COLORADO
ANNUAL MONITORING NETWORK PLAN
2013

Colorado Department
of Public Health
and Environment

Prepared by the Air Pollution Control Division

Technical Services Program

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I. INTRODUCTION

The Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Divisionôs (APCD) 2013 Ambient Air Monitoring Network Plan is an examination and evaluation of the APCDôs network of air pollution monitoring stations. The Network Plan is an annual review of the Divisionôs air monitoring network, as required by Title 40, Code of Federal Regulations, Part 58.10(a) [40 CFR 58.10(a)].[1] It is also a simple accounting of monitoring site changes expected for that year and the following year. It is due on or before July 1 each year.

Purpose of Network Plan

The purpose of the Network Plan is to provide an overview of the APCDôs current air quality monitoring network and projected plans for the coming year. This plan shows the general reason for monitoring, the location of the monitor, and finally the type and frequency of measurements taken at each location. This is the sixth year that this review has been released to the general public for comment prior to its submittal to the U. S. Environmental Protection Agency (EPA) for approval. This change was initiated because of a change in Federal Regulations implemented in December 2006.

Overview of the Colorado Air Monitoring Network

In 2013, the Colorado Air Pollution Control Division currently operates monitors at 57 locations. Since last reported, six monitoring sites were removed: Breckenridge (PM_{10}), Swansea ($PM_{2.5}$), Lamar Power Plant (PM_{10}), DMAS (NCore), Carriage (ozone), and Rist Canyon (ozone). La Casa was added to the network as the new NCore site, and Lay Peak was established to monitor ozone. Carbondale was added as a PM_{10} site. Existing sites were altered, including SO_2 added to the Highway 24 site, and meteorological monitoring added to the Weld County Tower site. Additions to the network for 2013 that are planned include near roadway NO_2, CO, meteorology, and particulate monitors. These changes are discussed in more detail later in this document.

Particulate monitors, including Particulate Matter 10 microns and smaller (PM_{10}) and Particulate Matter 2.5 microns and smaller ($PM_{2.5}$), and ozone monitors are the most abundant and widespread of monitoring types across the state, not considering meteorological monitoring. Currently, there are PM_{10} monitors at 28 separate locations (the Lamar Power Plant site and Breckenridge site were removed, the Carbondale site was added), $PM_{2.5}$ monitors at 17 separate locations (Swansea was decommissioned) and ozone monitors at 20 locations (down from 22 with the closure of Rist Canyon and Carriage, the closure of DMAS was balanced by the opening of La Casa). There are 18 meteorological sites in operation (down from 19 last period with the closure of Rist Canyon and Carriage and the addition of Weld County Tower). These sites monitor wind speed, wind direction, resultant speed, resultant direction, standard deviation of horizontal wind direction, and temperature. Three meteorological sites and the visibility site also monitor for relative humidity.

The APCD currently operates one TSP site at the Centennial Airport used for lead analysis, and submits PM_{10} samples from La Casa for lead analysis. Only seven of the 28 PM_{10} monitoring sites are continuous, while twelve of the 17 $PM_{2.5}$ monitoring sites also have

[1] ñAnnual Monitoring Network Plan and Periodic Network Assessment,ò 40 Federal Regulations 58.10 (1 July 2011), p. 248.

continuous monitors. Only three continuous $PM_{2.5}$ sites (Boulder Athens, NJH, and Rifle) are not collocated with $PM_{2.5}$ FRM monitors. This difference reflects the age of the technology, as well as the availability and focus of EPA funding. Increasing the amount of automated versus manual monitoring will require modifications to the particulate network, in the current network these are primarily manually operated monitors.

32 of the 57 currently monitoring sites have been in operation for ten or more years, and 19 of these have been in operation for 20 or more years. Twelve monitoring sites have been in operation for more than 30 years. These sites are Alamosa ASC, Highland Reservoir, Pagosa Springs School, Boulder ï CU Athens, Denver ï CAMP, Denver ï NJH-E, Parachute Elementary School, Crested Butte, Arvada, Lamar Municipal, Steamboat Springs, and Greeley ï Hospital. Conversely, 26 of the 58 operating sites have begun operation since the start of the year 2000.

Four of the ozone (O_3) monitoring sites that are located on the western slope and have data included in this report are operated and maintained by a third party contractor, Air Resource Specialists (ARS). These are the Rifle, Palisade, Lay Peak, and Cortez monitoring sites. ARS keeps the sites in proper working order and performs calibrations, data retrievals, and data validation, while the APCD uploads data to the AQS database and conducts independent audits of the sites for Quality Assurance (QA) purposes.

APCD Monitoring History

The State of Colorado has been monitoring air quality statewide since the mid-1960s when high volume and tape particulate samplers, dustfall buckets, and sulfation candles were the best technology available for defining the magnitude and extent of the very visible air pollution problem. Monitoring for gaseous pollutants (carbon monoxide, sulfur dioxide, oxides of nitrogen and ozone) began in 1965 when the Federal Government established the CAMP station in downtown Denver at the intersection of 21st Street and Broadway. This was the area that was thought to represent the best probability for detecting maximum levels of most of the suspected pollutants. Instruments were primitive by comparison with those of today, and frequently were out of service.

Under provisions of the original Federal Clean Air Act of 1970, the Administrator of the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) designed to protect the publicôs health and welfare. Standards were set for total suspended particulate matter (TSP), carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2) and sulfur dioxide (SO_2). In 1972, the first State Implementation Plan (SIP) was submitted to the EPA. It included an air quality surveillance system in accordance with EPA regulations of August 1971. That plan proposed a monitoring network of 100 monitors (particulate and gaseous) statewide. The system established as a result of that plan and subsequent modifications consisted of 106 monitors.

The 1977 Clean Air Act Amendments required States to submit revised SIPôs to the EPA by January 1, 1979. The portion of the Colorado SIP pertaining to air monitoring was submitted separately on December 14, 1979, after a comprehensive review, and upon approval by the Colorado Air Quality Control Commission. The 1979 EPA requirements as set forth in 40 CFR 58.20 have resulted in considerable modification to the network. These and subsequent modifications are made to ensure consistency and compliance with Federal monitoring requirements. Station location, probe siting, sampling methodology, quality assurance practices,

and data handling procedures are all maintained throughout any changes made to the network.

APCD Monitoring Operations

The APCD attempts to operate all of its monitors for a full calendar year, beginning operation of new monitors in January and terminating existing monitors in December. Circumstances both in and out of the Divisionôs control make that desired schedule difficult to achieve. The APCD does not own either the land or the buildings where most of the monitors are located, and it is becoming increasingly difficult to get property ownerôs permissions for use due to risk management issues.

When modifications to the State and Local Air Monitoring System (SLAMS) network are required, the Division will provide EPA Region 8 with the appropriate modification forms prior to its implementation for their approval. All currently operating SLAMS monitors have been approved by EPA. With the exception of some vegetation issues (tall trees), sites meet the requirements set forth in 40 CFR 58, Appendices A, C, D, and E.

Network Modification Procedures

The APCD develops changes to its monitoring network in several ways. New monitoring locations have been added as a result of community concerns about air quality, such as the PM_{10} monitors in Cripple Creek and Hygiene established in 1998. Other monitors have been established as a result of special studies, such as the O_3 monitoring in Aurora, Rifle, Cortez, Aspen Park, Rist Canyon, Palisade, and Lay Peak.

