

Washoe County Air Quality Management Division 2009 Ambient Air Monitoring Network Plan

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Washoe County Health District
Air Quality Management Division
1001 East Ninth Street, Suite A-115
P.O. Box 11130
Reno, Nevada 89520-0027

(775) 784-7200
www.washoecounty.us/health

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic Count
AQI	Air Quality Index
AQMD	Washoe County Health District - Air Quality Management Division
AQS	Air Quality System
ARM	Approved Regional Method
ATR	Automatic Traffic Recorder
BAM	Beta Attenuation Monitor
CARB	California Air Resources Board
CBSA	Core-Based Statistical Area
CFR	Code of Federal Regulations
CMSA	Consolidated Metropolitan Statistical Area
CO	Carbon Monoxide
CSA	Combined Statistical Area
DMV	Department of Motor Vehicles
EPA	U.S. Environmental Protection Agency
ESC	Environmental Systems Corporation
FEM	Federal Equivalent Method
FRM	Federal Reference Method
GFC	Gas Filter Correlation
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NAMS	National Air Monitoring Station
NCore	National Core multipollutant monitoring station
NDOT	Nevada Department of Transportation
NO ₂	Nitrogen Dioxide
NO _y	Reactive Oxides of Nitrogen
O ₃	Ozone
PAMS	Photochemical Assessment Monitoring Station
PM _{2.5}	Particulate Matter less than or equal to 2.5 microns in aerodynamic diameter
PM ₁₀	Particulate Matter less than or equal to 10 microns in aerodynamic diameter
PM _{coarse}	PM ₁₀ minus PM _{2.5}
ReTRAC	Reno Transportation Rail Access Corridor
RTI	Research Triangle Institute
SASS	Speciation Air Sampling System
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Station
SO ₂	Sulfur Dioxide
SPM	Special Purpose Monitoring
SR	State Route
STN	Speciation Trends Network
TAPI	Teledyne Advanced Pollution Instrumentation, Inc.

Introduction

Purpose

The U.S. Environmental Protection Agency (EPA) finalized amendments to the ambient air monitoring regulations on October 17, 2006.¹ The amendments revise the technical requirements for certain types of ambient air monitoring sites, add provisions for monitoring of PM_{coarse}, and reduce certain monitoring requirements for criteria pollutants. Monitoring agencies are required to submit annual monitoring network plans, conduct network assessments every five years, perform quality assurance activities, and in certain instances, establish NCore sites by January 1, 2011.

This plan was prepared and submitted as part of the fulfillment to these new regulations. It represents the Washoe County Health District - Air Quality Management Division's (AQMD) ambient air monitoring program activities completed in 2009 and proposed network modifications for 2010-2011.

Public Inspection Process

This monitoring network plan was available for public inspection from June 1 to June 30, 2010 at the AQMD website (www.washoecounty.us/health). A hardcopy of the plan was also available at the AQMD office. Public comments received during the public inspection period were submitted along with this plan to EPA Region IX.

Agency Contacts

For information or questions regarding the 2009 Ambient Air Monitoring Network Plan, please contact the following individuals of the AQMD.

Andrew Goodrich, Division Director
(775) 784-7213, or agoodrich@washoecounty.us

Duane Sikorski, Air Quality Supervisor
(775) 784-7206, or dsikorski@washoecounty.us

Craig Petersen, Senior Air Quality Specialist
(775) 784- 7233, or cpetersen@washoecounty.us

Julie Hunter, Air Quality Specialist II
(775) 784-7210, or jdhunter@washoecounty.us

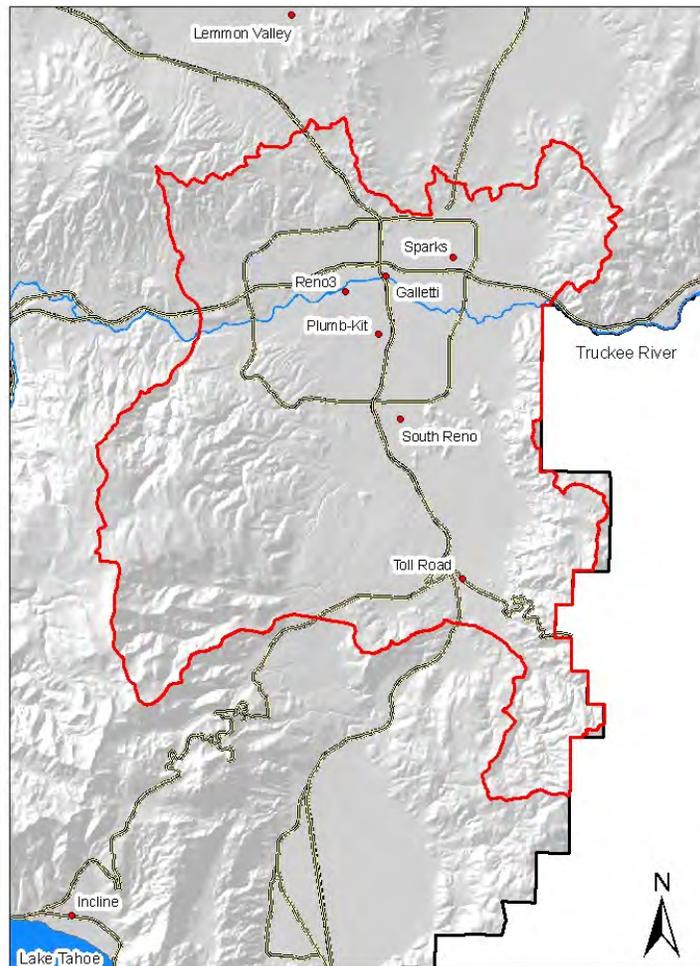
¹ 71 FR 61236-61328.

Overview of Network Operation

Network Design

The AQMD operated eight (8) ambient air monitoring sites in 2009 (Figure 1). The red boundary delineates Hydrographic Area 87 (HA 87) as defined by the State of Nevada Division of Water Resources and is currently designated as “serious” non-attainment for the 24-hour PM₁₀ NAAQS and “attainment/maintenance” for the 8-hour CO NAAQS.^{2,3} Washoe County is classified as “attainment” or “unclassifiable/attainment” for all other pollutants and averaging times.

Figure 1
Washoe County AQMD Ambient Air Monitoring Sites



² 40 CFR 81.329.

³ In July 2009, the AQMD submitted a SIP revision to EPA requesting redesignation of HA 87 to an attainment/maintenance area for the 24-hour PM₁₀ NAAQS. As of June 1, 2010, EPA has not taken final action on the request.

Table 1 lists the parameters monitored in 2009 sorted by network type and site.

Table 1
Ambient Air Monitoring Sites and Parameters Monitored

Network Type Site	Parameters Monitored										
	O ₃	CO	NO ₂	SO ₂	PM ₁₀ (manual)	PM ₁₀ (continuous)	PM _{2.5} (manual)	PM _{2.5} (continuous)	PM _{2.5} Speciation	PM _{coarse}	Meteorology
SLAMS											
Galletti		✓			✓						✓
Incline	✓										
Lemmon Valley	✓	✓									
Plumb-Kit					✓						✓
Reno3	✓	✓	✓		✓		✓			✓	✓
South Reno	✓	✓			✓						✓
Sparks	✓	✓			✓						✓
Toll	✓	✓			✓						✓
NCore											
Reno3											
Speciation Trends											
Reno3									✓		
Special Purpose											
Reno3						✓		✓			
Sparks						✓					

Notes: Meteorology for SLAMS network includes ambient temperature, wind speed, and wind direction. Meteorology for NCore network includes ambient temperature, wind speed, wind direction, barometric pressure, relative humidity, liquid precipitation, and solar radiation.

