APPENDIX C

Ambient Air Monitoring Network Plan
2011

AMBIENT AIR MONITORING NETWORK PLAN

2011

STATE OF NEVADA
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY PLANNING

Contact: Daren Winkelman
Ambient Monitoring Program
Bureau of Air Quality Planning
901 S. Stewart Street, Suite 4001
Carson City, Nevada 89701
(775) 687-9342 or (775) 687-6396 fax
Email: dwinkelman@ndep.nv.go

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Acronyms and Abbreviations

CAA:	Clean Air Act
AQS:	Air Quality System
BAQP:	Bureau of Air Quality Planning
BAM:	Beta Attenuation Monitor
CFR:	Code of Federal Regulations
CO:	Carbon Monoxide
DCNR:	Department of Conservation and Natural Resources
FEM:	Federal Equivalent Method
FRM:	Federal Reference Method
IMPROVE:	Interagency Monitoring of Protected Visual Environments
NAAQS:	National Ambient Air Quality Standard
NAC:	Nevada Administrative Code
NDEP:	Nevada Division of Environmental Protection
O_3:	Ozone
PM:	Particulate Matter (2.5 or 10 microns)
SLAMS:	State and Local Air Monitoring Station
SPMS:	Special Purpose Monitoring Station
USEPA:	United States Environmental Protection Agency

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Overview

The monitoring program of the Nevada Division of Environmental Protection (NDEP) operates an ambient air quality monitoring network of gaseous and particulate pollutant monitors. The monitors are located in small communities throughout rural Nevada. In the metropolitan areas of Reno and Las Vegas; the Washoe County District Health Department, Air Quality Management Division and the Clark County Department of Air Quality and Environmental Management operate and maintain their respective monitoring networks separate from NDEP and submit their Network Plan independently to the United States Environmental Protection Agency (USEPA).

NDEP regulates air quality to protect public health and the environment. Monitoring data is a crucial component of regulations used to determine compliance with the USEPA primary and secondary air quality standards. Other important uses of these monitors include: support of and issuing air quality forecasts, support of long-term health assessments, and tracking long-term air quality both to gauge effectiveness of emission control and abatement strategies and to quantify accuracy of supporting model evaluation.

Goals

NDEP created an ambient air quality monitoring program to provide useful and accurate information on air quality, which is used to evaluate the success of the State's air quality programs. The Clean Air Act of 1970, and subsequent amendments, defines air quality standards for various air pollutants necessary to protect the public from injurious pollution concentrations. Air pollution concentrations that exceed the National Ambient Air Quality Standard (NAAQS) can cause a public health hazard, nuisance, annoyance, or damage to flora, fauna and personal property.

The NAAQS, published by the USEPA, can be found in 40 Code of Federal Regulations (CFR) Part 50, which defines the levels of air quality necessary to protect human health and welfare. An area is considered to be in nonattainment for a pollutant if it has violated the NAAQS for that

pollutant. The CFR includes procedures for evaluating measured air quality against the NAAQS. State air quality standards can be found in Nevada Administrative Code (NAC) 445B.22097.

Background

The State of Nevada has three jurisdictions which independently manage their own air programs as designated by statute: Department of Conservation and Natural Resources (DCNR), Division of Environmental Protection (NDEP), Bureau of Air Quality Planning (BAQP); Washoe County District Health Department, Air Quality Management Division; and Clark County Department of Air Quality and Environmental Management.

State agencies that conduct ambient air monitoring using State and Local Air Monitoring Stations (SLAMS) or Special Purpose Monitoring Stations (SPMS), must use Federal Reference Methods (FRM) or Federal Equivalent Methods (FEM) that comply with federal quality assurance requirements listed in 40 CFR 58, Appendix A. In conjunction with the Network Plan, a BAQP quality assurance plan was developed to form the framework for planning, implementing, assessing and reporting work performed by the BAQP and for implementing quality assurance and quality control protocols.

The Ambient Air Monitoring Program Quality Assurance Project Plan (QAPP) was developed to address quality management as well as quality assurance. The QAPP defines the policies, procedures, specifications, standards, and documentation necessary to: 1) provide data of adequate quality to meet monitoring objectives, and 2) minimize loss of air quality data due to malfunctions or out-of-control conditions. The Quality Management Plan (QMP) describes the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces between planning, implementing, assessing and reporting activities involving environmental data operations.

Additionally, the BAQP has developed ambient monitoring guidelines in order to ensure that ambient air quality data collected, at regulated facilities in the State, are of the highest quality and conform to federal requirements for quality assurance listed under 40 CFR 58.

Ambient air quality monitoring data must be certified on an annual basis as accurate and complete. The certification process begins with the complete submittal of all SLAMS data to the federal Air Quality System (AQS) for the calendar year. Submittal of data into AQS for 2010 has been accomplished. BAQP is planning on completing the entry of 2011 data into AQS by the May 1, 2012, deadline. Precision and accuracy reports and certification of that data should also be submitted within that time frame.

Network Design

There are currently twelve ambient air quality monitoring stations in Nevada under the jurisdiction of NDEP. Air quality monitoring is represented by both SLAMS and SPMS. The ozone monitoring conducted by NDEP is done on a seasonal basis from April 1 to October 31 of each year. The EPA's approval of a seasonal ozone monitoring schedule for NDEP is documented in Appendix A. There are two meteorological stations, one in Carson City and the other in Pahrump. These are used to confirm the local meteorological data from the monitoring stations.

In addition to these three independent monitoring networks, air quality monitoring is conducted through the Interagency Monitoring of Protected Visual Environments (IMPROVE) network by the federal land management agencies. There are two IMPROVE monitoring sites in Nevada, at the Jarbidge Wilderness area and Great Basin National Park, Lehman Caves.

The following table shows the locations and types of monitors operated by NDEP.