The most common reasons for monitors being removed from the network are that either the land or building is modified, such that the site no longer meets current EPA siting criteria, the property ownership changes, or the area surrounding the monitor is being modified in a way that necessitates a change in the monitoring location. The most current examples of this are the Auraria meteorological monitoring station and the relocation of the Denver Municipal Animal Shelter (DMAS) site. The Auraria station was removed due to the construction of a tall building in the immediate vicinity of the monitor that obstructed airflow around the monitoring site. The DMAS site was relocated due to a change in use of the property. Monitors are also removed from the network after review of the data shows that the levels have dropped to the point where it is no longer necessary to continue monitoring at that location.

Finally, all monitors are reviewed on a regular basis to determine if they are continuing to meet their monitoring objectives. If the population, land use, or vegetation around the monitor changed significantly since the monitor was established, a more suitable location for the monitor is sought. An example of this is the O_3 monitor previously located at the Arvada monitoring site. It was shut down on 1/1/2012, and relocated to the Denver ï CAMP location beginning 3/1/2012.

Table 1 lists the locations and monitoring parameters of each site currently in operation, by county, alphabetically. It lists the AQS identification numbers for each site, the site address and coordinates, the start dates, and the site elevations. It further breaks down the monitor type, orientation/scale, and the sampling frequency for each site. The parameter date is the date when valid data were first collected. Due to equipment problems this date can be significantly different than the site installation date, which is the ñStartedò date.

Table 1. Monitoring Locations and Parameters Monitored

AQS #	*Site Name*	*Address*		*Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
Adams							
08 001 0006	*Alsup Elementary School*	*7101 Birch St.*		*01/2001*	*1,565*	*39.826007*	*-104.937438*
	PM_{10}	1	01/2001	P.O. Neigh	Partisol 2025	SLAMS	1 in 1
	$PM_{2.5}$	1	01/2001	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
	$PM_{2.5}$ Collocated	2	01/2001	P.O. Neigh	Partisol 2025	SLAMS	1 in 6
	$PM_{2.5}$	3	06/2003	P.O. Neigh	TEOM-1400ab	SPM	Continuous
	$PM_{2.5}$ Speciation	5	02/2001	P.O. Neigh	SASS	Trends Spec	1 in 6
	$PM_{2.5}$ Carbon	5	02/2007	P.O. Neigh	URG 3000N	Trends Spec	1 in 6
	WS/WD/Temp	1	06/2003	Other	Met - One	Other	Continuous
08 001 3001	*Welby*	*3174 E. 78th Ave.*		*07/1973*	*1,554*	*39.838119*	*-104.94984*
	CO	1	07/1973	P.O. Neigh	Thermo 48C	SLAMS	Continuous
	SO_2	2	07/1973	P.O. Neigh	TAPI 100E	SLAMS	Continuous
	NO	2	01/1976	P.O. Urban	TAPI 200E	Other	Continuous
	NO_2	1	01/1976	P.O. Urban	TAPI 200E	SLAMS	Continuous
	O_3	2	07/1973	P.O. Neigh	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	01/1975	Other	Met - One	Other	Continuous
	PM_{10}	1	02/1992	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 6
	PM_{10}	3	06/1990	P.O. Neigh	TEOM-1400ab	SLAMS	Continuous
Alamosa							
08 003 0001	*Alamosa – Adams State College*	*208 Edgemont Blvd*		*01/1970*	*2,302*	*37.469391*	*-105.878691*
	PM_{10}	1	07/1989	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 1
08 003 0003	*Alamosa – Municipal Bldg.*	*425 4th St.*		*04/2002*	*2,301*	*37.469584*	*-105.863175*
	PM_{10}	1	05/2002	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 1
Arapahoe							
08 005 0002	*Highland Reservoir*	*8100 S. University Blvd*		*06/1978*	*1,747*	*39.567887*	*-104.957193*
	O_3	1	06/1978	P.O. Neigh	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	07/1978	Other	Met - One	Other	Continuous
08 005 0005	*Arapaho Community College (ACC)*	*6190 S. Santa Fe Dr.*		*12/1998*	*1,636*	*39.604399*	*-105.019526*
	$PM_{2.5}$	1	03/1999	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
08 005 0006	*Aurora - East*	*36001 E. Quincy Ave.*		*04/2011*	*1,552*	*39.63854*	*-104.56913*
	O_3	1	04/2011	P.O. Region	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	06/2011	Other	Met - One	Other	Continuous
08 005 0007	*Centennial Airport*	*7800 S. Peoria St.*		*04/2011*	*1,774*	*39.572304*	*-104.84881*
	TSP/Pb	1	4/2011	P.O. Neigh	TSP-GMW	SLAMS	1 in 6
Archuleta							
08 007 0001	*Pagosa Springs School*	*309 Lewis St.*		*08/1975*	*2,165*	*37.26842*	*-107.009659*
	PM_{10}	3	09/1990	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 1
Boulder							

AQS #	*Site Name*	*Address*		*Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
08 013 0003	*Longmont-Municipal Bldg.*	*350 Kimbark St.*		*06/1985*	*1,520*	*40.164576*	*-105.100856*
	PM_{10}	2	09/1985	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 6
	$PM_{2.5}$	1	01/1999	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
	$PM_{2.5}$	3	11/2005	P.O. Neigh	TEOM 1400ab	SPM	Continuous
08 013 0011	*South Boulder Creek*	*1405 ½ S. Foothills Parkway*		*06/1994*	*1,669*	*39.957212*	*-105.238458*
	O_3	1	06/1994	H.C. Urban	TAPI 400E	SLAMS	Continuous
08 013 0012	*Boulder Chamber of Commerce*	*2440 Pearl St.*		*12/1994*	*1,619*	*40.021097*	*-105.263382*
	PM_{10}	1	10/1994	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 6
	$PM_{2.5}$	1	01/1999	P.O. Middle[2]	Partisol 2025	SLAMS	1 in 3
08 013 1001	*Boulder – CU – Athens*	*2102 Athens St.*		*12/1980*	*1,622*	*40.012969*	*-105.264212*
	$PM_{2.5}$	3	02/2004	P.O. Neigh	TEOM FDMS	SPM	Continuous
Delta							
08 029 0004	*Delta Health Dept*	*560 Dodge St.*		*08/1993*	*1,511*	*38.739213*	*-108.073118*
	PM_{10}	1	05/1993	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 3
Denver							
08 031 0002	*CAMP*	*2105 Broadway*		*01/1965*	*1,593*	*39.751184*	*-104.987625*
	CO	2	01/1971	P.O. Micro	Thermo 48C	SLAMS	Continuous
	SO_2	1	01/1967	P.O. Neigh	TAPI 100E	SLAMS	Continuous
	O_3	6	03/2012	P.O. Neigh	TAPI 400E	SLAMS	Continuous
	NO	1	01/1973	Other	TAPI 200E	Other	Continuous
	NO_2	1	01/1973	P.O. Neigh	TAPI 200E	SLAMS	Continuous
	WS/WD/Temp	1	01/1965	Other	Met - One	Other	Continuous
	PM_{10}	1	08/1986	P.O. Micro[2]	SA/GMW-1200	SLAMS	1 in 6
	PM_{10} Collocated	2	12/1987	P.O. Micro[2]	SA/GMW-1200	SLAMS	1 in 6
	PM_{10}	3	01/1988	P.O. Micro[2]	TEOM-1400ab	SLAMS	Continuous
	$PM_{2.5}$	1	01/1999	P.O. Micro[2]	Partisol 2025	SLAMS	1 in 1
	$PM_{2.5}$ Collocated	2	09/2001	P.O. Micro[2]	Partisol 2025	SLAMS	1 in 6
	$PM_{2.5}$	3	10/2001	P.O. Micro[2]	TEOM FDMS	SPM	Continuous
08 031 0013	*NJH-E*	*14th Ave. & Albion St.*		*01/1983*	*1,620*	*39.738578*	*-104.939925*
	$PM_{2.5}$	3	10/2003	P.O. Neigh	TEOM FDMS	SPM	Continuous
08 031 0016	*DESCI*	*1901 E. 13th Ave.*			*1,623*	*39.735700*	*-104.958200*
	Transmissometer	1	12/1989	Other	Optec LPV-2	SPM	Continuous
	Nephelometer	1	12/2000	Other	Optec NGN-2	SPM	Continuous
	Temp	1	12/1989	Other	Rotronics MP-101A	SPM	Continuous
	Relative Humidity	1	12/1989	Other	Rotronics MP-101A	SPM	Continuous