Data from the continuous PM_{2.5} and PM₁₀ Special Purpose monitors are used for short term air quality forecasts and are not submitted to AQS as data for record.

Minimum Monitoring Requirements

The AQMD’s ambient air monitoring network meets the minimum monitoring requirements for all criteria pollutants pursuant to 40 CFR 58, Appendix D. Tables 2 through 6 provide pollutant specific monitoring requirements. The design values are based on ambient air monitoring data for single (2009 for NO₂ and CO) or multiple (2007-2009 for O₃, PM_{2.5}, and PM₁₀) years. Additional pollutant specific design value data may be found in the “Washoe County, Nevada, Air Quality Trends Report, 2000-2009”. The 2009 population data are from the Nevada State Demographer’s Office.⁴

Table 2
Minimum Monitoring Requirements for O₃

MSA	County	Population	Design Value (ppm)		Number of Monitors		
			8-hour		Minimum Required	Active	Needed
Reno-Sparks	Washoe	416,632	0.072 ⁵		2	6	0

Monitors required for SIP or Maintenance Plan: 2

Table 3
Minimum Monitoring Requirements for PM_{2.5}

MSA	County	Population	Design Value (µg/m ³)		Number of Monitors		
			24-hour	Annual	Minimum Required	Active	Needed
Reno-Sparks	Washoe	416,632	39.3 ⁵	9.1 ⁵	2	2	0

Monitors required for SIP or Maintenance Plan: 0

⁴ Nevada State Demographer’s Office, “Nevada County Population Estimates, July 1, 1986 to July 1, 2009, Includes Cities and Towns”, Page 20.

⁵ Ambient air monitoring data from June/July 2008 were influenced by wildfires in Northern California. An exceptional events request was submitted to EPA Region IX in October 2009. The design values for O₃ and PM_{2.5} include these data until EPA determines concurrence with the request.

Table 4
Minimum Monitoring Requirements for PM₁₀

MSA	County	Population	Design Value (expected number of exceedances)		Number of Monitors		
			24-hour		Minimum Required	Active	Needed
Reno- Sparks	Washoe	416,632	0.0		4	7	0

Monitors required for SIP or Maintenance Plan: 4

Table 5
Minimum Monitoring Requirements for NO₂

MSA	County	Population	Design Value (ppm)		Number of Monitors		
			Annual		Minimum Required	Active	Needed
Reno- Sparks	Washoe	416,632	0.017		0	1	0

Monitors required for SIP or Maintenance Plan: 0

Monitors required for PAMS: n/a

Table 6
Minimum Monitoring Requirements for CO

MSA	County	Population	Design Value (ppm)		Number of Monitors		
			1-hour	8-hour	Minimum Required	Active	Needed
Reno- Sparks	Washoe	416,632	4.2	2.9	2	6	0

Monitors required for SIP or Maintenance Plan: 2

Network Modifications Completed in 2009

The following modifications to the ambient air monitoring network were completed in 2009.

SLAMS:

PM_{2.5} (Reno3)

- Replaced Andersen RAAS2.5-300 PM_{2.5} FRM monitor (designated) with new BGI PQ200 PM_{2.5} FRM monitor (designated).
- Replaced Andersen RAAS2.5-300 PM_{2.5} FRM monitor (collocated) with new BGI PQ200 PM_{2.5} FRM monitor (collocated).

PM₁₀ (Reno3)

- Replaced Andersen 1200 Hi-Vol PM₁₀ monitor with new BGI PQ200 PM₁₀ monitor. Increased sampling frequency from 1:6 to 1:3. In conjunction with the BGI PQ200 PM_{2.5} FRM monitor (designated) listed above, began reporting PM_{coarse} data for record to AQS on March 20, 2009.

All other pollutants and monitoring sites

- No modifications.

Speciation Trends:

PM_{2.5} Speciation (Reno3)

- Removed carbon channel 1 from the Met One SASS.
- Installed URG 3000N carbon sampler.

NCORE and Special Purpose Monitor Networks:

All other pollutants and monitoring sites

- No modifications.

Additional Modifications Completed in 2009

The following additional modifications were completed in 2009.

AQMD PM Lab

- Relocated lab from 401 Ryland Street, Reno to 1001 East Ninth Street, Reno.

Basic Meteorology (Galletti, South Reno, Toll)

- Relocated meteorology tower and extended to 10 meters.

RadNet

- Installed General Atomics HV-400BRL-S sampler at 1001 East Ninth Street, Reno on March 19, 2009.

Network Modifications Proposed for 2010-2011

The following modifications to the ambient air monitoring network are proposed for 2010-2011.

SLAMS:

O₃, CO, NO₂ (Reno3)

- Take existing instruments offline and replace with new NCore instruments listed below.
- Meteorology (Galletti, South Reno, Sparks, Toll)
- Install new YSI 700 thermoliner element ambient temperature sensor.

NCore:

SO₂ (Reno3)

- Install new TAPI 100EU trace level SO₂ monitor and submit data for record to AQS by January 1, 2011.

NO₂ (Reno3)

- Install new TAPI 200EU trace level NO_x/NO_y monitor and submit data for record to AQS by January 1, 2011.

CO (Reno3)

- Install new TAPI 300EU trace level CO monitor and submit data for record to AQS by January 1, 2011.

O₃ (Reno3)

- Install new TAPI 400E O₃ monitor.

O₃, CO, NO₂, SO₂ (Reno3)

- Install gas dilution system consisting of: 1) New Environics 6103 multi-gas calibrator/O₃ transfer standard, and 2) new TAPI 701H high performance zero air system.

PM_{2.5} (Reno3)

- Replace existing Met One BAM 1020 PM_{2.5} monitor with a new Met One BAM 1020 FEM PM_{2.5} monitor. This monitor will be configured with the Met One BAM 1020 FEM PM₁₀ monitor listed below for continuous PM_{coarse} measurement. Continuous PM_{2.5} and PM_{coarse} data for record to be submitted to AQS by January 1, 2011.

PM₁₀ (Reno3)

- Replace existing Met One BAM 1020 FEM PM₁₀ monitor with a new Met One BAM 1020 FEM PM₁₀ monitor. This monitor will be configured with the Met One BAM 1020 FEM PM_{2.5} monitor listed above for continuous PM_{coarse} measurement. Continuous PM₁₀ and PM_{coarse} data for record to be submitted to AQS by January 1, 2011.

Meteorology (Reno3)

- Remove solar radiation sensor from South Reno and install at Reno3.
- Install new Vaisala WXT520 weather transmitter measuring ambient temperature, wind speed, wind direction, barometric pressure, relative humidity, and liquid precipitation. Meteorology data for record to be submitted to AQS by January 1, 2011.

Speciation Trends:

All other pollutants and monitoring sites

- No modifications proposed.

Special Purpose Monitor:

PM_{2.5} (Reno3)

- Replace existing monitor as indicated in the NCore section above.

PM₁₀ (Reno3)

- Replace existing monitor as indicated in the NCore section above.

PM_{2.5} (Sparks)

- Install new Met One BAM 1020 FEM PM_{2.5} monitor. Continuous PM_{2.5} data will be used for short term air quality forecasts and will not be submitted to AQS as data for record.

