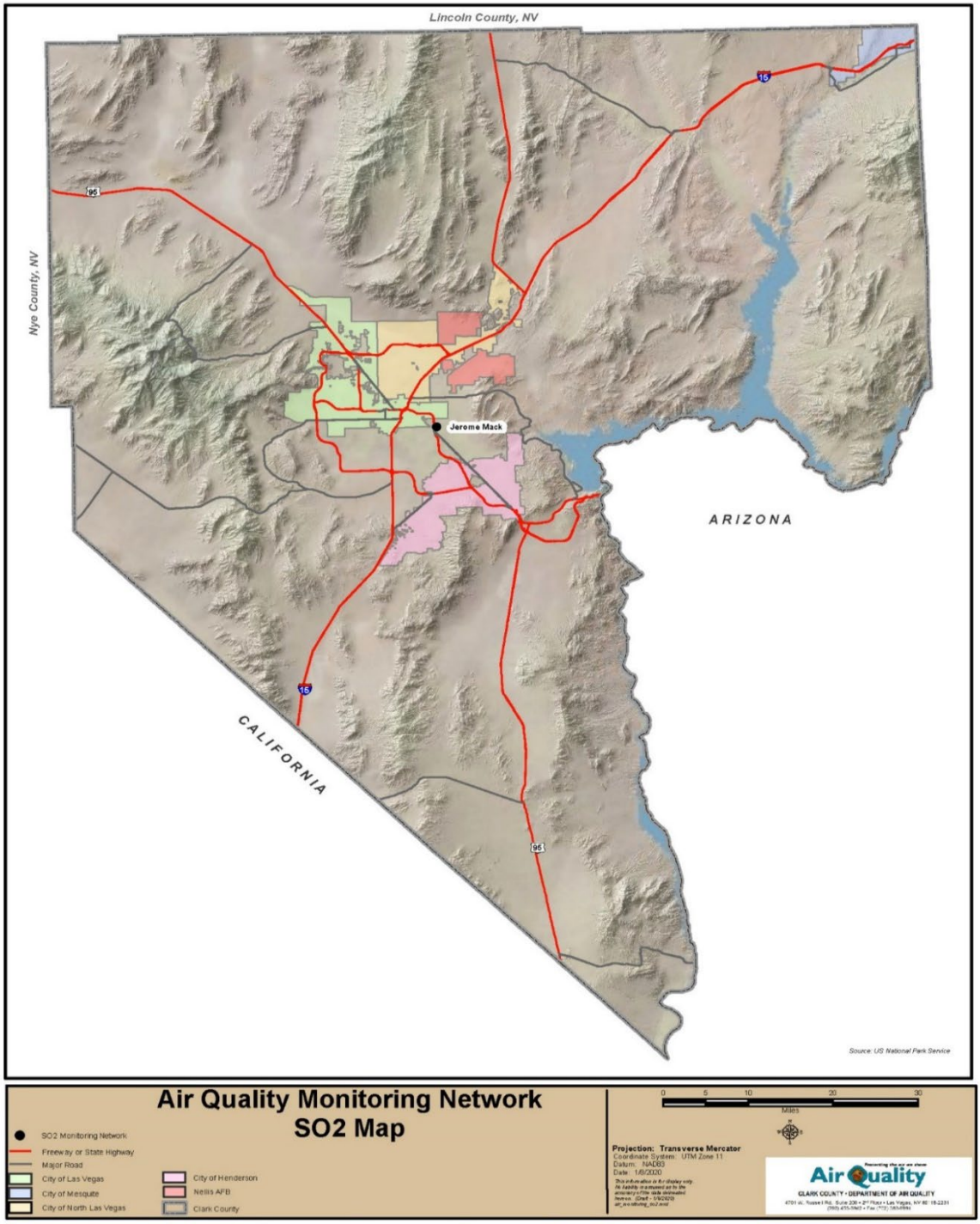

Figure 4-4: SO_2 Monitor

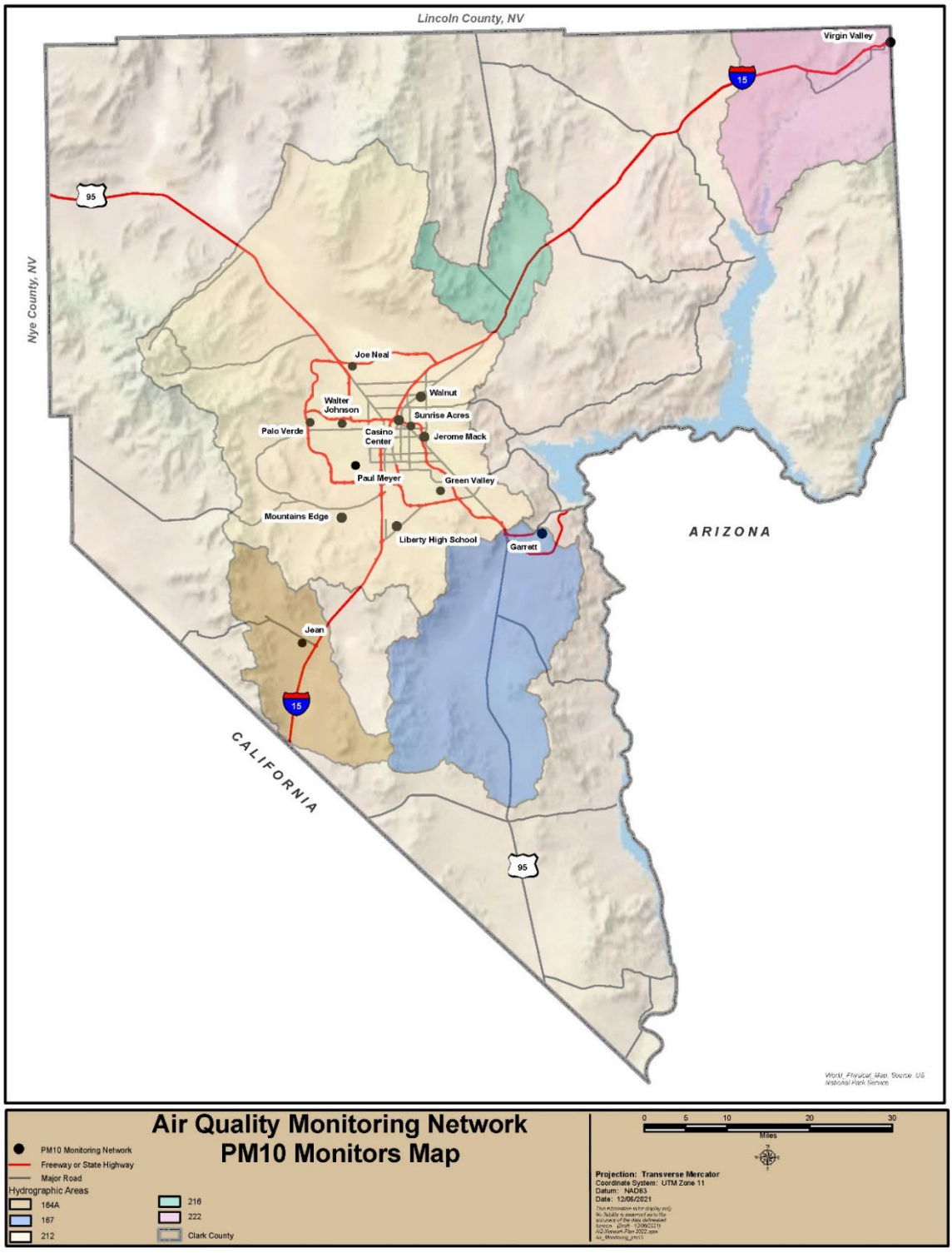

Figure 4-5: Continuous PM_{10} Monitors

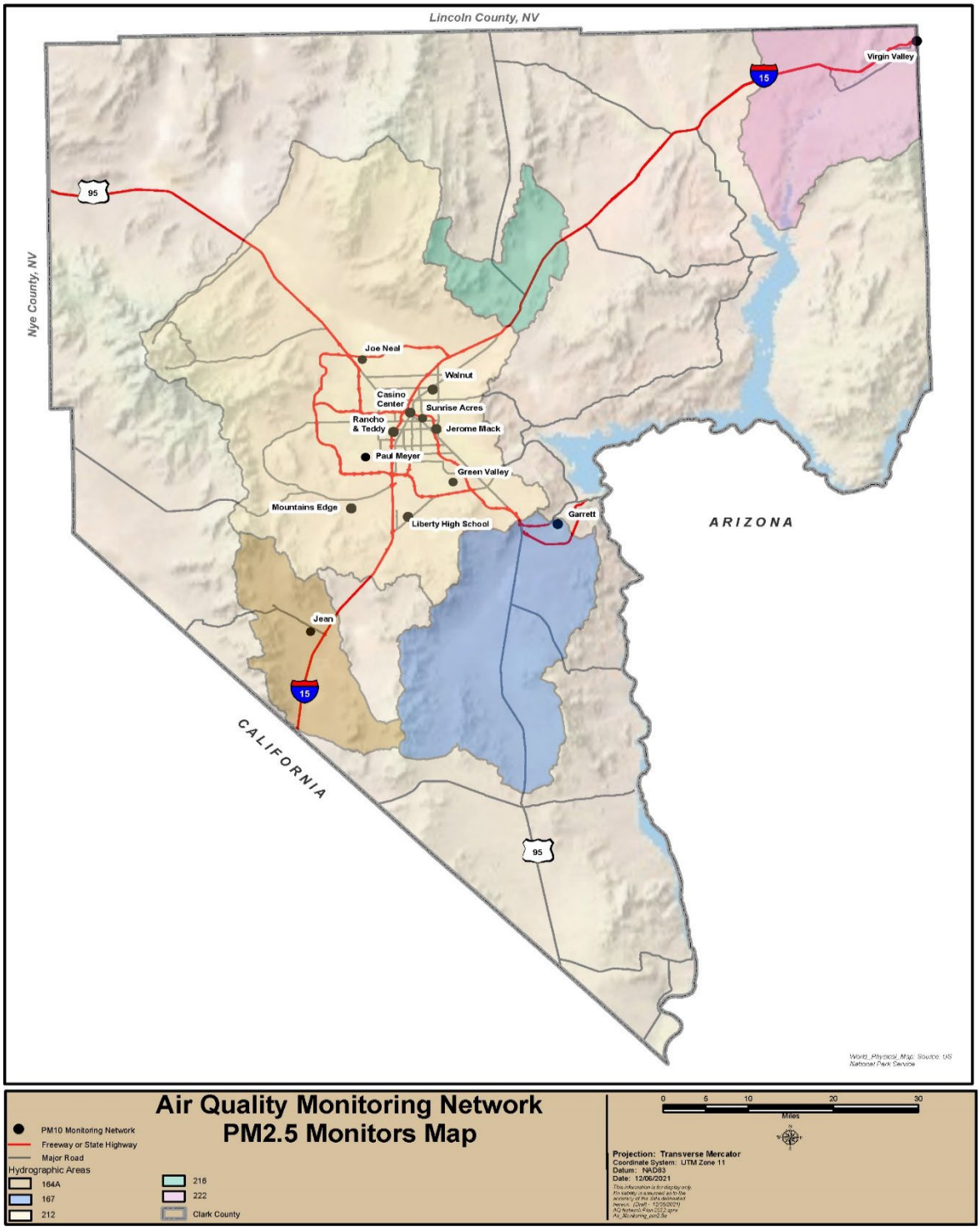