[2] The CAMP $PM_{2.5}$ site is technically a micro-scale site, but the APCD demonstrated to EPA in 2001 that the CAMP site is representative of a much larger area of similar land use, meteorology, and emissions around downtown Denver, and has therefore been justified to meet the Neighborhood scale criteria for $PM_{2.5}$ concentrations. The same is true for the Boulder Chamber of Commerce $PM_{2.5}$ site, which is technically a middle scale site.

AQS #	*Site Name*	*Address*		*Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
08 031 0017	*Denver Visitor Center*	*225 W. Colfax*		*12/1992*	*1,597*	*39.740342*	*-104.991037*
	PM_{10}	1	12/1992	P.O. Middle	SA/GMW-1200	SLAMS	1 in 1
08 031 0026	*La Casa*	*4587 Navajo St.*		*01/2013*	*1,594*	*39.779429*	*-105.005174*
	CO (Trace)	1	01/2012	P.O. Neigh	Thermo 48i-TLE	NCore	Continuous
	SO_2 (Trace)	1	01/2012	P.O. Neigh	TAPI 100EU	NCore	Continuous
	NO_Y	1	01/2012	P.O. Neigh	TAPI 200EU	NCore	Continuous
	O_3	1	01/2012	Neigh/Urban	TAPI 400E	NCore	Continuous
	WS/WD/Temp	1	01/2012	P.O. Neigh	Met - One	NCore	Continuous
	Relative Humidity	1	01/2012	P.O. Neigh	Met - One	NCore	Continuous
	Temp (Lower)	2	01/2012	P.O. Neigh	Met - One	NCore	Continuous
	PM_{10}	1	01/2012	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
	PM_{10} Collocated/Pb	2	01/2012	P.O. Neigh	Partisol 2025	SLAMS	1 in 6
	PM_{10}	3	01/2012	P.O. Neigh	TEOM-1400ab	SLAMS	Continuous
	$PM_{2.5}$	1	01/2012	P.O. Neigh	Partisol 2025	NCore	1 in 3
	$PM_{2.5}$	3	01/2012	P.O. Neigh	TEOM FDMS	SPM	Continuous
	$PM_{2.5}$ Speciation	5	01/2012	P.O. Neigh	SASS	Supplem. Speciation	1 in 3
	$PM_{2.5}$ Carbon	5	01/2012	P.O. Neigh	URG 3000N	Supplem. Speciation	1 in 3
Douglas							
08 035 0004	*Chatfield State Park*	*11500 N. Roxborough Pk Rd*		*04/2004*	*1,676*	*39.534488*	*-105.070358*
	O_3	1	05/2005	H.C. Urban	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	04/2004	Other	Met - One	Other	Continuous
	$PM_{2.5}$	1	07/2005	P.O. Neigh	Partisol 2025	SPM	1 in 3
	$PM_{2.5}$	3	05/2004	P.O. Neigh	TEOM FDMS	SPM	Continuous
El Paso							
08 041 0013	*U. S. Air Force Academy*	*USAFA Rd. 640*		*05/1996*	*1,971*	*39.958341*	*-104.817215*
	O_3	1	06/1996	P.O. Urban	TAPI 400E	SLAMS	Continuous
08 041 0015	*Highway 24*	*690 W. Hwy. 24*		*11/1998*	*1,824*	*39.830895*	*-104.839243*
	CO	1	11/1998	P.O. Micro	Thermo 48i-TLE	SLAMS	Continuous
	SO_2	1	01/2013	P.O. Micro	TAPI 100T	SLAMS	Continuous
08 041 0016	*Manitou Springs*	*101 Banks Pl.*		*04/2004*	*1,955*	*38.853097*	*-104.901289*
	O_3	1	04/2004	P.O. Neigh	TAPI 400E	SLAMS	Continuous
08 041 0017	*Colorado College*	*130 W. Cache La Poudre*		*12/2007*	*1,832*	*38.848014*	*-104.828564*
	PM_{10}	1	12/2007	P.O. Neigh	Partisol 2000	SLAMS	1 in 6
	$PM_{2.5}$	1	12/2007	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
	$PM_{2.5}$	3	01/2008	P.O. Neigh	TEOM FDMS	SLAMS	Continuous
Fremont							
08 043 0003	*Cañon City – City Hall*	*128 Main St.*		*10/2004*	*1,626*	*38.43829*	*-105.24504*
	PM_{10}	1	10/2004	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 6