Additional Modifications Proposed for 2010-2011

The following additional modifications are proposed for 2010-2011.

SLAMS:

Shelter temperature (Galletti, Incline, Lemmon Valley, South Reno, Sparks, Toll)

- Install new T° Sentry 140-100HVB shelter temperature sensor.

NCore:

All continuous monitors (Reno3)

- Install new ESC 8832 data acquisition system.

Shelter temperature (Reno3)

- Install new T° Sentry 140-100HVB shelter temperature sensor.

Speciation Trends and Special Purpose Monitor Networks:

All other pollutants and monitoring sites

- No modifications proposed.

Review of Changes to PM_{2.5} Monitoring Network

The geographic area of Washoe County is currently designated as either Attainment or Attainment/Unclassifiable for the 24-hour and annual PM_{2.5} NAAQS. Although the current PM_{2.5} design value (39.3 µg/m³) violates the 24-hour NAAQS, ambient air monitoring data from June/July 2008 were influenced by wildfires in Northern California. An exceptional events request was submitted to EPA Region IX in October 2009. The PM_{2.5} design value includes these data until EPA determines concurrence with the request.

In the event that a review of changes to the PM_{2.5} monitoring network is required, the annual network plan and five year network assessment would be used to provide for this review. No changes are proposed to the PM_{2.5} monitoring network for 2010-2011.

Data Submission Requirements

Precision and Accuracy Reports for 2009 were submitted to AQS for the:

- 1st quarter in May 2009,
- 2nd quarter in September 2009,
- 3rd quarter in December 2009, and
- 4th quarter in February 2010.

Annual Data Certification for 2009 was submitted to EPA on April 23, 2010.

Detailed Site Information

Galletti

Site Name:	Galletti
AQS ID:	32-031-0022
Geographical coordinates:	CO: 39° 31.920'N, 119° 47.099'W PM ₁₀ : 39° 31.947'N, 119° 46.973'W
Location:	CO: South end of NDOT equipment yard. PM ₁₀ : Northwest corner of Nevada DMV parking lot.
Street address:	305 Galletti Way Reno, NV 89431
County:	Washoe
Distance to road:	CO: 15.0 meters to Kietzke Lane. PM ₁₀ : 68 meters Kietzke Lane.
Traffic count:	16,033 AADT (2006-2008) (NDOT ATR 0312210 - Kietzke Lane, 0.15 miles south of Galletti Way)
Groundcover:	Paved
Representative area:	Reno-Sparks MSA

Figure 2
Galletti Monitoring Station



Figure 3
Galletti PM₁₀ Monitoring Station



Figure 4
Galletti Monitoring Site Vicinity Map

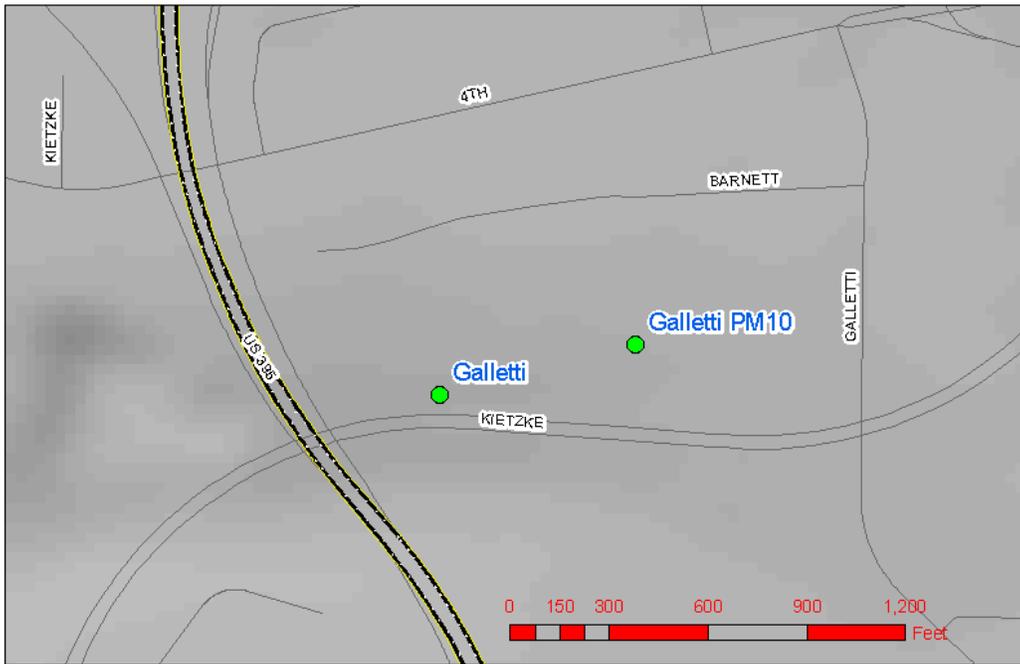
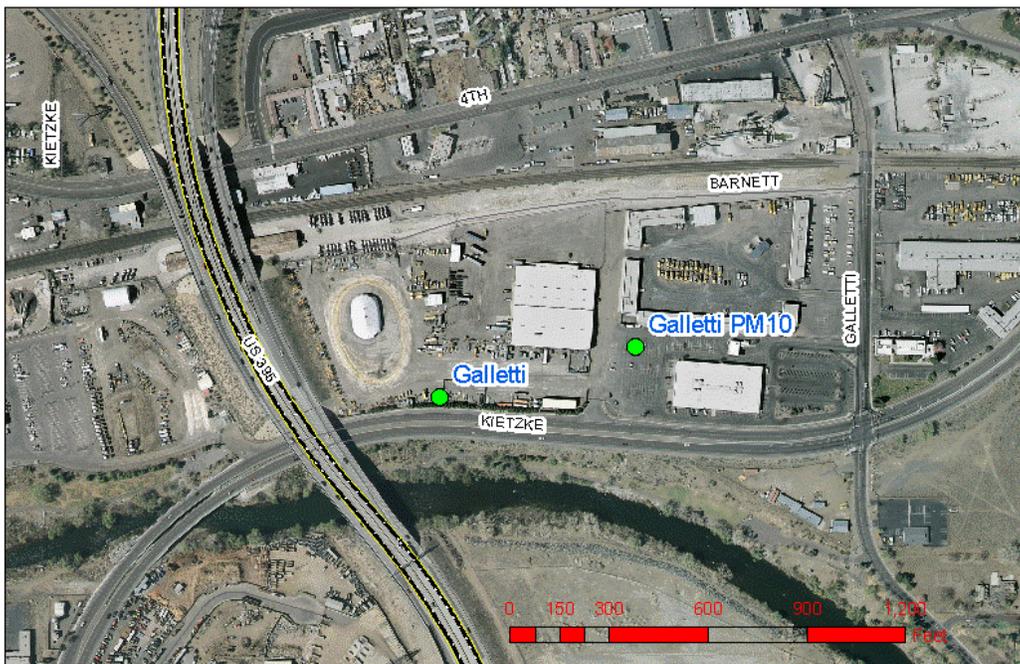


Figure 5
Galletti Monitoring Site Vicinity Aerial



Galletti (continued)