Table 1: NDEP'S Ambient Air Monitoring Network

Location	Ozone	Carbon Monoxide	PM10	PM2.5
Elko			1 (SLAMS)	
Fallon	1 (SLAMS)			
Stateline- Harvey's		1 (SLAMS)		
Fernley	1 (SLAMS)			1 (SPMS)
Carson City-5th Street	1(SLAMS)			1(SPMS)
Gardnerville Ranchos				1 (SPMS)
Pahrump-Church Site			1 (SLAMS)	
Pahrump-Manse Elementary			1 (SLAMS)	
Pahrump-Manse Replacement*			*projected start date of 5/1/11	
Pahrump-Glen Oaks			1 (SLAMS)	
Pahrump-Linda Street			1 (SLAMS)	
Total	3	1	5	3

SLAMS – State and Local Air Monitoring Station

SPMS – Special Purpose Monitoring Station

Minimum Monitoring Requirements

The USEPA provides minimum site requirements for ozone and particulate matter based on metropolitan statistical area (MSA) population. The NDEP's air monitoring network meets or, in most cases, exceeds the minimum network requirements. The monitors currently required in the NDEP monitoring network by the USEPA are located in Stateline (CO), Carson City (O_3), Fallon (O_3), Fernley (O_3) and Pahrump (PM_{10}). The Stateline monitoring site is a continuation of a highest concentration site started by the California Air Resources Board (CARB). Through a Maintenance Plan with USEPA, monitoring and maintenance of this site was assumed by NDEP in August 2006. The four PM_{10} monitoring sites in Pahrump are required through a Memorandum of Understanding (MOU) between NDEP, USEPA, Nye County and the Town of Pahrump. Otherwise according to 40 CFR Appendix D: Tables D-4 and D-5; sections 4.2, 4.3.2, 4.3.3, 4.4.2 and 4.5, additional monitoring for criteria pollutants is not presently required.

The following table outlines the minimum required monitors within the NDEP ambient air monitoring network.

Table 2: Minimum Monitoring Requirements by Pollutant

Pollutant	Minimum # of Monitors Required	# of Monitors Active	# of Monitors needed	Location	MSA/CSA	County(ies)	County Pop. (2009)	Design Values
Ozone	3	3	0	Carson City	Carson City MSA	Carson City	55,176	66 ppb (2005-2007)
				Fallon	Fallon MSA	Churchill	24,897	68 ppb (2006-2008)
				Fernley	Rural	Lyon	52, 641	63 ppb (2007-2009)
CO	1	1	0	South Lake Tahoe	Sacramento-Arden-Truckee CSA	Douglas	45, 464	3.7 ppm (2008-2009)
Lead*	0	0	0	N/A	N/A	N/A	N/A	N/A
SO2*	0	0	0	N/A	N/A	N/A	N/A	N/A
NO2*	0	0	0	N/A	N/A	N/A	N/A	N/A
PM10	4	5	0	Elko	Elko MSA	Elko	47,896	0.0 (2006-2008)
				Pahrump (4)	Pahrump MSA/Las Vegas-Paradise-Pahrump CSA	Nye	44,324	Manse = 3.5 Church = 0.3 Willow Creek = 1.0 Linda Street = 0.3 (2006-2008)
PM2.5	0	3	0	Carson City	Carson City MSA	Carson City	55,176	N/A
				Gardnerville Ranchos	Gardnerville Ranchos MSA	Douglas	45,464	N/A
				Fernley	Rural	Lyon	52,641	N/A
Total	8	12	0					

*Based on 40 CFR Appendix D: Tables D-4 and D-5; sections 4.2, 4.3.2, 4.3.3, 4.4.2 and 4.5, additional monitoring for criteria pollutants is not presently required. Additionally, based on the 2008 Lead NAAQS Final Rule, 2010 SO_2 NAAQS Final Rule and the 2010 NO_2 NAAQS Final Rule, NDEP is not required to monitor for these criteria pollutants.

Changes in Monitoring Network

Over the last 12 months, one significant change has occurred throughout the monitoring network that will impact data submittal for the 2011 year. NDEP will be moving the PM_{10} monitor currently located at the Manse Elementary School in Pahrump, NV, to a comparable location on the rooftop of a Nye County School district administrative building across the street. This move is necessitated by the closure of the school after the 2010-2011 school year. Currently, data is still being collected and submitted to AQS from the original Manse site. The USEPA will be notified when data collection and submittal at 208 Dahlia Street in Pahrump is commenced. Please see the approval letter from USEPA regarding the approval of the monitor relocation in Appendix B. For the next year, NDEP is anticipating changes in the monitoring network. Depending on the final decision regarding the new ozone standard, NDEP may install new ozone monitors throughout the network. Also, NDEP is evaluating the $PM_{2.5}$ monitors to determine if these monitors are meeting our air quality objectives. This annual monitoring network plan will be used to identify changes in the ozone and $PM_{2.5}$ monitoring network during the next 12 months. Presently there are no violating ozone or $PM_{2.5}$ monitors in the NDEP monitoring network. Over the next five years, through 2016, NDEP will evaluate our current network to determine if any new sites or monitors need to be added to the existing monitoring network.

Purpose of Monitors

The purpose of the Nevada Air Monitoring Network is to provide useful and accurate information on air quality, which is used to evaluate the success of the State's air quality programs. To accomplish this task, the NAAQS is used to identify the criteria pollutants; CO (Carbon Monoxide), Pb (Lead), NO_2 (Nitrogen Dioxide), O_3 (Ozone), particulate matter (PM_{10} and $PM_{2.5}$), and SO_2 (Sulfur Dioxide). Measuring pollutant concentrations in outdoor air and comparing the measured concentrations to corresponding standards help to classify ambient air quality status of an area as either attainment or nonattainment. The NAAQS is broken down into primary and secondary standards. Primary standards are those established to protect public health. Secondary standards are those established to protect the public welfare from adverse pollution effects on soils, water, vegetation, man-made materials, animals, weather, visibility,

climate, property, and the economy. The scientific criteria upon which the standards are based are reviewed periodically by the USEPA, who may reestablish or change the standards according to its findings. Note that there are hundreds of compounds that are generally considered pollutants when found in ambient air but their health and welfare effects are not well enough understood for ambient standards to be defined.

A pollutant measurement that is greater than the ambient air quality standard for its specific averaging time is called an exceedance. This is not necessarily a synonym for a violation; for each pollutant there are specific rules about how many exceedances are allowed in a given time period before a pattern of exceedances is considered to be a violation of the NAAQS. A violation may result in regulatory action to clean up the area's air. Exceptions are made to allow for certain limited exceedances of the standard that may occur, for example, during an unusual weather pattern. Regulatory action is typically reserved for cases where the exceedances are too large or too frequent.