AQS #	*Site Name*	*Address*		*Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
Garfield							
08 045 0005	*Parachute – Elem. School*	*100 E. 2nd St.*		*01/1982*	*1,557*	*38.453654*	*-108.053269*
	PM_{10}	1	05/2000	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 3
	WS/WD/Temp	1	03/2011	Other	RM Young /Vaisala	Other	Continuous
08 045 0007	*Rifle–Henry Bldg*	*144 3rd St.*		*05/2005*	*1,627*	*39.531813*	*-107.782298*
	PM_{10}	1	05/2005	P.O. Neigh	SA/GMW-1200	SPM	1 in 3
	$PM_{2.5}$	3	09/2008	P.O. Neigh	Thermo 1405 DF	SPM	Continuous
	PM_{10}	3	09/2008	P.O. Neigh	Thermo 1405 DF	SPM	Continuous
	$PM_{10-2.5}$	3	09/2008	P.O. Neigh	Thermo 1405 DF	SPM	Continuous
	WS/WD/Temp	1	09/2008	Other	RM Young /Vaisala	Other	Continuous
08 045 0012	*Rifle – Health Dept*	*195 W. 14th Ave.*		*06/2008*	*1,629*	*39.54182*	*-107.784125*
	O_3	1	06/2008	P.O. Neigh	TAPI 400E	SLAMS	Continuous
08 045 0018	*Carbondale*	*1493 County Road 106*		*5/2012*	*1868*	*39.41224*	*-107.230413*
	PM_{10}	1	08/2012	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 3
Gunnison							
08 051 0004	*Crested Butte*	*603 6th St.*		*09/1982*	*2,714*	*38.867595*	*-106.981436*
	PM_{10}	2	03/1997	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 3
	PM_{10} Collocated	3	10/2008	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 6
08 051 0007	*Mt. Crested Butte - Realty*	*19 Emmons Rd.*		*07/2005*	*2,866*	*38.900392*	*-106.966104*
	PM_{10}	1	07/2005	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 1
Jefferson							
08 059 0002	*Arvada*	*9101 W. 57th Ave.*		*01/1973*	*1,640*	*39.800333*	*-105.099973*
	WS/WD/Temp	1	01/1975	Other	Met - One	Other	Continuous
08 059 0005	*Welch*	*12400 W. Hwy. 285*		*08/1991*	*1,742*	*39.638781*	*-105.13948*
	O_3	1	08/1991	P.O. Urban	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	11/1991	Other	Met - One	Other	Continuous
08 059 0006	*Rocky Flats - N*	*16600 W. Hwy. 128*		*06/1992*	*1,802*	*39.912799*	*-105.188587*
	O_3	1	09/1992	H.C. Urban	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	09/1992	Other	Met - One	Other	Continuous
08 059 0011	*NREL*	*2054 Quaker St.*		*06/1994*	*1,832*	*39.743724*	*-105.177989*
	O_3	1	06/1994	H.C. Urban	TAPI 400E	SLAMS	Continuous
08 059 0013	*Aspen Park*	*26137 Conifer Rd.*		*04/2011*	*2,467*	*39.540321*	*-105.296512*
	O_3	1	04/2011	P.O. Neigh	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	06/2011	Other	Met - One	Other	Continuous
La Plata							
08 067 0004	*Durango – River City Hall*	*1235 Camino del Rio*		*09/1985*	*1,988*	*37.277798*	*-107.880928*
	PM_{10}	1	12/2002	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 3
Larimer							
08 069 0009	*Fort Collins – CSU - Edison*	*251 Edison Dr.*		*12/1998*	*1,524*	*40.571288*	*-105.079693*

AQS #	*Site Name*	*Address*		*Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
	PM_{10}	1	07/1999	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 3
	PM_{10}	3	06/2011	P.O. Neigh	Thermo 1405 DF	SPM	Continuous
	$PM_{2.5}$	1	07/1999	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
	$PM_{2.5}$	3	06/2011	P.O. Neigh	Thermo 1405 DF	SPM	Continuous
	$PM_{10-2.5}$	3	06/2011	P.O. Neigh	Thermo 1405 DF	SPM	Continuous
08 069 0011	*Fort Collins - West*	*3416 La Porte Ave.*		*05/2006*	*1,571*	*40.592543*	*-105.141122*
	O_3	1	05/2006	H.C. Urban	TAPI 400E	SLAMS	Continuous
08 069 1004	*Fort Collins - Mason*	*708 S. Mason St.*		*12/1980*	*1,524*	*40.57747*	*-105.07892*
	CO	1	12/1980	P.O. Neigh	Thermo 48C	SLAMS	Continuous
	O_3	1	12/1980	P.O. Neigh	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	01/1981	Other	Met - One	Other	Continuous
Mesa							
08 077 0017	*Grand Junction – Powell Bldg*	*650 South Ave.*		*02/2002*	*1,398*	*39.063798*	*-108.561173*
	PM_{10} & NATTS Toxic Metals	3	01/2005	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
	PM_{10} Collocated & NATTS	4	03/2005	P.O. Neigh	Partisol 2000	SLAMS	1 in 6
	$PM_{2.5}$	1	11/2002	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
	PM_{10}	3	07/2011	P.O. Neigh	Thermo 1405 DF	SPM	Continuous
	$PM_{2.5}$	3	01/2005	P.O. Neigh	Thermo 1405 DF	SPM	Continuous
	$PM_{10-2.5}$	3	07/2011	P.O. Neigh	Thermo 1405 DF	SPM	Continuous
08 077 0018	*Grand Junction - Pitkin*	*645 1/4 Pitkin Ave.*		*01/2004*	*1,398*	*39.064289*	*-108.56155*
	CO	1	01/2004	P.O. Micro	Thermo 48C	SLAMS	Continuous
	WS/WD/Temp	1	01/2004	Other	Met - One	Other	Continuous
	Relative Humidity	1	01/2004	Other	Rotronic	Other	Continuous
08 077 0019	*Clifton - Sanitation*	*Hwy. 141 & D Rd.*		*10/2006*	*1,413*	*39.062514*	*-108.457382*
	PM_{10}	1	10/2007	P.O. Neigh	SA/GMW -1200	SLAMS	1 in 3
08 077 0020	*Palisade Water Treatment*	*Rapid Creek Rd.*		*05/2008*	*1,512*	*39.130575*	*-108.313853*
	O_3	1	04/2008	P.O. Urban	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	04/2008	Other	RM Young	Other	Continuous
Moffat							
08 081 0002	*Lay Peak*	*Moffat CR 17*		*08/2011*	*1,961*	*40.506890*	*-107.891000*
	O_3	1	08/2011	P.O. Region	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	08/2011	P.O Region	Met ï One	Other	Continuous
	Relative Humiditiy	1	08/2011	P.O Region	Met - One	Other	Continuous
Montezuma							
08 083 0006	*Cortez – Health Dept*	*106 W. North St.*		*06/2006*	*1,890*	*37.350054*	*-108.592337*
	O_3	1	06/2008	P.O. Urban	TAPI 400E	SLAMS	Continuous
	$PM_{2.5}$	1	06/2008	P.O Region	Partisol 2000	SPM	1 in 6
Pitkin							
08 097 0006	*Aspen - Library*	*120 Mill St.*		*05/2002*	*2,408*	*39.19104*	*-106.818864*

AQS #	Site Name	Address		Started	Elevation (m)	Latitude	Longitude
	Parameter	POC	Started	Orient/Scale	Monitor	Type	Sample
	PM_{10}	1	05/2002	P.O. Neigh	SA/GWM 1200	SLAMS	1 in 3
Prowers							
08 099 0002	*Lamar Municipal*	*104 E. Parmenter St.*		*12/1976*	*1,107*	*38.084688*	*-102.618641*
	PM_{10}	2	03/1987	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 1
08 099 0003	*Lamar Port of Entry*	*7100 US Hwy. 50*		*03/2005*	*1,108*	*38.113792*	*-102.626181*
	WS/WD/Temp	1	03/2005	Other	Met - One	Other	Continuous
Pueblo							
08 101 0015	*Pueblo – Fountain School*	*925 N. Glendale Ave.*		*06/2011*	*1,433*	*38.276099*	*-104.597613*
	PM_{10}	1	04/2011	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 3
	$PM_{2.5}$	1	04/2011	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
Routt							
08 107 0003	*Steamboat Springs*	*136 6th St.*		*09/1975*	*2,054*	*40.485201*	*-106.831625*
	PM_{10}	2	03/1987	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 1
San Miguel							
08 113 0004	*Telluride*	*333 W. Colorado Ave.*		*03/1990*	*2,684*	*37.937872*	*-107.813061*
	PM_{10}	1	03/1990	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 3
Weld							
08 123 0006	*Greeley-Hospital*	*1516 Hospital Rd.*		*04/1967*	*1,441*	*40.414877*	*-104.70693*
	PM_{10}	2	03/1987	P.O. Neigh	SA/GMW-1200	SLAMS	1 in 3
	$PM_{2.5}$	1	02/1999	P.O. Neigh	Partisol 2025	SLAMS	1 in 3
	$PM_{2.5}$	3	02/1999	P.O. Neigh	TEOM ï 1400ab	SPM	Continuous
08 123 0008	*Platteville Middle School*	*1004 Main St.*		*12/1998*	*1,469*	*40.209387*	*-104.82405*
	$PM_{2.5}$	1	08/1999	P.O. Region	Partisol 2025	SLAMS	1 in 3
	$PM_{2.5}$ Speciation	5	08/1999	P.O. Region	SASS	Spec Trends	1 in 6
	$PM_{2.5}$ Carbon	5	04/2011	P.O. Neigh	URG 3000N	Spec Trends	1 in 6
08 123 0009	*Greeley –County Tower*	*3101 35th Ave.*		*06/2002*	*1,484*	*40.386368*	*-104.73744*
	O_3	1	06/2002	P.O. Neigh	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	02/2012	Other	Met - One	Other	Continuous
08 123 0010	*Greeley – West Annex*	*905 10th Ave.*		*12/2003*	*1,421*	*40.423432*	*-104.69479*
	CO	1	12/2003	P.O. Neigh	Thermo 48C	SLAMS	Continuous