	CO	PM₁₀	
Monitor objective	Highest concentration	Highest concentration	
Monitor classification	SLAMS	SLAMS	
Spatial scale	Middle	Neighborhood	
Sampling method	TAPI 300E	Andersen 1200 Hi-Vol	
Analysis method	GFC	Weighed by AQMD lab	
Start date	August 1988	August 1988	
Operation schedule	Continuous	1:6	
Sampling season	All year	All year	
Probe height	4.0 meters	3.0 meters	
Distance:			
from supporting structure	1.2 meters	1.5 meters	
from obstructions on roof	n/a	n/a	
from obstructions not on roof	82 meters	39 meters	
from trees	4.6 meters*	70 meters	
to furnace or incinerator flue	n/a	n/a	
between collocated monitors	n/a	n/a	
Unrestricted airflow	360 degrees	360 degrees	
Probe material	Teflon	n/a	
Residence time	13 seconds	n/a	
Proposed modifications within the next 18 months?	none	none	
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	n/a	n/a	
Frequency of:			
flow rate verification for manual samplers audit (PM)	n/a	Every 1:6 run and quarterly	
flow rate verification for automated analyzers audit (PM)	n/a	n/a	
one-point QC check (gaseous)	Bi-weekly (3 point)	n/a	
Last:			
annual performance evaluation (gaseous)	03-04-09 06-17-09 09-10-09 10-10-09	n/a	
two semi-annual flow rate audits (PM)	n/a	03-04-09 06-17-09 08-26-09 10-19-09	

* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

Incline

Site Name:	Incline
AQS ID:	32-031-2002
Geographical coordinates:	39° 15.025'N, 119° 57.404'W
Location:	Inside northeast corner of Washoe County office building.
Street address:	855 Alder Avenue Incline Village, NV 89451
County:	Washoe
Distance to road:	57 meters to Tahoe Boulevard and 53 meters to Alder Avenue.
Traffic count:	4,417 AADT (2006-2008) (NDOT ATR 0310756 - Lakeshore Blvd, 100 feet east of Village Blvd)
Groundcover:	Paved / Vegetated
Representative area:	Reno-Sparks MSA

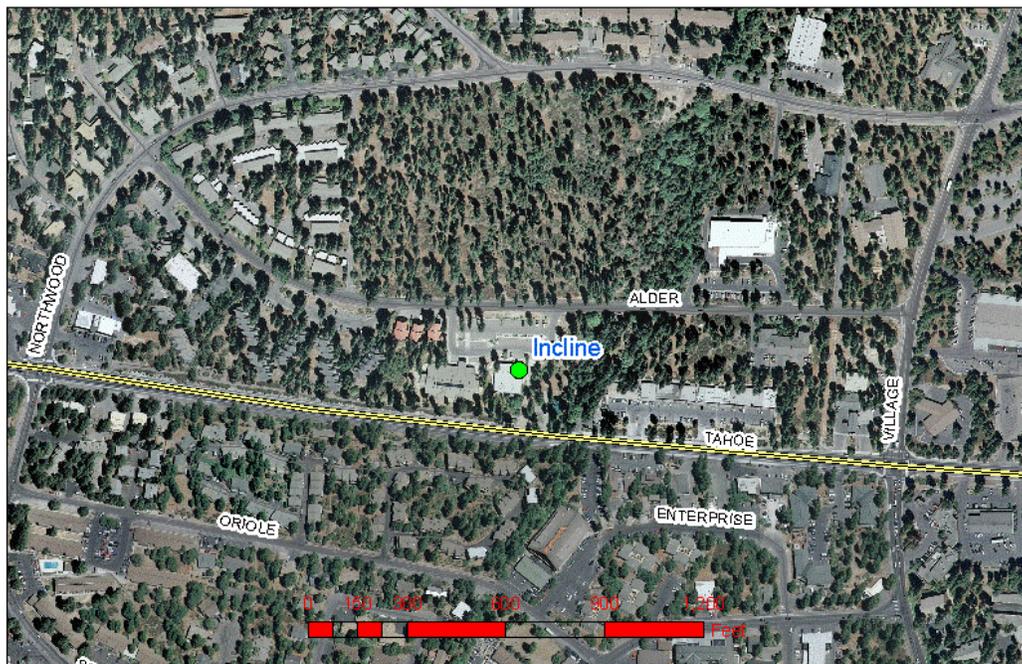
Figure 6
Incline Monitoring Station



Figure 7
Incline Monitoring Site Vicinity Map



Figure 8
Incline Monitoring Site Vicinity Aerial



Incline (continued)

	O₃		
Monitor objective	Typical Concentrations		
Monitor classification	SLAMS		
Spatial scale	Neighborhood		
Sampling method	Dasibi 1008-AH		
Analysis method	UV Photometry		
Start date	June 1993		
Operation schedule	Continuous		
Sampling season	All year		
Probe height	4.6 meters		
Distance:			
from supporting structure	1.1 meters		
from obstructions on roof	n/a		
from obstructions not on roof	41 meters		
from trees	5.2 meters*		
to furnace or incinerator flue	12.2 meters		
between collocated monitors	n/a		
Unrestricted airflow	360 degrees		
Probe material	Teflon		
Residence time	14 seconds		
Proposed modifications within the next 18 months?	none		
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	n/a		
Frequency of:			
flow rate verification for manual samplers audit (PM)	n/a		
flow rate verification for automated analyzers audit (PM)	n/a		
one-point QC check (gaseous)	Bi-weekly (3 point)		
Last:			
annual performance evaluation (gaseous)	03-05-09 06-18-09 09-09-09 11-18-09		
two semi-annual flow rate audits (PM)	n/a		

* At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

Lemmon Valley

Site name:	Lemmon Valley
AQS ID:	32-031-2009
Geographical coordinates:	39° 38.716'N, 119° 50.401'W
Location:	Inside northwest corner of Joe Mitchell Community Center.
Street address:	325 W. Patrician Drive Reno, NV 89506
County:	Washoe
Distance to road:	59 meters to Patrician Drive.
Traffic count:	1,030 AADT (2006-2008) (NDOT ATR 0310926 - Patrician Drive, 150 feet west of Lemmon Drive)
Groundcover:	Paved / Vegetated
Representative area:	Reno-Sparks MSA