Historically, ambient air quality monitoring by BAQP has looked at trends in air quality to aid in the local planning process. Traffic, wood burning stoves, and growth related activities have prompted air quality monitoring in specific areas around the State. Data from these sites has lead to public education and outreach to communities identifying the potential health effects caused by air pollutants in the environment. Ordinances controlling surface area disturbances and other related activities that produce dust have also been implemented with the help of the monitoring sites.

Overview of Monitored Parameters

Carbon Monoxide (CO)

CO is a poisonous gas that, when introduced into the bloodstream, inhibits the delivery of oxygen to body tissue. The health risk is greatest for individuals with cardiovascular disease.

Ozone (O_3)

Ground-level ozone, or photochemical smog, is not emitted into the atmosphere as ozone, but rather is formed by the reactions of other pollutants. The primary pollutants entering into this reaction, VOCs and oxides of nitrogen, create ozone in the presence of sunlight. Ozone is a strong irritant of the upper respiratory system and also causes damage to crops.

Particulate Matter (PM_{10})

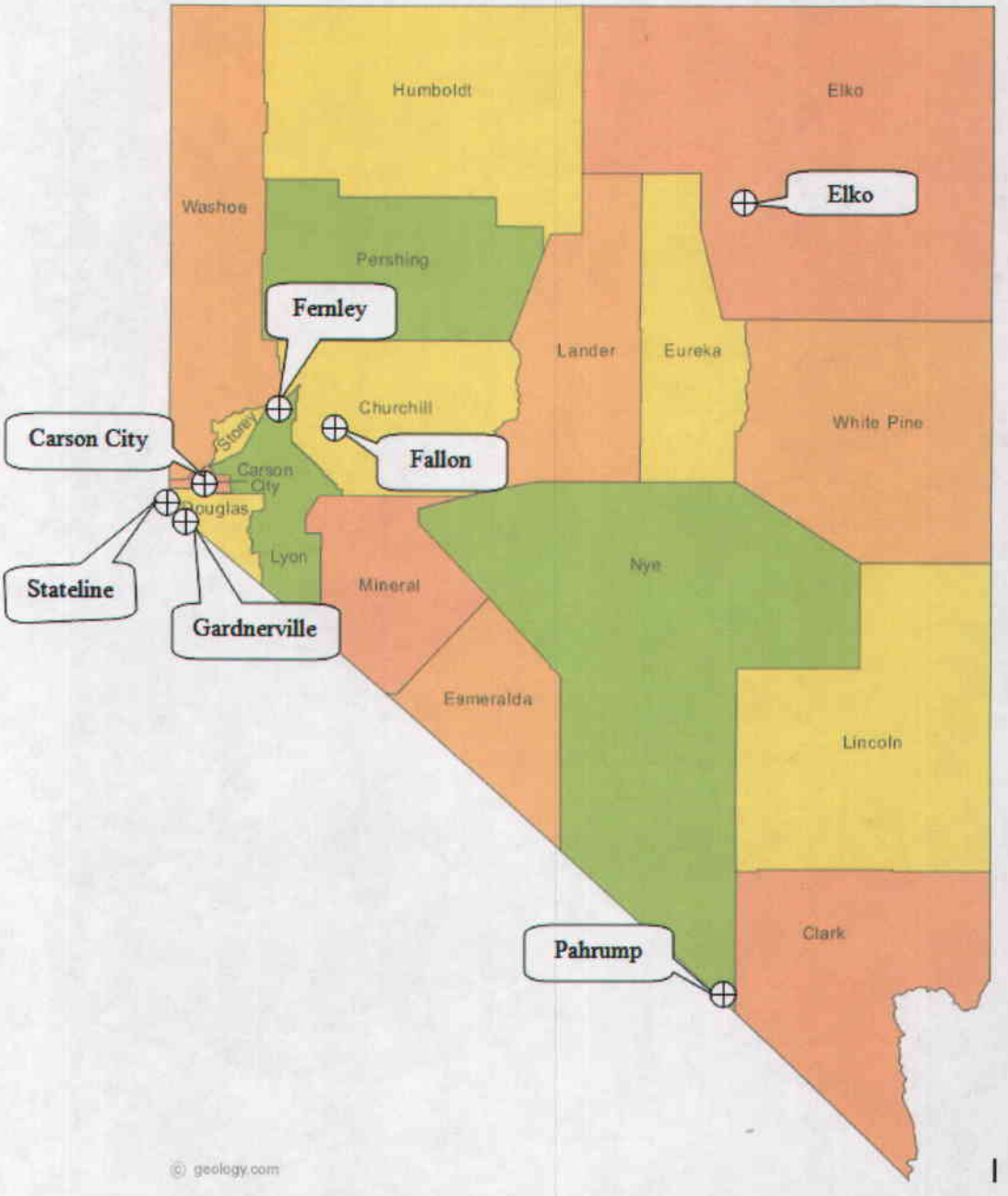
Particulate matter with an aerodynamic diameter of 10 microns or less is emitted from transportation and industrial sources. Exposure to particle pollution is linked to a variety of significant health problems ranging from aggravated asthma to premature death in people with heart and lung disease.

Fine Particulate Matter ($PM_{2.5}$)

Fine particulate matter with a diameter of 2.5 microns or less is created primarily from industrial processes and fuel combustion. These particles are breathed deeply into the lungs. Exposure to particle pollution is linked to a variety of significant health problems ranging from aggravated asthma to premature death in people with heart and lung disease.

Site Map

Figure 1: A map showing the locations of the monitoring stations maintained in NDEP's network.



[1] Map template from:
http://geology.com/state-map/maps/nevada-county-map.gif

Elko: Detailed Site Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
Elko	**32-007-0005**	**Lat +40.838347 Long -115.765961**	**Elko Grammar School #2**	**1055 7th Street**	**Elko**	**18 meters**	**1400 AADT (2009) Station # 0070203**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Asphalt	**Elko MSA**	**PM_{10}/81102**	**SLAMS**	**Typ. Conc. /Population Oriented**	**Neighborhood**	**BAM-1020**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A	**09/25/2008**	**Continuous**	**All Year**	**2.6 meters**	**Vertical Distance 1.2 meters**	**N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
N/A	**27 meters**	**N/A**	**N/A**	**360**	**N/A**	**N/A**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (gaseous)	Last two semi-annual flow rate audits for PM monitors	
No	**N/A**	**N/A**	**Monthly**	**N/A**	**N/A**	**7/22/2010 12/22/2010**	

Prior to 1992 the location for this sampler was the fire station at 723 Railroad Street (ID #32-007-003) in a commercial area. In November of 1992 this continuous PM_{10} monitoring site was relocated to the roof of the State offices at 850 Elm Street in a predominantly residential area. The monitoring objective was to determine typical concentration/population oriented. The manual sampler was replaced with a continuous (TEOM) PM_{10} monitor in December 1998. In September 2008, the TEOM monitor was closed and a new BAM 1020 monitor was sited at the Elko Grammar School #2.