The following abbreviations were used in Table 1, with orientation (Orient) referring to the reason why the monitor was placed in that location, and scale referring to the size of the area that concentrations from the monitor represent.

Orientation	**Scale (Area Represented)**[3]
P.O. - Population oriented	Micro - Micro-scale (several m ï 100 m)
Back - Background orientation	Middle - Middle Scale (100 ï 500 m)
SPM - Special Projects Monitor	Neigh - Neighborhood Scale (0.5 ï 4 km)
H.C. - Highest Concentration	Urban - Urban Scale (4 ï 50 km)
POC - Parameter Occurrence Code	Region - Regional Scale (50 ï hundreds of km)

Also included in the above table are listings as ñOtherò which are meteorological monitors that do not include either orientation or scale. A ñ+ò in the Start column indicates that the monitor has not yet been installed.

Description of Monitoring Areas in Colorado

The state has been divided into eight multi-county areas that are generally based on topography and have similar airshed characteristics. These areas are the Central Mountains, Denver Metro/North Front Range, Eastern High Plains, Pikes Peak, San Luis Valley, South Central, Southwestern, and Western Slope regions. Figure 1 shows the approximate boundaries of these areas.

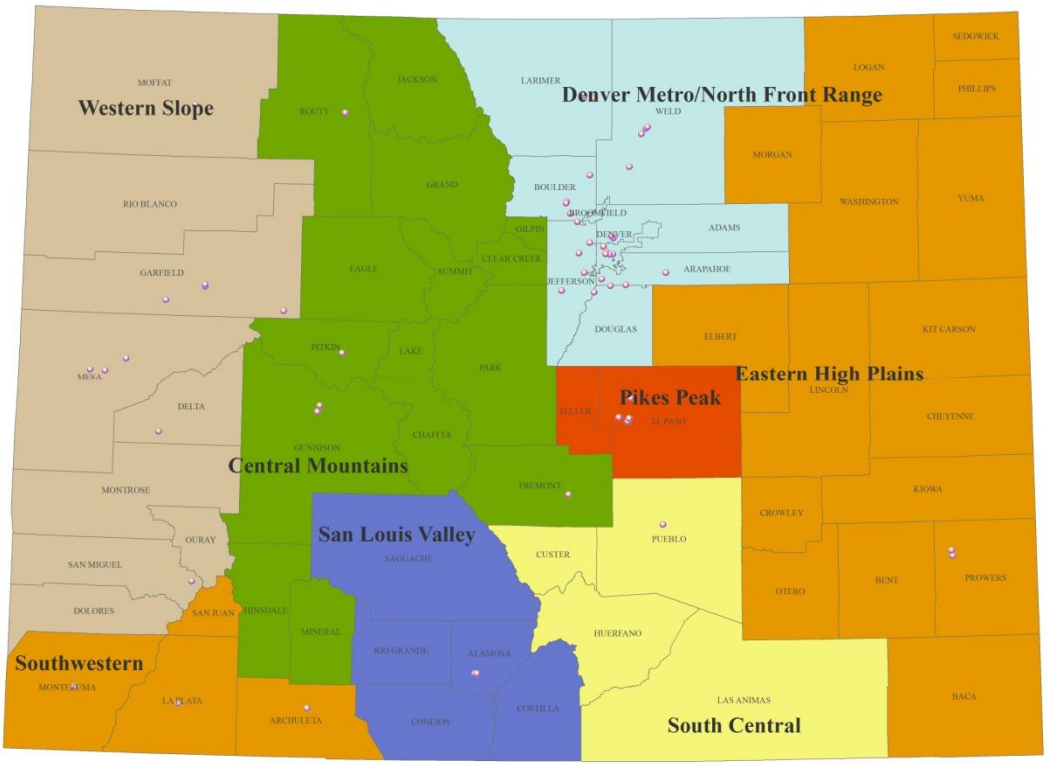


Figure 1. Monitoring Regions in Colorado

[3] ñAppendix D to Part 58 ï Network Design Criteria for Ambient Air Quality Monitoring,ò 40 Federal Register 58 (1 July 2011), pp. 290-292.

Central Mountains Region

The Central Mountains Region consists of 15 counties in the central area of the state. The Continental Divide passes through much of this region. Mountains and mountain valleys are the dominant landscape. Leadville, Steamboat Springs, Cañon City, Salida, Buena Vista and Aspen represent the larger communities. The population of this region is about 256,800, according to U.S. Census Bureau estimates. Skiing, tourism, ranching, mining, and correctional facilities are the primary industries. Black Canyon of the Gunnison National Park is located in this region. All of the area complies with federal air quality standards.

The primary monitoring concern is with particulate pollution from wood burning and road sanding. Currently, there are no gaseous and five particulate monitoring sites operated by the APCD in the Central Mountains region.

Denver Metro/North Front Range Region

The Denver-Metro/North Front Range Region includes Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer and Weld counties. It includes the largest population area of the state, with 2.8 million people living in the seven-county Denver-metro area and another half-million living in the northern Colorado area of Larimer and Weld counties. This area includes Rocky Mountain National Park and several wilderness areas.

Since 2002, the region complies with all National Ambient Air Quality Standards, except for ozone. The area has been exceeding the EPAôs most recent ozone standards since the early 2000s, and in 2007 was formally designated as a ñnonattainmentò area. This designation was re-affirmed in 2012 when the EPA designated the region as a ñmarginalò nonattainment area for the more stringent ozone standard adopted by EPA in 2008.

In the past, the Denver-metropolitan area violated health-based air quality standards for carbon monoxide and fine particles. In response, the Regional Air Quality Council, the Colorado Air Quality Control Commission and the Air Pollution Control Division developed, adopted and implemented air quality improvement plans to reduce each of the pollutants.

For the rest of the Northern Front Range, Fort Collins, Longmont, and Greeley were nonattainment areas for carbon monoxide in the 1980s and early 1990s, but have met the federal standards since 1995. Air quality improvement plans have been implemented for each of these communities.