Figure 9
Lemmon Valley Monitoring Station



Figure 10
Lemmon Valley Monitoring Site Vicinity Map

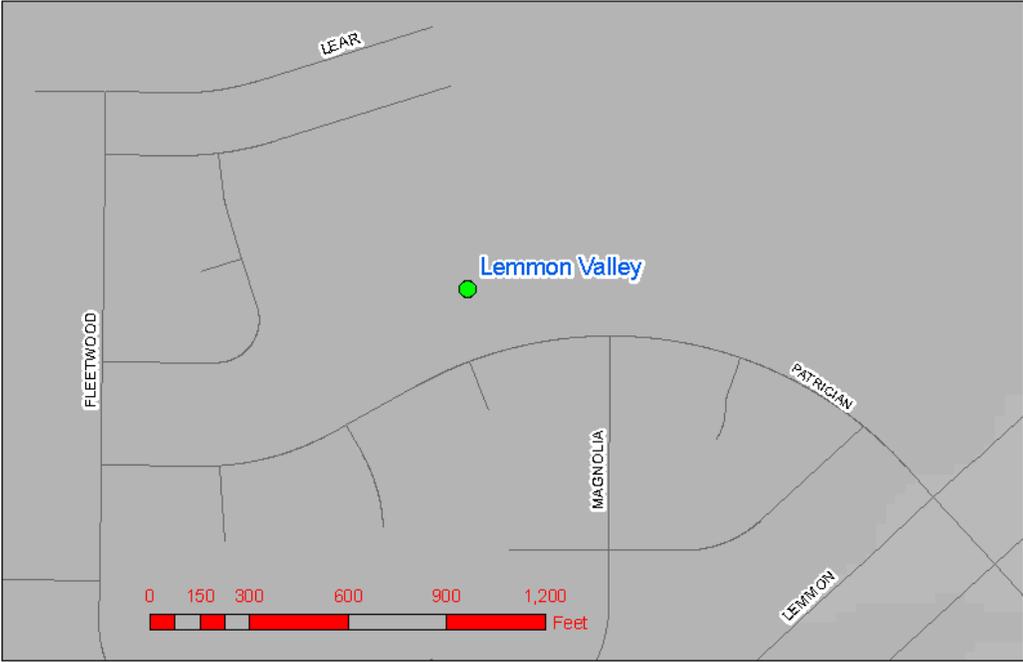


Figure 11
Lemmon Valley Monitoring Site Vicinity Aerial



Lemmon Valley (continued)

	O₃	CO	
Monitor objective	Typical Concentrations	Typical Concentrations	
Monitor classification	SLAMS	SLAMS	
Spatial scale	Urban	Urban	
Sampling method	API 400E	API 300	
Analysis method	UV Photometry	GFC	
Start date	January 1987	January 1987	
Operation schedule	Continuous	Continuous	
Sampling season	All year	All year	
Probe height	5.5 meters	5.5 meters	
Distance:			
from supporting structure	2.0 meters	2.0 meters	
from obstructions on roof	n/a	n/a	
from obstructions not on roof	n/a	n/a	
from trees	21 meters	21 meters	
to furnace or incinerator flue	9.1 meters	9.1 meters	
between collocated monitors	n/a	n/a	
Unrestricted airflow	360 degrees	360 degrees	
Probe material	Teflon	Teflon	
Residence time	9 seconds	9 seconds	
Proposed modifications within the next 18 months?	none	none	
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	n/a	n/a	
Frequency of:			
flow rate verification for manual samplers audit (PM)	n/a	n/a	
flow rate verification for automated analyzers audit (PM)	n/a	n/a	
one-point QC check (gaseous)	Bi-weekly (3 point)	Bi-weekly (3 point)	
Last:			
annual performance evaluation (gaseous)	03-13-09 06-22-09 09-10-09 10-23-09	03-13-09 06-22-09 09-10-09 10-23-09	
two semi-annual flow rate audits (PM)	n/a	n/a	

Plumb-Kit

Site name:	Plumb-Kit
AQS ID:	32-031-0030
Geographical coordinates:	39° 30.381'N, 119° 47.314'W
Location:	Northeast corner of Plumb and Kietzke Lanes.
Street address:	891 East Plumb Lane Reno, NV 89502
County:	Washoe
Distance to road:	36 meters to Kietzke Lane, 44 meters to Plumb Lane, and 12.0 meters to the westbound Plumb Lane to northbound Kietzke Lane roadway.
Traffic count:	33,167 AADT (2006-2008) (NDOT ATR 0310192 - East Plumb Lane, 590 feet east of Kietzke Lane)
Groundcover:	Gravel
Representative area:	Reno-Sparks MSA

Figure 12
Plumb-Kit Monitoring Station



Figure 13
Plumb-Kit Monitoring Site Vicinity Map

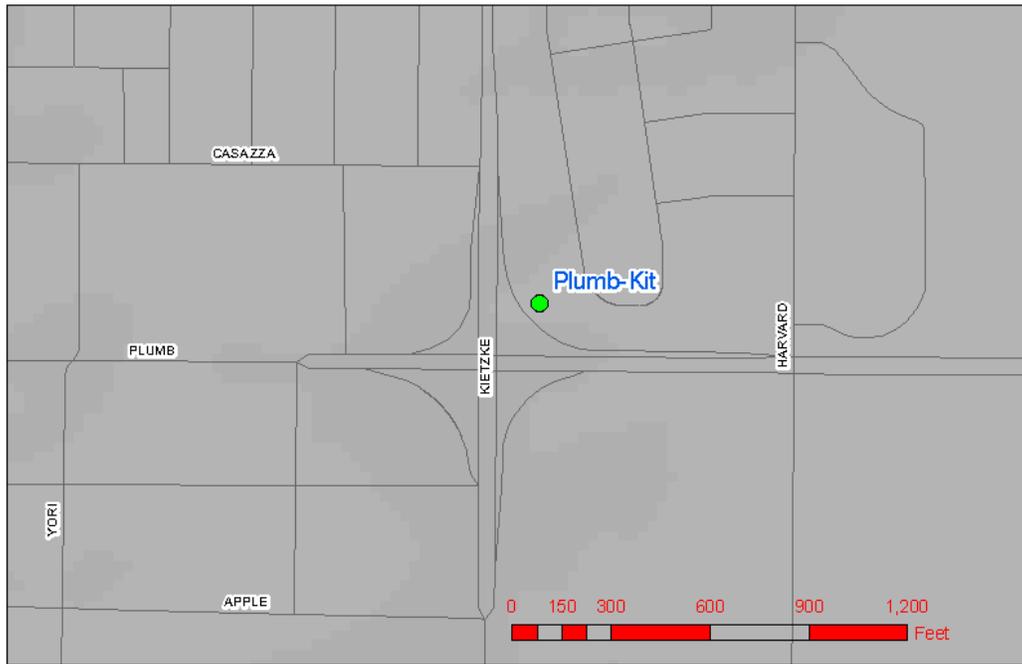


Figure 14
Plumb-Kit Monitoring Site Vicinity Aerial



Plumb-Kit (continued)

	PM₁₀		
Monitor objective	Typical Concentrations		
Monitor classification	SLAMS		
Spatial scale	Neighborhood		
Sampling method	Andersen 1200 Hi-Vol		
Analysis method	Weighed by AQMD lab		
Start date	January 2006		
Operation schedule	1:6		
Sampling season	All year		
Probe height	4.2 meters		
Distance:			
from supporting structure	1.5 meters		
from obstructions on roof	n/a		
from obstructions not on roof	106 meters		
from trees	12.2 meters*		
to furnace or incinerator flue	n/a		
between collocated monitors	n/a		
Unrestricted airflow	360 degrees		
Probe material	n/a		
Residence time	n/a		
Proposed modifications within the next 18 months?	none		
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	n/a		
Frequency of:			
flow rate verification for manual samplers audit (PM)	Every 1:6 run and quarterly		
flow rate verification for automated analyzers audit (PM)	n/a		
one-point QC check (gaseous)	n/a		
Last:			
annual performance evaluation (gaseous)	n/a		
two semi-annual flow rate audits (PM)	03-05-09 06-16-09 08-26-09 10-19-09		

* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

Reno3

Site name:	Reno3
AQS ID:	32-031-0016
Geographical coordinates:	39° 31.505'N, 119° 48.463'W
Location:	Southwest corner of City of Reno parking lot.
Street address:	301A State Street Reno, NV 89501
County:	Washoe
Distance to road:	38 meters to Mill Street, 13.1 meters to State Street, and 6.7 meters to River Rock.
Traffic count:	5,700 AADT (2006-2008) (NDOT ATR 0310862 - Mill Street, 100 feet west of Holcomb Avenue)
Groundcover:	Paved
Representative area:	Reno-Sparks MSA