Figure 4-6: Continuous $PM_{2.5}$ Monitors

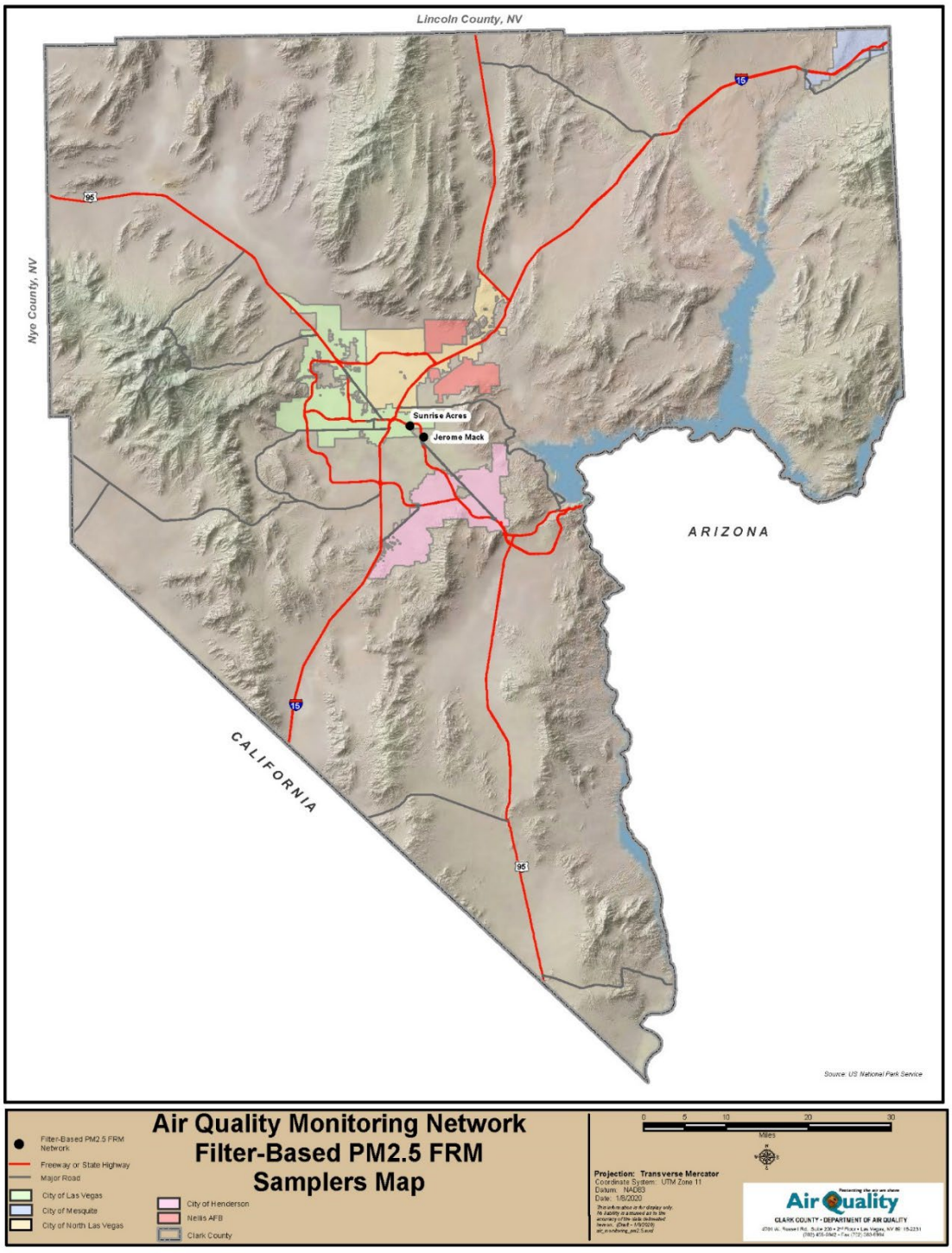

Figure 4-7: Filter-Based $PM_{2.5}$ Monitors

5.0 NATIONAL PERFORMANCE AUDIT PROGRAM AND PERFORMANCE EVALUATION PROGRAM

Each year, EPA Region 9 performs NPAP TTP performance evaluations of DES monitoring stations in accordance with 40 CFR Part 58 Appendix A, which focuses on gaseous criteria pollutants. EPA has not audited the direct NO_2 FEM instruments, and the TTP audits are carried out through a contractor.