Currently, there are 25 gaseous pollutants monitored at 15 sites and 23 particulate monitoring sites in the Northern Front Range Region. There are five CO, 14 O_3, two NO_2, one NOy, and three SO_2 monitoring sites. There are ten PM_{10}, 12 $PM_{2.5}$, and one TSP/Pb monitoring sites. There are two air toxics monitoring sites, one located at CAMP, and one at Platteville.

Eastern High Plains Region

The Eastern High Plains region encompasses the counties on the plains of eastern Colorado. The area is semiarid and often windy. The area's population is approximately 157,000 according to U.S. Census Bureau estimates. Its major urban centers have developed around farming, ranching and trade centers such as Sterling, Fort Morgan, Limon, La Junta, and Lamar. The agricultural base includes both irrigated and dry land farming. All of the area complies with federal air quality standards.

Historically, there have been a number of communities that were monitored for particulates and meteorology but not for any of the gaseous pollutants. In the northeast along the I-76 corridor, the communities of Sterling, Brush, and Fort Morgan have been monitored. Along the I-70 corridor only the community of Limon has been monitored for particulates. Along the US-50/Arkansas River corridor the Division has monitored for particulates in the communities of La Junta and Rocky Ford. These monitoring sites were all discontinued in the late 1970s and early 1990s after a review showed that the concentrations were well below the standard and trending downward.

For the Eastern High Plains Region there is currently one PM_{10} monitoring site in Lamar and no gaseous pollutant monitoring sites in the area. A replacement site for the Elbert background site may be installed in Elbert County, which is in the Eastern High Plains Region or in Douglas County, which is in the Northern Front Range region.

Pikes Peak Region

The Pikes Peak Region includes El Paso and Teller counties. The area has a population of approximately 626,200 according to U.S. Census Bureau estimates. Eastern El Paso County is rural prairie, while the western part of the region is mountainous. All of the area complies with federal air quality standards.

The U.S. Government is the largest employer in the area, and major industries include Fort Carson and the U.S. Air Force Academy in Colorado Springs, both military installations. Aerospace and technology are also large employers in the area.

Currently, there are four gaseous pollutants monitored at three sites and one particulate monitoring site in the Pikes Peak Region. There is one CO, one SO_2, and two O_3 monitoring sites, and one PM_{10} and one $PM_{2.5}$ monitoring sites in the region.

San Luis Valley Region

Colorado's San Luis Valley Region is in the south central portion of Colorado and includes a broad alpine valley situated between the Sangre de Cristo Mountains on the northeast and the San Juan Mountains of the Continental Divide to the west. The valley is some 71 miles wide and 122 miles long, extending south into New Mexico. The average elevation is 7,500 feet. Principal towns include Alamosa, Monte Vista and Del Norte. The population is about 45,100 according to U.S. Census Bureau estimates. Agriculture and tourism are the primary industries. The valley is semiarid and croplands of potatoes, head lettuce, and barley are typically irrigated. The valley is home to Great Sand Dunes National Park.

The air quality planning region consists of Saguache, Rio Grande, Alamosa, Conejos and Costilla counties. All of the area complies with federal air quality standards.

Currently, there are no gaseous and two pollutant monitoring sites in the area. There is one PM_{10} and one $PM_{2.5}$ monitoring site.

South Central Region

The South Central Region is comprised of Pueblo, Huerfano, Las Animas and Custer counties. Its population is approximately 184,800 according to U.S. Census Bureau estimates. Urban centers include Pueblo, Trinidad and Walsenburg. The region has rolling semiarid plains to the east and is mountainous to the west. All of the area complies with federal air quality standards.

In the past the APCD has conducted particulate monitoring in both Walsenburg and Trinidad but that monitoring was discontinued in 1979 and 1985 respectively, due to low concentrations.

Currently, there are no gaseous pollutant monitoring sites and one particulate monitoring site in the South Central Region. There is one PM_{10} and one $PM_{2.5}$ monitoring site in the region.

Southwest Region

The Southwestern Region includes the Four Corners area counties of Montezuma, La Plata, Archuleta and San Juan. The population of this region is about 89,800, according to U.S. Census Bureau estimates. The landscape includes mountains, plateaus, high valleys and canyons. Durango and Cortez are the largest towns, while lands of the Southern Ute and Ute Mountain Ute tribes make up large parts of this region. The region is home to Mesa Verde National Park, tourism and agriculture are dominant industries. Though the oil and gas industry is growing in this area, all of the area complies with federal air quality standards.

Currently there is one gaseous and three particulate monitoring stations in the region. There is one O_3, two PM_{10} monitors, and one $PM_{2.5}$ monitor.

Western Slope Region

The Western Slope Region includes nine counties on the far western border of Colorado. A mix of mountains on the east, and mesas, plateaus, valleys and canyons to the west form the landscape of this region. Grand Junction is the largest urban area, and other cities include Telluride, Montrose, Delta, Rifle, Glenwood Springs, Meeker, Rangely, and Craig. The population of this region is about 309,700, according to U.S. Census Bureau estimates. Primary industries include ranching, agriculture, mining, energy development and tourism. Dinosaur and Colorado National Monuments are located in this region.

The Western Slope, along with the central mountains, are projected to be the fastest growing areas of Colorado through 2020 with greater than two percent annual population increases, according to the Colorado Department of Local Affairs. All of the area complies with federal air quality standards.

Currently, there are four gaseous pollutant monitoring sites and 9 particulate monitoring sites in the Western Slope region. There is one CO and three O_3 monitoring sites. There are seven PM_{10} and two $PM_{2.5}$ monitoring sites.

State-wide Population Statistics

Table 2 is a listing of the projected population statistics by county. The counties have been grouped into Planning and Management Regions (per Colorado Executive Orders of November 1972, 1973 and 1986, and October 1998), Metropolitan Statistical Areas (per the US Office of Management and Budget, June 30, 1993), and Sub-state Regions. The Sub-state Regional grouping typically varies from data user to data user. For the purposes of this assessment, the groupings used were as similar to the Stateôs monitoring regions as possible.

Table 2. Population Statistics and Monitors by County and Metropolitan Statistical Area

REGIONS/Counties	Actual Population	Projected Population		Avg. Annual % Change	
	July 2010	July 2015	July 2020	2010 -15	2010 -20
COLORADO	***5,029,196***	***5,474,968***	***5,999,989***	***1.8%***	***1.9%***
FRONT RANGE	***4,141,359***	***4,488,360***	***4,892,326***	**1.7%**	**1.8%**