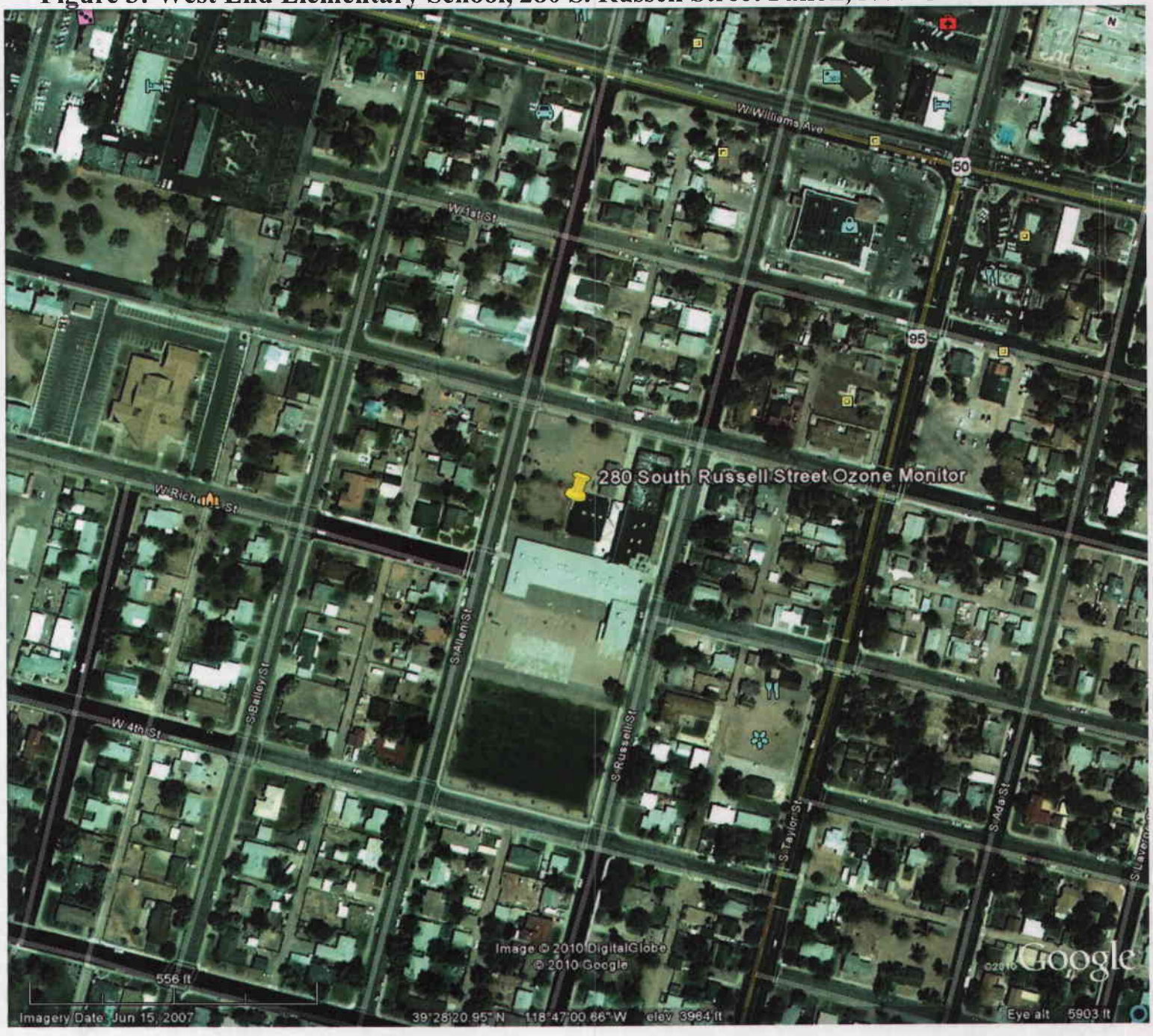
Figure 2: Elko Grammar School #2, 1055 7th Street Elko, NV. PM 10 Monitor

Fallon: Detailed Site Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
Fallon	**32-001-0002**	**Lat +39.472502 Long -118.783596**	**On West End Elementary School**	**280 South Russell St. Fallon, Nevada**	**Churchill**	**65 meters**	**410 AADT (2009) Station # 0010135**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Dirt and rock	**Fallon MSA**	**O_3/44201**	**SLAMS**	**Typ. Conc. /Population Oriented**	**Neighborhood**	**Model 400E (UV Absorption)**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A	**10/1/1999**	**Seasonal**	**April thru October**	**3.2 meters**	**1 meter from wall**	**N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
N/A	**> 10 meters**	**N/A**	**N/A**	**180**	**Teflon tubing**	**10 seconds**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (gaseous)	Last two semi-annual flow rate audits for PM monitors	
No	**N/A**	**N/A**	**N/A**	**Semimonthly**	**9/28/2010**	**N/A**	

The ozone monitoring site at 280 South Russell Street is at the West End Elementary School in a residential neighborhood that may be affected by agricultural operations surrounding the City of Fallon. The monitoring objective is to determine typical concentration/population orientation. PM_{10} sampling commenced at this site in May 1993 and was discontinued at the end of June 1998. Monitoring for ozone began in October 1999 as an ozone transport site downwind of Reno and Fernley.