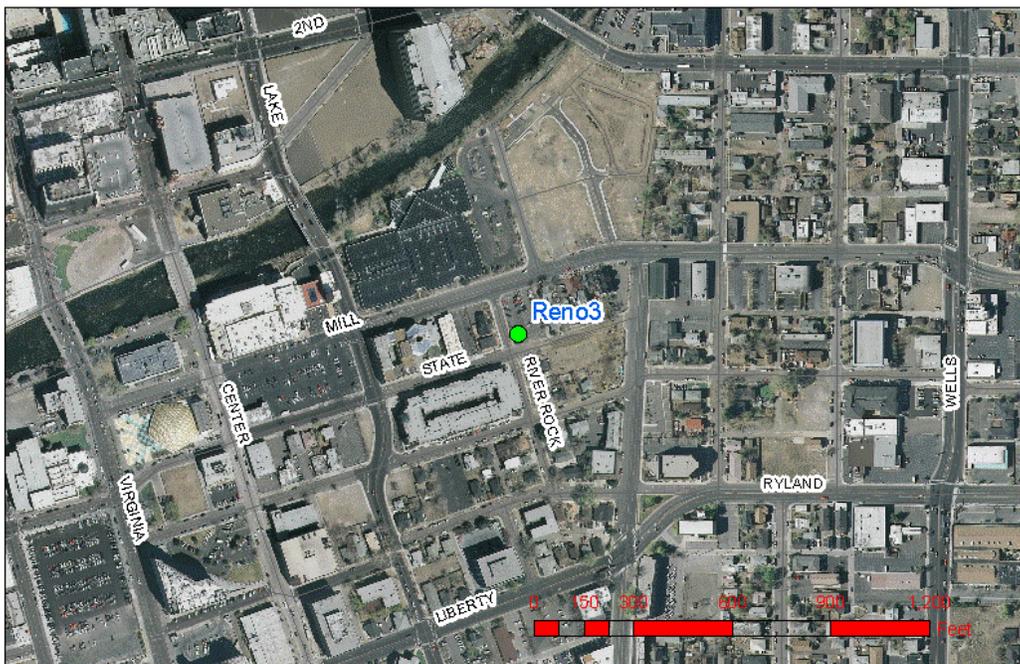
Figure 15
Reno3 Monitoring Station



Figure 16
Reno3 Monitoring Site Vicinity Map



Figure 17
Reno3 Monitoring Site Vicinity Aerial



Reno3 (continued)

	O₃	CO	NO₂
Monitor objective	Typical Concentrations	Typical Concentrations	Typical Concentrations
Monitor classification	SLAMS	SLAMS	SLAMS
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	API 400A	Monitor Labs 9830	Thermo 42C
Analysis method	UV Photometry	GFC	Chemiluminescent
Start date	November 2001	November 2001	November 2001
Operation schedule	Continuous	Continuous	Continuous
Sampling season	All year	All year	All year
Probe height	4.6 meters	4.6 meters	4.6 meters
Distance:			
from supporting structure	1.8 meters	1.8 meters	1.8 meters
from obstructions on roof	n/a	n/a	n/a
from obstructions not on roof	33 meters	33 meters	33 meters
from trees	17.4 meters*	17.4 meters*	17.4 meters*
to furnace or incinerator flue	n/a	n/a	n/a
between collocated monitors	n/a	n/a	n/a
Unrestricted airflow	360 degrees	360 degrees	360 degrees
Probe material	Teflon	Teflon	Teflon
Residence time	7 seconds	7 seconds	7 seconds
Proposed modifications within the next 18 months?	See pages 7 and 8	See pages 7 and 8	See pages 7 and 8
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	n/a	n/a	n/a
Frequency of:			
flow rate verification for manual samplers audit (PM)	n/a	n/a	n/a
flow rate verification for automated analyzers audit (PM)	n/a	n/a	n/a
one-point QC check (gaseous)	Bi-weekly (3 point)	Bi-weekly (3 point)	Bi-weekly (4 point)
Last:			
annual performance evaluation (gaseous)	03-19-09 06-24-09 09-21-09 10-21-09	03-19-09 06-24-09 09-21-09 10-21-09	03-19-09 06-24-09 09-21-09 10-21-09
two semi-annual flow rate audits (PM)	n/a	n/a	n/a

* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

Reno3 (continued)

	PM_{2.5} (Designated)	PM_{2.5} (Collocated)	PM₁₀
Monitor objective	Typical Concentrations	Typical Concentrations	Typical Concentrations
Monitor classification	SLAMS	SLAMS	SLAMS
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	BGI PQ200	BGI PQ200	BGI PQ200
Analysis method	Weighed by AQMD lab	Weighed by AQMD lab	Weighed by AQMD lab
Start date	November 2001	November 2001	November 2001
Operation schedule	1:3	1:3	1:6
Sampling season	All year	All year	All year
Probe height	4.9 meters	4.9 meters	4.9 meters
Distance:			
from supporting structure	2.0 meters	2.0 meters	2.0 meters
from obstructions on roof	n/a	n/a	n/a
from obstructions not on roof	29 meters	28 meters	28 meters
from trees	20 meters	19 meters*	19 meters*
to furnace or incinerator flue	n/a	n/a	n/a
between collocated monitors	1.1 meters	1.1 meters	N/A
Unrestricted airflow	360 degrees	360 degrees	360 degrees
Probe material	n/a	n/a	n/a
Residence time	n/a	n/a	n/a
Proposed modifications within the next 18 months?	none	none	none
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	Yes for all current sites in Region IX	Yes for all current sites in Region IX	n/a
Frequency of:			
flow rate verification for manual samplers audit (PM)	Monthly verifications and quarterly audits	Monthly verifications and quarterly audits	Every 1:6 run and quarterly
flow rate verification for automated analyzers audit (PM)	n/a	n/a	n/a
one-point QC check (gaseous)	n/a	n/a	n/a
Last:			
annual performance evaluation (gaseous)	n/a	n/a	n/a
two semi-annual flow rate audits (PM)	03-12-09 06-11-09 09-24-09 11-17-09	03-12-09 06-11-09 09-24-09 11-17-09	03-18-09 06-11-09 09-24-09 11-17-09

* Trees are not of sufficient height and leaf canopy density to interfere with the normal unrestricted airflow around the monitoring path. At least 90 percent of the monitoring path is at least 10 meters from the drip line of the trees.