Table 5-1. 2024 NPAP TTP Evaluations

Monitoring Station	Pollutant	Evaluation Date
Rancho & Teddy AQS ID: 32-003-1501	CO	3/3/2026
Garrett Jr. High AQS ID: 32-003-0602	O_3	02/24/2026
Mountain's Edge AQS ID: 32-003-0044	O_3	2/25/2026

Each year, the $PM_{2.5}$ FRM sampling network undergoes Performance Evaluation Program (PEP) audits. PEP audit results (in $\mu g/m^3$) are generated by an independent lab and then submitted to the AQS database through an EPA contractor.

Table 5-2. 2024 PEP Audit Activity

Sampler/Monitor Location	Pollutant	Audit Date
Jerome Mack AQS ID: 32-003-0540	PM FEM	2/25/2026
Virgin Valley AQS ID: 32-003-0024	PM FEM	2/25/2026

6.0 NETWORK MODIFICATIONS

6.1 Completed Changes

The CASS is in full operation at the Casino Center monitoring site as explained in Section 1.0 and 6.5 below.

6.2 Upcoming Changes and Request for Approval

This section describes anticipated changes to the monitoring network over the next year and beyond. If not already approved, the proposed changes will be carried out in accordance with 40 CFR 58.14, as applicable. The following constitutes Clark County's official request to EPA Region 9 for approval of upcoming and proposed changes as outlined in Table 6-1.

Table 6-1. Upcoming Site and Equipment Changes

Site/Equipment Change	Date of Proposed Change	Explanation
Redeploy O_3 and Trace CO SPMs at Spring Mountain Youth Camp.	April 2026	Monitoring anticipated to support DES Planning initiatives to assess stratospheric O_3 intrusions. An inverse CO to O_3 correlation will provide further weight of evidence for these intrusions. Furthermore, O_3 and CO are expected to show direct correlation/relationship during wildfire smoke events.
Install Carbonaceous Aerosol Speciation System (CASS), a combined unit of a Total Carbon Analyzer and an Aethalometer at Casino Center	Installed and operating beginning in April 2024, data submitted to AQS.	Monitoring anticipated to support DES Planning initiatives to assess potential correlation of wildfires and biomass burning on summer O_3 and winter $PM_{2.5}$ levels. $PM_{2.5}$ speciation and assessment of black carbon and total carbon are expected to show direct correlation/relationship during wildfire smoke events and winter wood stove use. The CASS is operating and is maintained in accordance with the manufacturer's specifications.
Request for a waiver for sampling heights at Sunrise Acres monitoring site for FEM and FRM for $PM_{2.5}$	July 2025	See Section 6.5 below.

6.3 Availability of Plan for Public Inspection and Comment and DES Response

This plan was made available between START DATE and END DATE, for the required 30-day public inspection and comment period per 40 CFR 58.10(a)(1). This plan was posted on DES's website, made available at the DES front counter, and noticed in the Las Vegas Review Journal.

The annual network plan outlines all notices of proposed changes, in compliance with 40 CFR 58.10. If DES needs to change the location of a $PM_{2.5}$ monitor that records exceedances of the NAAQS, DES will notify EPA Region 9 of the exceedance, and DES will formulate a plan for moving the site. DES will post all such notices and relevant documents for public review on its website, and the public will have at least a 30-day comment period. DES will then submit formal notification to EPA. DES intends to discuss and obtain EPA approval prior to making any changes to its $PM_{2.5}$ network, whether the changes affect monitors that record NAAQS exceedance or not; however, unforeseen circumstances (e.g., unexpected loss of site access) may preclude this process.

6.4 O_3 Monitoring Waiver

Due to the promulgation of the 2015 O_3 NAAQS, EPA has revoked all previous seasonal O_3 waivers. If agencies desire an O_3 waiver approval, they must reevaluate O_3 data and resubmit waiver requests. Based on this direction, DES submitted an O_3 waiver request for the Apex and Indian Springs sites on March 4, 2025, and EPA approved it on March 26, 2025.