Figure 3: West End Elementary School, 280 S. Russell Street Fallon, NV. Ozone Monitor



Harvey's Casino and Resort: Detailed Site Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
Harvey's Casino and Resort	**32-005-0009**	**Lat +38.960500 Long -119.941564**	**1st level of parking garage facing HWY**	**Stateline, NV 89449**	**Douglas, NV**	**9 meters**	**24,000 AADT (2009) Station # 0050044**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Paved, asphalt and grass	**Sacramento-Arden Arcade-Truckee CSA or Rural (Micropolitan Statistical Area)**	**CO/42101**	**SLAMS**	**Highest Concentrations**	**Micro**	**API Teledyne 300M**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A	**10/1/1999**	**Continuous**	**All Year**	**2.5 meters**	**1 meter Horizontally**	**N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
N/A	**4 meters**	**N/A**	**N/A**	**180 degrees**	**Teflon**	**5 seconds**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (gaseous)	Last two semi-annual flow rate audits for PM monitors	
No	**N/A**	**N/A**	**N/A**		**12/2/2010**	**N/A**	

This is a "micro-scale" monitoring site for carbon monoxide in the core of the Stateline casino hotel area at Lake Tahoe. The site is designed to monitor the highest CO concentrations at Lake Tahoe, and is, taken to be representative of the California and Nevada sides of the south shore casino district. Monitoring at this site began in October 1999 and was previously conducted by the California Air Resources Board by multi-agency cooperative agreement. Starting in July of 2006, NDEP took over the monitoring responsibility for this site under a maintenance agreement with EPA.

Figure 4: Harvey's Casino and Resort Lake Tahoe NV. CO Monitor

Fernley Intermediate School: Detailed Site Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
Fernley Intermediate School	**32-019-0006** **32-019-0006**	**Lat +39.600859 Long -119.246945**	**Fernley, NV**	**320 Hardie Lane Fernley, NV**	**Lyon County**	**220 meters**	**1300 AADT (2009) Station # 0190119**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Paved, cement, gravel and dirt	**Rural (Micropolitan Statistical Area)**	**$PM_{2.5}$/88501** **O_3/44201**	**SPMS** **SLAMS**	**Typ. Conc. / Population Oriented** **Urban**	**Urban** **Urban**	**ES-640** **Model 400E (UV Absorption)**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A **N/A**	**6/8/1999** **7/6/2007**	**Continuous** **Continuous**	**All Year** **April to October**	**7 Meters** **7 Meters**	**1.5 Vertical meters** **Vert. distance above 2.1 meters**	**N/A (Elevated)** **N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
N/A **N/A**	**15 meters** **15 Meters**	**N/A** **N/A**	**N/A** **N/A**	**360 Degrees** **360 Degrees**	**Aluminum** **Teflon**	**N/A** **4 Seconds**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (gaseous)	Last two semi-annual flow rate audits for PM monitors	
No	**N/A**	**N/A**	**Monthly**	**Semimonthly**	**9/28/2010**	**N/A**	

Particulate and ozone monitoring is done at the Fernley Intermediate School which is located at 320 Hardie Lane. This is an area of mainly residential and agricultural use. There has recently been a large growth of industry both upwind and downwind of this site. Monitoring for PM_{10} at this site commenced on May 1995, to determine the agricultural and industrial source impacts and population exposure. PM_{10} sampling was discontinued in November 1998. Monitoring for $PM_{2.5}$ began in June 1999. In addition to the $PM_{2.5}$ monitoring, ozone monitoring began at this site July 2007. However, ozone monitoring (SPMS) was previously conducted at the Fernley Volunteer Fire Department starting in October 1997 and discontinued on October 2003.

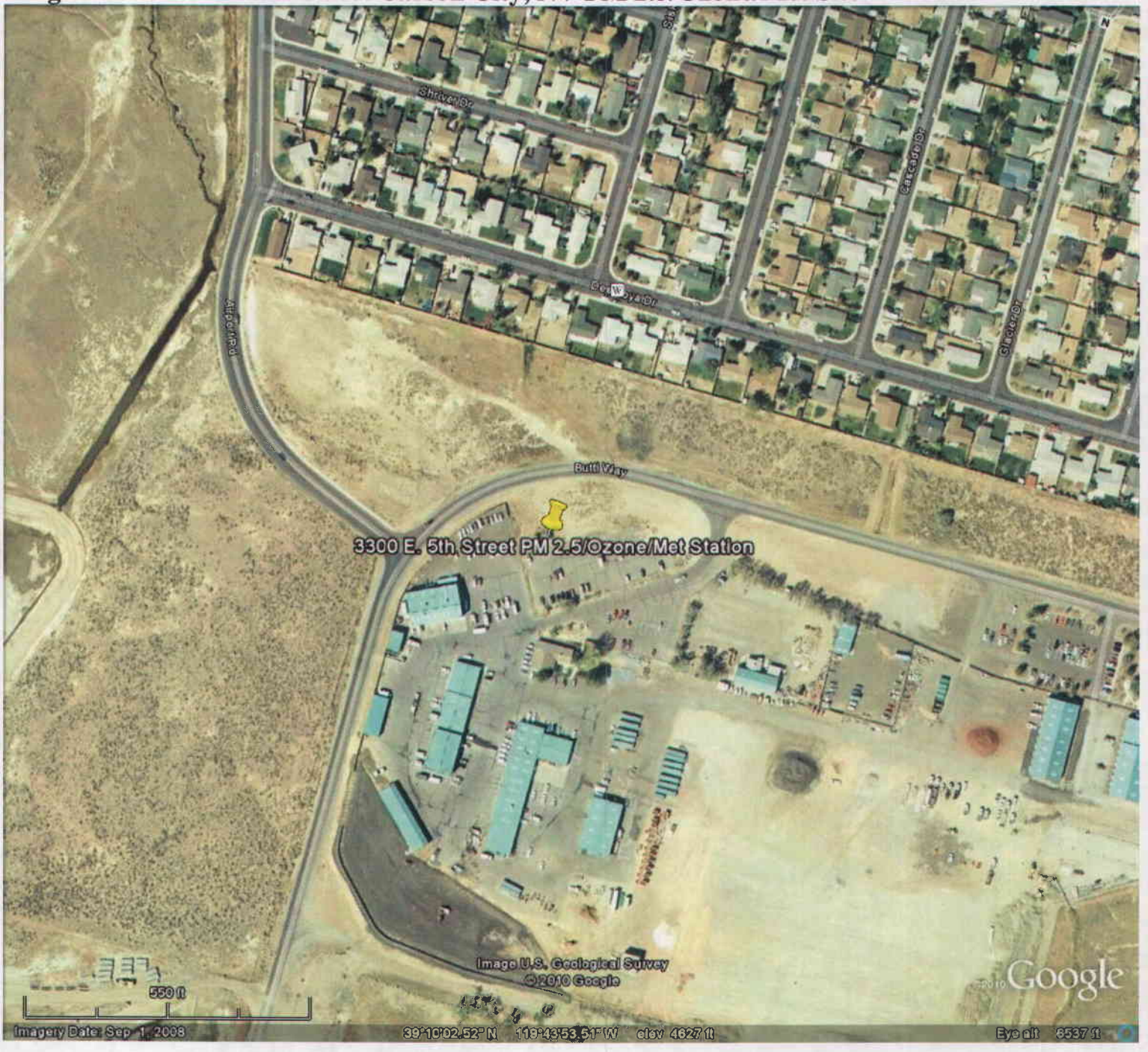
Figure 5: Fernley Intermediate School, 320 Hardie Lane Fernley NV PM 2.5/Ozone Monitor