Reno3 (continued)

	PM_{2.5} Speciation	PM₁₀ BAM	PM_{2.5} BAM
Monitor objective	Trends Network	Typical Concentrations	Typical Concentrations
Monitor classification	STN	SPM	SPM
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	Met One SASS; URG 3000N	Met One BAM 1020	Met One BAM 1020
Analysis method	Sent to RTI lab for analysis	Beta Attenuation	Beta Attenuation
Start date	November 2001	March 2005	November 2001
Operation schedule	1:3	Continuous	Continuous
Sampling season	All year	All year	All year
Probe height	SASS: 4.7 meters URG: 5.0 meters	4.0 meters	4.5 meters
Distance:			
from supporting structure	SASS: 1.8 meters URG: 2.1 meters	2.4 meters	1.6 meters
from obstructions on roof	n/a	n/a	n/a
from obstructions not on roof	30 meters	32 meters	31 meters
from trees	20 meters	20 meters	20 meters
to furnace or incinerator flue	n/a	n/a	n/a
between collocated monitors	n/a	n/a	n/a
Unrestricted airflow	360 degrees	360 degrees	360 degrees
Probe material	n/a	n/a	n/a
Residence time	n/a	n/a	n/a
Proposed modifications within the next 18 months?	none	See pages 7 and 8	See pages 7 and 8
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	Yes for all current sites in Region IX	n/a	No, AQI use only
Frequency of:			
flow rate verification for manual samplers audit (PM)	Monthly verifications and quarterly audits	n/a	n/a
flow rate verification for automated analyzers audit (PM)	n/a	Bi-weekly verifications and quarterly audits	Bi-weekly verifications and quarterly audits
one-point QC check (gaseous)	n/a	n/a	n/a
Last:			
annual performance evaluation (gaseous)	n/a	n/a	n/a
two semi-annual flow rate audits (PM)	03-18-09 06-23-09 09-24-09 11-19-09	03-12-09 08-21-09 11-16-09	03-12-09 06-10-09 08-21-09 11-16-09

South Reno

Site name:	South Reno
AQS ID:	32-031-0020
Geographical coordinates:	39° 28.153'N, 119° 46.521'W
Location:	Northeast corner of NV Energy campus.
Street address:	4110 DeLucchi Lane Reno, NV 89502
County:	Washoe
Distance to road:	37 meters to DeLucchi Lane.
Traffic count:	7,333 AADT (2006-2008) (NDOT ATR 0310690 - Neil Road, 515 feet north of DeLucchi Lane)
Groundcover:	Gravel / Dirt / Vegetated
Representative area:	Reno-Sparks MSA

Figure 18
South Reno Monitoring Station



Figure 19
South Reno Monitoring Site Vicinity Map

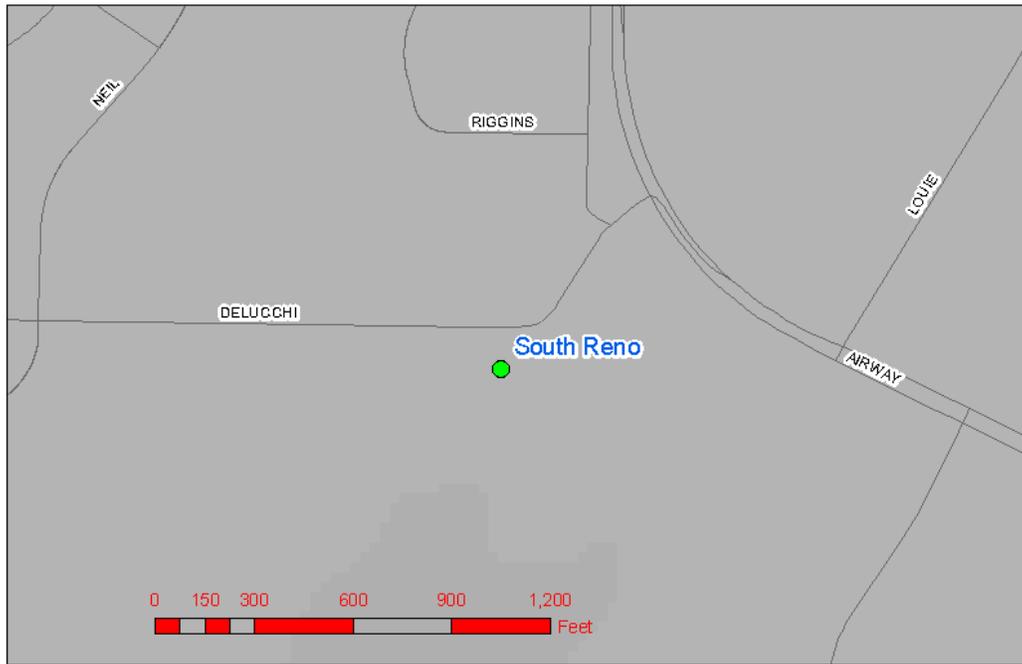


Figure 20
South Reno Monitoring Site Vicinity Aerial



South Reno (continued)

	O₃	CO	PM₁₀
Monitor objective	Highest Concentrations	Typical Concentrations	Typical Concentrations
Monitor classification	SLAMS	SLAMS	SLAMS
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	TAPI 400E	Monitor Labs 8830	Andersen 1200 Hi-Vol
Analysis method	UV Photometry	GFC	Weighed by AQMD lab
Start date	January 1988	January 1988	January 1988
Operation schedule	Continuous	Continuous	1:6
Sampling season	All year	All year	All year
Probe height	4.0 meters	4.0 meters	3.4 meters
Distance:			
from supporting structure	1.2 meters	1.2 meters	1.5 meters
from obstructions on roof	n/a	n/a	n/a
from obstructions not on roof	68 meters	68 meters	68 meters
from trees	29 meters	29 meters	29 meters
to furnace or incinerator flue	n/a	n/a	n/a
between collocated monitors	n/a	n/a	n/a
Unrestricted airflow	360 degrees	360 degrees	360 degrees
Probe material	Teflon	Teflon	N/A
Residence time	9 seconds	9 seconds	N/A
Proposed modifications within the next 18 months?	none	none	none
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	n/a	n/a	n/a
Frequency of:			
flow rate verification for manual samplers audit (PM)	n/a	n/a	Every 1:6 run and quarterly
flow rate verification for automated analyzers audit (PM)	n/a	n/a	n/a
one-point QC check (gaseous)	Bi-weekly (3 point)	Bi-weekly (3 point)	n/a
Last:			
annual performance evaluation (gaseous)	03-04-09 06-16-09 09-08-09 10-14-09	03-04-09 06-16-09 09-08-09 10-14-09	n/a
two semi-annual flow rate audits (PM)	n/a	n/a	03-04-09 06-16-09 08-26-09 10-19-09

Sparks

Site name:	Sparks
AQS ID:	32-031-1005
Geographical coordinates:	39° 32.455'N, 119° 44.806'W
Location:	East end of US Postal Service back parking lot.
Street address:	750 4 th Street Sparks, NV 89431
County:	Washoe
Distance to road:	50 meters to Prater Way and 103 meters to 4 th Street.
Traffic count:	17,533 AADT (2006-2008) (NDOT ATR 0310497 - Prater Way, 100 feet east of Pyramid Way)
Groundcover:	Paved / Vegetated / Decomposed Granite
Representative area:	Reno-Sparks MSA