6.5 $PM_{2.5}$ Collocation Waiver

It was discovered during May 2024 TSA that there was a difference of approximately 2.5 meters of vertical height between the inlets of the FEM and the FRM $PM_{2.5}$ monitors at the Sunrise Acres monitoring site. Finding 2 of the TSA final report states "40 CFR Part 58 Appendix E, collocated monitors should be no greater than 1 meter apart in the vertical direction." To meet this requirement, a platform to elevate the FEM approximately 2 meters would be required. DES cannot construct the necessary platform because of equipment limitations and construction costs. Accordingly, we are requesting a waiver to continue monitoring with the current configuration at that site, in accordance with 40 CFR 58, App A, part 3.2.3.4(c). This was accepted by EPA, with notification to DES on March 20, 2026.

6.6 Special Purpose Studies

DES plans to contribute to the goals of the Clean Air Act and the evolving science of air quality. DES's objectives include research of pollutants and precursor transport, identification of stratospheric intrusions and mixing heights, pollution impacts, and model validation. Many of these efforts will be focused on the O_3 season, and related studies are being projected over the next several years. DES will continue to deploy high-elevation trace CO and O_3 monitors, which can provide an inverse O_3-CO correlation during O_3 intrusions and direct correlation during smoke events. These initiatives also contribute to DES modeling efforts. None of the upper-elevation CO or O_3 research monitors that are a part of these studies will be part of the SLAMS or regulatory monitoring network.

DES will continue filter-based chemical speciation sampling during special events, such as New Year's Eve and Fourth of July, when $PM_{2.5}$ can reach exceedance levels and where impacts from fireworks can be documented. DES may also sample for markers of levoglucosan, which can assist development of O_3 exceptional event demonstration packages when smoke from wildfires may be a significant factor.

DES operates visibility cameras at the M Resort located at 12300 South Las Vegas Blvd., Henderson, Nevada. This location is at the south end of the Las Vegas Valley. These visibility cameras assist in documenting dust and transport events in the Las Vegas Valley.

During 2023 and 2024, DES purchased and began operation at the Casino Center monitoring site of a CASS consisting of a TCA08 Total Carbon Analyzer and an AE33 Aethalometer, from Magee Scientific, to assist the DES Planning Section with their ongoing studies to better determine local impacts from regional wildfire smoke, as well as providing support data during PM or ozone exceedances for exceptional event packages. The CASS utilizes both filter-based and thermal destruction technologies which provide data for black carbon, brown carbon, organic carbon, and total carbon. Although there are currently no approved reference or equivalent methods for this device, DES operates and maintains it according to the manufacturer's specifications. The CAS data is submitted to AQS, beginning with data collected in November 2024. Updates will be added monthly during normal data upload to AQS.

During the 2025 wildfire and smoke season (normally from May to September), DES conducted a smoke tracer study. DES deployed Volatile Organic Compounds (VOC) Summa canister samplers at four

monitoring sites: Jean, Jerome Mack, Sunrise Acres, and Joe Neal. DES will continue this study through the 2026 wildfire and smoke season. Additionally, during 2026, DES will deploy a VOC thermal desorption (TD) sampler at Jerome Mack. Summa Canisters employed EPA Method TO-15, while TD tubes utilized EPA Method TO-17. Sampling events with Summa canisters were initiated based on a set schedule, in conjunction with wildfire and smoke forecasts from DES air quality forecasters. The TD instrument will sample on TD tubes daily for 8-hour periods. Analyzed VOC compounds included acetonitrile (a specific chemical tracer for biomass burning), acetone, n-pentane, isopentane, benzene, toluene, furan, acrolein, 2,3-butanedione, methyl ethyl ketone, 2,5-dimethylfuran, and furfural. Collected samples were sent to an analytical laboratory for VOC GC-MS analysis.

6.7 Future Needs

DES will continue exploring the possibility of gaseous, particulate, and meteorological monitoring in underrepresented/underserved areas within Clark County. Any special study sites will likely be started as SPM sites.