3300 E. 5th Street: Detailed Site Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
East 5th Street	**32-510-0002**	**Lat +39.1671 Long -119.7314**	**Carson City**	**3300 East Fifth Street**	**Carson**	**10 meters**	**3500 AADT (2009) Station # 0250116**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Dirt	**Carson City MSA**	**Met Site**	**N/A**	**Modeling, Natural Events and Confirmation**	**Neighborhood**	**N/A**	
		O_3/44201	**SLAMS**	**Typ. Conc. /Population Oriented**	**Neighborhood**	**Model 400E (UV Absorption)**	
		$PM_{2.5}$/88501	**SPMS**	**Typ. Conc. /Population Oriented**	**Neighborhood**	**BAM 1020**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A	**1/1/1989**	**April through October**	**Seasonal**	**>10 meters**	**Vertical distance above 7 meters**	**N/A**	
N/A	**04/03/2008**	**Continuous**	**All Year**	**4 meters**	**Vertical distance above 1.4 meters**	**N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
N/A	**N/A**	**N/A**	**N/A**	**360 Degrees**	**N/A**	**N/A**	
N/A	**N/A**	**N/A**	**N/A**	**360 Degrees**	**Teflon**	**6 seconds**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (Gaseous)	Last two semi-annual flow rate audits for PM monitors	
No	**No**	**N/A**	**Monthly**	**Semimonthly**	**4/28/11**	**N/A**	

This site is located at 3300 East Fifth Street near the Carson City Public Works Department maintenance yard in a transition area, adjacent to wetlands, the City yard, sewage treatment plant, residential neighborhood and the new highway extension of US 395. The pollutants monitored included carbon monoxide and ozone (through 1989) and PM_{10} (March 1991- February 1997). The monitoring objective is to determine typical concentration/population oriented. In 2007, an existing meteorological station was restarted, and as previously stated, the ozone monitor from Long Street site was relocated to East Fifth Street. At the end of 2009, the $PM_{2.5}$ was relocated to this monitoring site.

Figure 6: 3300 E. Fifth Street Carson City, NV PM 2.5/Ozone/Met Site



Gardnerville: Detailed Site Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
Gardnerville Ranchos	**32-005-0007**	**Lat + 38.898889 Long -119.732222**	**Aspen Park maintenance yard**	**820 Lyell Way**	**Douglas**	**12 meters East, 100 meters South 200 meters North**	**5600 AADT (2009) Station # 0050073**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Gravel	**Gardnerville Ranchos MSA**	**$PM_{2.5}$/88501**	**SPMS**	**Typ. Conc. /Population Oriented**	**Neighborhood**	**Met-One BAM 1020**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A	**Jul-98**	**Continuous**	**All Year**	**3 meters**	**Vertical distance above 1.5 meters**	**N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
4 meters	**21 Meters**	**N/A**	**N/A**	**360 Degrees**	**Aluminum**	**N/A**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (Gaseous)	Last two semi-annual flow rate audits for PM monitors	
Yes	**No**	**N/A**	**Monthly**	**N/A**	**N/A**	**N/A**	

This particulate monitoring site at 820 Lyell Way is located in Aspen Park in the Gardnerville Ranchos, a residential neighborhood. The site monitor objective is typical concentration/ population oriented. PM_{10} commenced at this site in December 1995 and was discontinued at the end of 1998. Monitoring for $PM_{2.5}$ began in July 1998.