Figure 21
Sparks Monitoring Station



Figure 22
Sparks Monitoring Site Vicinity Map

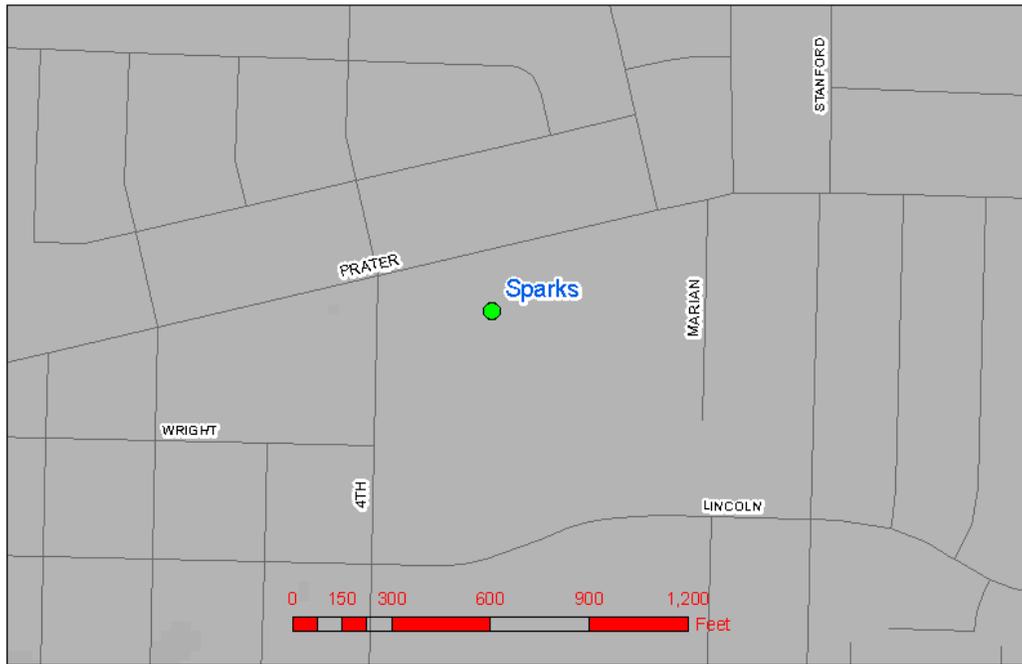


Figure 23
Sparks Monitoring Site Vicinity Aerial



Sparks (continued)

	O₃	CO	
Monitor objective	Typical Concentrations	Typical Concentrations	
Monitor classification	SLAMS	SLAMS	
Spatial scale	Neighborhood	Neighborhood	
Sampling method	API 400E	API 300	
Analysis method	UV Photometry	GFC	
Start date	January 1979	January 1980	
Operation schedule	Continuous	Continuous	
Sampling season	All year	All year	
Probe height	4.6 meters	4.6 meters	
Distance:			
from supporting structure	1.7 meters	1.7 meters	
from obstructions on roof	n/a	n/a	
from obstructions not on roof	29 meters	29 meters	
from trees	26 meters	26 meters	
to furnace or incinerator flue	n/a	n/a	
between collocated monitors	n/a	n/a	
Unrestricted airflow	360 degrees	360 degrees	
Probe material	Teflon	Teflon	
Residence time	9 seconds	9 seconds	
Proposed modifications within the next 18 months?	none	none	
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	n/a	n/a	
Frequency of:			
flow rate verification for manual samplers audit (PM)	n/a	n/a	
flow rate verification for automated analyzers audit (PM)	n/a	n/a	
one-point QC check (gaseous)	Bi-weekly (3 point)	Bi-weekly (3 point)	
Last:			
annual performance evaluation (gaseous)	03-13-09 06-23-09 09-10-09 10-30-09	03-13-09 06-23-09 09-10-09 10-30-09	
two semi-annual flow rate audits (PM)	n/a	n/a	

Sparks (continued)

	PM₁₀ (Designated)	PM₁₀ (Collocated)	PM₁₀ BAM
Monitor objective	Typical Concentrations	Typical Concentrations	Typical Concentrations
Monitor classification	SLAMS	SLAMS	SPM
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	Andersen 1200 Hi-Vol	Andersen 1200 Hi-Vol	Sibata BAM-102
Analysis method	Weighed by AQMD lab	Weighed by AQMD lab	Beta attenuation
Start date	April 1988	April 1988	November 1988
Operation schedule	1:6	1:6	Continuous
Sampling season	All year	All year	All year
Probe height	4.4 meters	3.5 meters	5.0 meters
Distance:			
from supporting structure	1.5 meters	1.5 meters	2.1 meters
from obstructions on roof	n/a	n/a	n/a
from obstructions not on roof	27 meters	27 meters	29 meters
from trees	28 meters	26 meters	26 meters
to furnace or incinerator flue	n/a	n/a	n/a
between collocated monitors	2.7 meters	2.7 meters	n/a
Unrestricted airflow	360 degrees	360 degrees	360 degrees
Probe material	n/a	n/a	n/a
Residence time	n/a	n/a	n/a
Proposed modifications within the next 18 months?	none	none	none
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	n/a	n/a	n/a
Frequency of:			
flow rate verification for manual samplers audit (PM)	Every 1:6 run and quarterly	Every 1:6 run and quarterly	n/a
flow rate verification for automated analyzers audit (PM)	n/a	n/a	Bi-weekly and quarterly audits
one-point QC check (gaseous)	n/a	n/a	n/a
Last:			
annual performance evaluation (gaseous)	n/a	n/a	n/a
two semi-annual flow rate audits (PM)	03-18-09 05-20-09 08-24-09 10-20-09	03-18-09 05-20-09 08-24-09 10-20-09	03-12-09 06-10-09 08-21-09 11-16-09

Toll

Site name:	Toll
AQS ID:	32-031-0025
Geographical coordinates:	39° 23.990'N, 119° 44.376'W
Location:	North end of Washoe County School District parking lot.
Street address:	684A State Route 341 Reno, NV 89521
County:	Washoe
Distance to road:	20 meters to SR341 (Geiger Grade Road).
Traffic count:	16,033 AADT (2006-2008) (NDOT ATR 0310137 - SR 341, 0.4 miles east of US 395)
Groundcover:	Paved parking lot / Dirt
Representative area:	Reno-Sparks MSA

Figure 24
Toll Monitoring Station



Figure 25
Toll Monitoring Site Vicinity Map



Figure 26
Toll Monitoring Site Vicinity Aerial



Toll (continued)

	O₃	CO	PM₁₀
Monitor objective	Typical Concentrations	Typical Concentrations	Typical Concentrations
Monitor classification	SLAMS	SLAMS	SLAMS
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Sampling method	API 400A	API 300	Andersen 1200 Hi-Vol
Analysis method	UV Photometry	GFC	Weighed by AQMD lab
Start date	March 1996	March 1996	March 1996
Operation schedule	Continuous	Continuous	1:6
Sampling season	All year	All year	All year
Probe height	4.0 meters	4.0 meters	4.2 meters
Distance:			
from supporting structure	1.2 meters	1.2 meters	1.5 meters
from obstructions on roof	n/a	n/a	n/a
from obstructions not on roof	17.4 meters	17.4 meters	17.4 meters
from trees	12.5 meters	12.5 meters	12.5 meters
to furnace or incinerator flue	n/a	n/a	n/a
between collocated monitors	n/a	n/a	n/a
Unrestricted airflow	360 degrees	360 degrees	360 degrees
Probe material	Teflon	Teflon	n/a
Residence time	8 seconds	8 seconds	n/a
Proposed modifications within the next 18 months?	none	none	none
Is the monitor suitable for comparison against the annual PM_{2.5} NAAQS?	n/a	n/a	n/a
Frequency of:			
flow rate verification for manual samplers audit (PM)	n/a	n/a	Every 1:6 run and quarterly
flow rate verification for automated analyzers audit (PM)	n/a	n/a	n/a
one-point QC check (gaseous)	Bi-weekly (3 point)	Bi-weekly (3 point)	n/a
Last:			
annual performance evaluation (gaseous)	03-03-09 06-15-09 09-08-09 10-08-09	03-03-09 06-15-09 09-08-09 10-08-09	n/a
two semi-annual flow rate audits (PM)	n/a	n/a	03-05-09 06-15-09 08-26-09 10-19-09