REGIONS/Counties	Actual Population	Projected Population		Avg. Annual % Change	
	July 2010	July 2015	July 2020	2010 -15	2010 -20
DNVR-BLDR Region	***2,784,228***	***3,004,415***	***3,252,481***	**1.6%**	**1.7%**
DENVER PMSA	***2,489,661***	***2,691,747***	***2,920,374***	**1.6%**	**1.7%**
Adams	441,603	491,263	544,258	2.2%	2.3%
Arapahoe	572,003	619,762	673,230	1.7%	1.8%
Broomfield	55,889	63,926	71,211	2.9%	2.7%
Denver	600,158	645,364	686,613	1.5%	1.4%
Douglas	285,465	322,985	373,308	2.6%	3.1%
Jefferson	534,543	548,447	571,753	0.5%	0.7%
BOULDER PMSA/Co	**294,567**	**312,668**	**332,107**	**1.2%**	**1.3%**
N. FRONT RANGE	***552,455***	***610,993***	***691,615***	***2.1%***	***2.5%***
FORT COLLINS MSA	**299,630**	**325,776**	**360,274**	**1.7%**	**2.0%**
GREELEY MSA	**252,825**	**285,216**	**331,341**	**2.6%**	**3.1%**
S. FRONT RANGE	***804,676***	***872,952***	***948,230***	***1.7%***	***1.8%***
COLO. SPRINGS MSA	**645,613**	**702,925**	**763,003**	**1.8%**	**1.8%**
El Paso	622,263	677,353	734,862	1.8%	1.8%
Teller	23,350	25,572	28,142	1.9%	2.1%
PUEBLO MSA	**159,063**	**170,027**	**185,227**	**1.4%**	**1.6%**
WESTERN SLOPE	***552,564***	***622,228***	***704,243***	***2.5%***	***2.7%***
REGION 9	**91,716**	**103,916**	**118,231**	**2.7%**	**2.9%**
Archuleta	12,084	14,348	17,127	3.7%	4.2%
Dolores	2,064	2,247	2,436	1.8%	1.8%
La Plata	51,334	58,404	66,714	2.8%	3.0%
Montezuma	25,535	28,160	31,171	2.1%	2.2%
San Juan	699	758	784	1.7%	1.2%
REGION 10	**105,333**	**114,699**	**131,150**	**1.8%**	**2.5%**
Delta	30,952	35,724	41,311	3.1%	3.3%
Gunnison	15,324	16,457	17,895	1.5%	1.7%
Hinsdale	843	928	1,027	2.0%	2.2%
Montrose	41,276	47,541	54,718	3.0%	3.3%
Ouray	4,436	5,220	5,832	3.5%	3.1%
San Miguel	7,359	8,829	10,367	4.0%	4.1%
REGION 11	**247,082**	**271,207**	**301,602**	**2.0%**	**2.2%**
Garfield	56,389	65,124	76,939	3.1%	3.6%
Mesa	146,723	157,878	171,581	1.5%	1.7%
Moffat	13,795	14,672	15,464	1.3%	1.2%
Rio Blanco	6,666	7,827	9,056	3.5%	3.6%
Routt	23,509	25,706	28,563	1.9%	2.1%
REGION 12	**113,576**	**132,406**	**153,260**	**3.3%**	**3.5%**

REGIONS/Counties	Actual Population	Projected Population		Avg. Annual % Change	
	July 2010	July 2015	July 2020	2010 -15	2010 -20
Eagle	52,197	61,846	71,076	3.7%	3.6%
Grand	14,843	16,989	20,090	2.9%	3.5%
Jackson	1,394	1,507	1,598	1.6%	1.5%
Pitkin	17,148	19,394	21,929	2.6%	2.8%
Summit	27,994	32,670	38,568	3.3%	3.8%
CENTRAL MTNS.	***129,151***	***143,418***	***160,566***	***2.2%***	***2.4%***
CLR CRK. & GILPIN	**14,529**	**15,729**	**17,228**	**1.7%**	**1.9%**
Clear Creek	9,088	9,757	10,710	1.5%	1.8%
Gilpin	5,441	5,972	6,519	2.0%	2.0%
PARK COUNTY	**16,206**	**19,614**	**23,816**	**4.2%**	**4.7%**
REGION 13	**76,198**	**83,733**	**92,777**	**2.0%**	**2.2%**
Chaffee	17,809	19,862	23,052	2.3%	2.9%
Custer	4,255	4,991	5,866	3.5%	3.8%
Fremont	46,824	50,456	54,217	1.6%	1.6%
Lake	7,310	8,424	9,642	3.0%	3.2%
REGION 14	**22,218**	**24,343**	**26,744**	**1.9%**	**2.0%**
Huerfano	6,711	6,996	7,527	0.8%	1.2%
Las Animas	15,507	19,346	19,217	5.0%	2.4%
SAN LUIS VALLEY	**46,027**	**49,107**	**52,843**	**1.3%**	**1.5%**
Alamosa	15,445	16,505	17,860	1.4%	1.6%
Conejos	8,256	8,773	9,253	1.3%	1.2%
Costilla	3,524	3,726	3,871	1.1%	1.0%
Mineral	712	804	870	2.6%	2.2%
Rio Grande	11,982	12,812	13,887	1.4%	1.6%
Saguache	6,108	6,487	7,101	1.2%	1.6%
EASTERN PLAINS	***160,095***	***171,854***	***190,011***	***1.5%***	***1.9%***
REGION 1	**72,546**	**76,169**	**81,358**	**1.0%**	**1.2%**
Logan	22,709	23,873	25,734	1.0%	1.3%
Morgan	28,159	29,772	32,209	1.1%	1.4%
Phillips	4,442	4,540	4,670	0.4%	0.5%
Sedgwick	2,379	2,542	2,689	1.4%	1.3%
Washington	4,814	4,948	5,054	0.6%	0.5%
Yuma	10,043	10,494	11,001	0.9%	1.0%
REGION 5	**38,659**	**44,636**	**55,341**	**3.1%**	**4.3%**
Cheyenne	1,836	1,940	2,082	1.1%	1.3%
Elbert	23,086	28,266	38,173	4.5%	6.5%
Kit Carson	8,270	8,643	8,893	0.9%	0.8%
Lincoln	5,467	5,787	6,193	1.2%	1.3%
REGION 6	**48,890**	**51,049**	**53,312**	**0.9%**	**0.9%**

REGIONS/Counties	Actual Population	Projected Population		Avg. Annual % Change	
	July 2010	July 2015	July 2020	2010 -15	2010 -20
Baca	3,788	3,822	3,893	0.2%	0.3%
Bent	6,499	6,657	6,832	0.5%	0.5%
Crowley	5,823	6,234	6,643	1.4%	1.4%
Kiowa	1,398	1,458	1,509	0.9%	0.8%
Otero	18,831	19,813	20,802	1.0%	1.0%
Prowers	12,551	13,065	13,633	0.8%	0.9%

II. Carbon Monoxide (CO)

In 2013 the APCD will operate seven CO monitors. Currently, the NAAQS for CO is a primary standard, with a concentration level not to exceed 9 parts per million (ppm) in an eight-hour time period, or 35 ppm in a one-hour period. There is no secondary standard for CO. CO levels have declined from a statewide maximum eight-hour value of 48.1 ppm in 1973 to a value of 2.7 ppm in 2012. The level of the standard has not been exceeded since 1999. The CO monitors currently operated by the APCD are associated both with State Maintenance Plan requirements and CFR requirements. However, the EPA has revised the minimum requirements for CO monitoring by requiring CO monitors to be sited near roads in certain urban areas. They are requiring one CO monitor to be collocated with the near-roadway NO_2 monitoring requirements. EPA is also specifying that monitors required in CBSAs of 2.5 million or more persons are to be operational by January 1, 2015, and that monitors required in CBSAs of one million or more persons are required to be operational by January 1, 2017. A monitor will be located at the near roadway NO_2 site to satisfy these requirements.