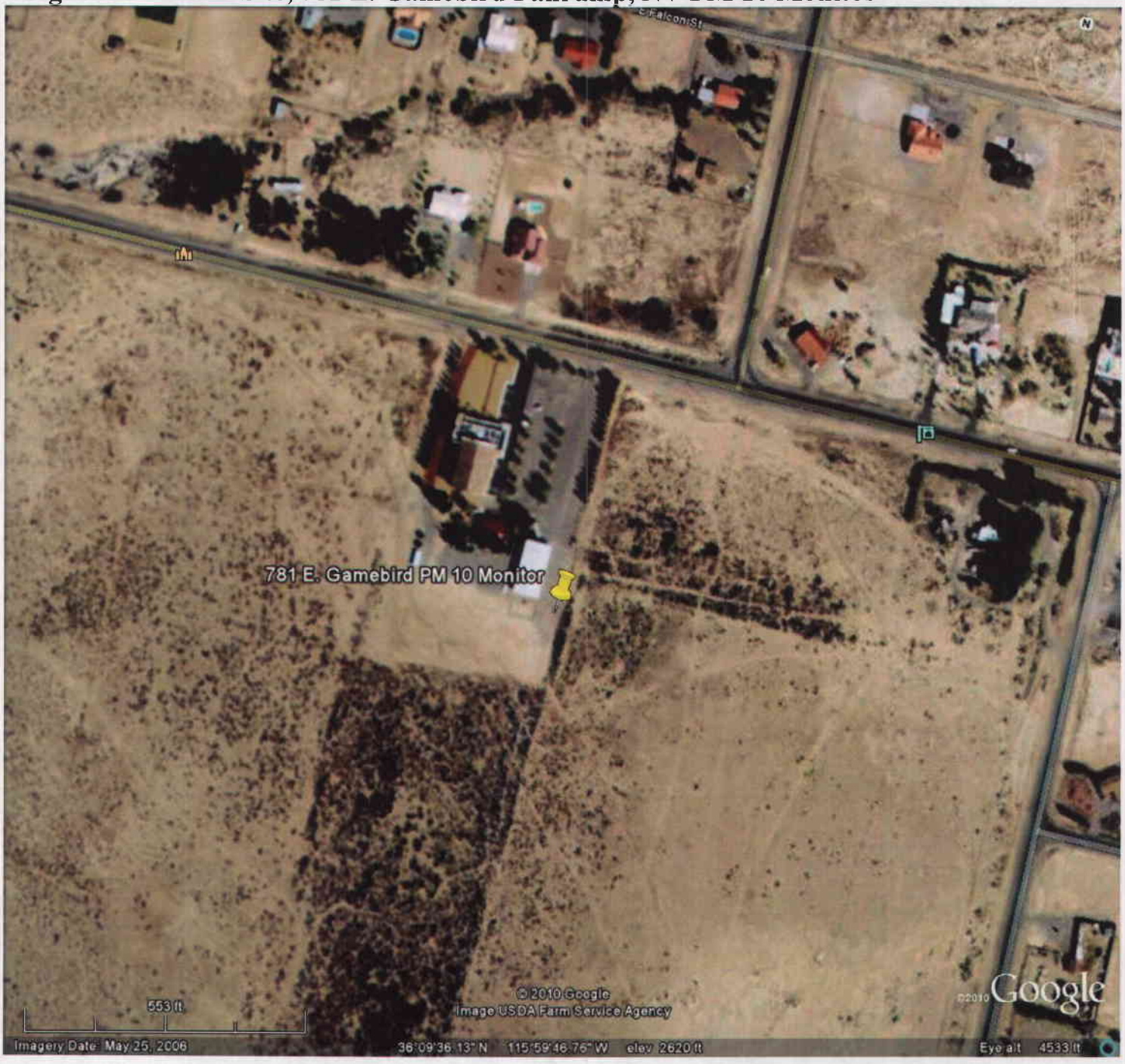
Figure 7: 820 Lyell Way, Gardnerville, NV PM 2.5 Monitor

Church: Detailed Site Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
Our Lady of the Valley Catholic Church	**32-023-0013**	**Lat +36.161319 Long -115.996267**	**Pahrump**	**781 E. Gamebird**	**Nye**	**100 Meters**	**1100 AADT (2009) Station # 0230010**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Desert	**Pahrump MSA Las Vegas-Paradise-Pahrump CSA**	**PM_{10}/81102**	**SLAMS**	**Significant sources- dry lake bed 6 miles to south**	**Urban**	**BAM-1020**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A	**2/14/2004**	**Continuous**	**All Year**	**4 meters**	**Vertical distance above 2 meters**	**N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
10 meters	**50 Meters**	**N/A**	**N/A**	**360 Degrees**	**Aluminum**	**N/A**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (Gaseous)	Last two semi-annual flow rate audits for PM monitors	
No	**N/A**	**N/A**	**Monthly**	**N/A**	**N/A**	**4/16/2010 10/13/2010**	

The Church Site began operation in 2004 to complement the existing three other sites in the Pahrump monitoring network. Monitoring is accomplished with a continuous beta attenuated monitor located in the southeast corner of the Catholic Church. This site represents the southern-most monitoring in Pahrump Valley. The monitoring objective of this site is a significant source of PM_{10}. The surrounding area represents residential with little commercial, some native desert with a mix of dirt and paved roads.

Figure 8: Church Site, 781 E. Gamebird Pahrump, NV PM 10 Monitor



Manse Elementary: Site Detailed Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
Manse Elementary	**32-023-0014-81102-1**	**Lat +36.225093 Long -115.997467**	**Pahrump**	**1020 E. Wilson Rd**	**Nye**	**50 meters South, 100 meters South East, 68 meters South West**	**11,000 AADT (2006) Station #0230006**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Gravel school yard	**Pahrump MSA Las Vegas-Paradise-Pahrump CSA**	**PM_{10}/81102**	**SLAMS**	**Highest Concentrations**	**Neighborhood**	**BAM-1020**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A	**11/17/2005**	**Continuous**	**All Year**	**3 meters**	**Vertical distance above 1 meters**	**N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
N/A	**> 10 Meters**	**N/A**	**N/A**	**360 Degrees**	**Aluminum**	**N/A**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (Gaseous)	Last two semi-annual flow rate audits for PM monitors	
Yes-relocation	**N/A**	**N/A**	**Monthly**	**N/A**	**N/A**	**4/15/2010 10/12/2010**	

The Manse site represents the monitoring objective for highest concentrations of PM_{10} in Pahrump. This site replaces the Community Pool site, which at the time it was operating, represented the highest concentrations of PM_{10} in Pahrump. Located at 1020 E. Wilson Road, the Manse Elementary site is located on the roof of the school and monitors for PM_{10} using the continuous beta attenuation monitor. The area adjacent to this site represents mostly commercial, some residential, and is adjacent to the busiest activity area of Pahrump. This site is located downwind from residential construction developments that have cleared large parcels of ground for building, as well as agricultural areas that cultivate large areas of farm-ground and raise livestock. Roads surrounding this site are both paved and dirt. This monitor is in the process of being replaced due to the closure of the Manse Elementary School after the 2010-2011 school year. A monitor has been placed with USEPA approval on the rooftop of a Nye County School District building across the street, 208 Dahlia Street. NDEP will be collecting data from both sites until electricity is discontinued at Manse Elementary. USEPA will be notified when the data from the Dahlia Street monitor is submitted to AQS.

Figure 9: Manse Elementary, 1020 E. Wilson Road Pahrump, NV PM 10 Monitor

Glen Oaks: Site Detailed Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
Glen Oaks	**32-023-0012**	**Lat +36.195996 Long -116.004882**	**Pahrump**	**145 Glen Oaks St.**	**Nye**	**200 m**	**1100 AADT (2009) Station # 0230010**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Grass	**Pahrump MSA Las Vegas-Paradise-Pahrump CSA**	**PM_{10}/81102**	**SLAMS**	**Typ. Conc. /Population Oriented**	**Neighborhood**	**BAM-1020**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A	**11/20/2003**	**Continuous**	**All Year**	**6 meters**	**Vertical distance above 2 meters**	**N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
N/A	**12 Meters**	**N/A**	**N/A**	**360 Degrees**	**Aluminum**	**N/A**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (Gaseous)	Last two semi-annual flow rate audits for PM monitors	
No	**N/A**	**N/A**	**Monthly**	**N/A**	**N/A**	**4/15/2010 10/13/2010**	

The Willow Creek site was started in 2003 and was located at 1500 Red Butte on the roof of a building in which irrigation equipment for the golf course is housed. The monitoring objective of this site was to measure typical concentrations/population oriented of PM_{10} using the beta attenuated monitor. The surrounding area adjacent to this site is fairway/golf course and residential structures. Due to closure of the golf course, the Willow Creek site was relocated to the Glen Oaks sewer treatment plant.in 2009. The Glen Oaks site is a short distance away from the existing golf course site and the monitoring objective did not change.

Figure 10: 145 Glen Oaks St., Pahrump, NV PM10 Monitor

Linda Street: Site Detailed Information

Site Name	AQS ID	GIS coordinates	Location	Address	County	Dist. to road	Traffic count
Linda St.	**32-023-0011-81102-1**	**Lat +36.351622 Long -116.031916**	**Pahrump**	**8825 N. Linda**	**Nye**	**20 Meters**	**22,00 AADT (2008) Station #0230008**
Groundcover	Representative Area	Pollutant	Classification	Monitor objective (Site Type)	Spatial scale	Sampling method	
Desert	**Pahrump MSA Las Vegas-Paradise-Pahrump CSA**	**PM_{10}/81102**	**SLAMS**	**General Background**	**Urban**	**BAM-1020**	
Analysis method	Start date	Operational schedule	Sampling season	Probe Height	Distance from supporting structures	Distance from obstructions on roof	
N/A	**5/03/2003**	**Continuous**	**All Year**	**6.7 meters**	**Vertical distance above 3 meters**	**N/A**	
Distance from obstructions not on roof	Distance from trees	Distance to furnace or incinerator flue	Distance between collocated monitors	Unrestricted airflow	Probe material	Residence time	
10 Meters	**N/A**	**N/A**	**N/A**	**360 Degrees**	**Aluminum**	**N/A**	
Will there be changes within the next 18 months?	Is it suitable for comparison against the annual PM2.5?	Frequency of flow rate verification for manual PM samplers audit	Frequency of flow rate verification for automated PM analyzers audit	Frequency of one-point QC check (gaseous)	Last Annual Performance Evaluation (Gaseous)	Last two semi-annual flow rate audits for PM monitors	
No	**N/A**	**N/A**	**Monthly**	**N/A**	**N/A**	**04/16/2010 10/12/2010**	

The Linda Street site was started in 2003 and is located at 8825 North Linda Street. The beta attenuated monitor is located on the roof of an old railroad box car and represents not only the northern-most site in the Pahrump monitoring network, but the most rural area. There is some residential surrounding this site, but mainly native desert vegetation with little or no surface disturbances. The monitoring objective for this site is general background levels of PM_{10} in Pahrump.

Figure 11: 8825 N. Linda Pahrump, NV PM 10 Monitor

Appendix A.
Ozone Seasonality Approval Letter

STEVE

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

FEBRUARY 6, 2002

Mr. Chester Sergent, Supervisor
Ambient Air Monitoring Branch
Bureau of Air Quality Planning
Division of Environmental Protection
Department of Conservation and Natural Resources
333 W. Nye Lane, Room 138
Carson City, NV 89706

Dear Mr. ~~Sergent~~ Chet:

I have received your letter of January 29, 2002 requesting permission to adjust the ozone monitoring season from year round to April 1 through October 31. We have reviewed the information you provided and approve your request to reduce the ozone monitoring season.

One issue that needs to be addressed is ensuring that EPA's AIRS database is updated to reflect this change in the ozone monitoring season. Failure to do so will result in AIRS showing incomplete ozone data capture rates for the Carson City, Fernley and Fallon monitoring sites. Please have your staff contact our AIRS database manager, Jim Forrest, at (415) 947-4135 to discuss the appropriate procedure for making this change. Please feel free to contact me at (415) 947-4128 if you have any questions.

Sincerely,

Robert S. Pallarino
Technical Support Office
Air Division

cc: Colleen Cripps, DCNR/DEP
Jim Forrest, US EPA

Appendix B.
Manse PM10 Monitor Relocation Approval

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

MAR 22 2011

Nevada
Environmental Protection

MAR 25 2011

BAPC/BAQP

RECEIVED
MAR 25 2011
ENVIRONMENTAL PROTECTION

Mr. Daren Winkelman, Supervisor
Ambient Air Quality Monitoring Program
Bureau of Air Quality Planning
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City, NV 89701

RE: Response to discontinuation and relocation request of Manse Elementary SLAMS PM_{10} monitor (AQS ID: 32-023-0014-81102-1)

Dear Mr. Winkelman: Daren

On February 24, 2011 we received your official request for the discontinuation of the PM_{10} monitor at Manse Elementary School (AQS ID: 32-023-0014-81102-1) and the subsequent relocation of the PM_{10} monitor to the nearby Nye County School District office.

After a visit to the proposed relocation site and upon our review of the documentation you have provided, pursuant to 40 CFR 58.14, we approve your selection of the Nye School District building for replacement of the current Manse Elementary School site. Specifically, we have determined that your request meets the provisions under 40 CFR 58.14(c)(6), namely that logistical problems beyond NDEP's control make it impossible to continue operation at the current site and that the replacement site is a nearby location with the same scale of representation. We request that you list the official site address as 208 Dahlia Street, Pahrump, NV 89048 with GPS coordinates (in decimal degrees): 36.212989, -115.996875.

Thank you for your cooperation throughout this process and please feel free to contact Elfego Felix (415) 947-4141 from my staff or myself (415) 972-3851 with any questions or concerns in regards to this matter.

Sincerely,

Matthew Lakin, Manager
Air Quality Analysis Office

Appendix C.
Comment Submittal Information

The proposed 2011 Ambient Air Monitoring Network Plan is posted on the NDEP website for review and comment for thirty (30) days.

Comments may be emailed to
Daren Winkelman (dwinkelman@ndep.nv.gov)
or mailed to,
Daren Winkelman
Ambient Monitoring Program
Bureau of Air Quality Planning
901 S. Stewart Street, Suite 4001
Carson City, Nevada 89701