Denver Metro/Northern Front Range Region

The three major urban centers in the Northern Front Range Region include Fort Collins and Greeley in Laramie and Weld counties respectively, and the greater Denver Metro area. Motor vehicle activity is a major source of CO. However, there are several small industries and manufacturing processes that may contribute to CO levels. These industries include breweries, power plants, cement plants, mining, electronics and film manufacturing facilities, and rock quarries. Weld County is also an area of significant oil and gas development.

Table 3 lists the maximum eight-hour and one-hour concentrations recorded in 2012 for the Northern Front Range region while Table 4 lists the same values for monitoring stations in the Denver Metro area.

Table 3. Maximum CO Concentrations in Northern Front Range

Site ID	Site Name	Eight-Hour Max (ppm)	One-Hour Max (ppm)
08 069 1004	Fort Collins-Mason	1.8	2.7
08 123 0010	Greeley-West Annex	2.3	3.2

Table 4. Maximum CO Concentrations in Denver Area

Site ID	Site Name	Eight-Hour Max (ppm)	One-Hour Max (ppm)
08 001 3001	Welby	1.7	2.2
08 031 0002	CAMP	2.7	4.2
08 031 0025	Denver ï DMAS	1.5	2.08

The monitor in operation at the Denver ï DMAS site is a trace-level monitor, while the others are not. It was moved to La Casa in 2013. The network modification form can be seen in Appendix C.

Pikes Peak Region

The Pikes Peak Region is a very popular tourist area with rapid urban growth. In 2013 the CO analyzer was upgraded from a 48c to a 48iTLE analyzer. The TLE indicates the new analyzer is capable of trace-level CO detection, which increases the resolution of concentrations detected by an order of magnitude. The TLE is a more accurate analyzer. In 2012, the highest eight-hour CO concentration recorded at the Colorado Springs-Hwy 24 monitor was 2.0 ppm with a maximum one-hour concentration of 2.7 ppm.

The CO monitor in this area is:

08 041 0015 Colorado Springs ï Hwy. 24, 690 W. Highway 24

Western Slope Region

Population in the Western Slope region is not evenly distributed among the counties and ranges from 146,723 people in Mesa County to 2,064 in San Miguel County, according to the April 2010 census data. Grand Junction is the largest city on the western slope with a population of 58,566 (April 2010). This is due in large part to the transient oil/gas working population associated with the boom in drilling in this area.

In 2012, the highest eight-hour CO concentration recorded at the Grand Junction ï Pitkin monitor was 2.3 ppm with a one-hour maximum concentration of 3.2 ppm.

The CO monitor in this area is:

08 077 0018 Grand Junction - Pitkin, 645 ¼ Pitkin Ave.

Planned Changes in CO Monitoring

In 2013 the NCore site was moved from the current location of 678 S. Jason St., to 4587 Navajo St. in Denver. In addition, there are plans to install a new trace-level CO monitor in conjunction with the new Near Roadway NO_2 monitoring site.

III. Ozone (O_3)

On March 12, 2008, the U.S. Environmental Protection Agency promulgated a new level of the NAAQS for O_3 of 0.075 ppm as an annual fourth-highest daily maximum eight-hour concentration, averaged over three years. This made a significant change in the number of O_3 monitors that violate the standard.

The EPA is currently set to propose a new primary O_3 standard in 2013, to be final in 2014. The APCD operates seven sites out of 20 that have three-year design values (2010 ï 2012) in

excess of the current eight-hour O_3 NAAQS standard of 0.075 ppm, up from three sites last year.

EPAôs monitoring requirements for O_3 include placing certain numbers of monitors in areas with high populations. For example, in Metropolitan Statistical Areas (MSAs) with a population greater than ten million people, EPA recommends the placement of at least four monitors in areas with design value concentrations that are greater than or equal to 85% of the O_3 standard. The largest MSA in Colorado is the Denver Primary Metropolitan Statistical Area (PMSA). This PMSA includes the counties of Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson. There are seven different MSAs in Colorado. The table below lists EPAs O_3 monitoring requirements. Each MSA is discussed further in the following subsections.

Table 5. EPAs Minimum Ozone Monitoring Requirements

MSA population[1,2]	**Most recent 3-year design value concentrations ≥ 85% of any O_3 NAAQS[3]**	**Most recent 3-year design value concentrations < 85% of any O_3 NAAQS[3,4]**
>10 million	4	2
4ï 10 million	3	1
350,000ï <4 million	2	1
50,000ï <350,000[5]	1	0

[1]Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
[2]Population based on latest available census figures.
[3]The ozone (O_3) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
[4]These minimum monitoring requirements apply in the absence of a design value.
[5]Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

In addition to the above mentioned O_3 monitoring requirements, EPA rules also state that there must be at least one monitoring site per MSA that monitors for the highest concentrations.

Denver Metro/Northern Front Range

Motor vehicle activity is a major precursor source of O_3. However, there are several small industries and manufacturing processes that also contribute to those levels. These industries include a brewery, power plants, cement plants, mining, electronics and film manufacturing facilities, and rock quarries. Weld County is also an area of significant oil and gas development.

In the Northern Front Range, the first and fourth maximum eight-hour concentrations recorded in 2012 for each O_3 monitoring site in Larimer and Weld Counties are listed in the table below. Also listed are the three-year design values (2010-2012) for each site with enough data available to calculate them. There are two MSAs located in Larimer and Weld counties. These are the Fort Collins-Loveland MSA, and the Greeley PMSA. According to the 2010 Census data their populations are 299,630, and 252,825, respectively. Per EPA monitoring requirements, these MSAs fall in the 50,000 to 350,000 population range and each area requires at least one O_3

monitor. These requirements are satisfied by the monitors listed below. The monitor located at the Fort Collins ï West site is a highest concentration monitor for the Fort Collins-Loveland MSA. Design values that are bold and italicized exceed the NAAQS.

Table 6. Maximum O_3 Concentrations in Northern Front Range Region

Site ID	Site Name	1st eight-hour Max (ppm)	4th eight-hour Max (ppm)	Design Value (ppm)
08 069 0011	Fort Collins ï West	0.093	0.080	***0.078***
08 069 0012	Rist Canyon	0.077	0.071	0.071
08 069 1004	Fort Collins ï Mason	0.094	0.074	0.069
08 123 0009	Greeley ï Tower	0.090	0.080	***0.076***

In the Denver Metro area, only Adams, Arapahoe, Boulder, Denver, Douglas, and Jefferson counties have O_3 monitors. There are 11 monitors currently in operation in this area. In Table 7 Carriage lists summary statistics for Carriage, though the ozone monitor there has since been moved to CAMP.

The first and fourth maximum eight-hour concentrations recorded in 2012 for each O_3 monitoring site in the metropolitan Denver area are listed in the table below. Also listed are the three-year design values (2010-2012) for each site with enough data available to calculate them. The CAMP O_3 site was established in 2012, so there is insufficient data to report at this time.

There are two MSAs located in the Metropolitan Denver area. These are the Boulder-Longmont PMSA, and the Denver PMSA. According to the 2010 Census data their populations are 294,567, and 2,489,661, respectively. Per EPA monitoring requirements, the Boulder-Longmont PMSA falls in the 50,000 to 350,000 population range, and the Denver PMSA falls in the 350,000 to 4,000,000 range. The Boulder-Longmont PMSA therefore requires at least one monitor, which is satisfied by the monitor at South Boulder Creek. By EPA rules, the Denver PMSA requires at least two monitors. This requirement is satisfied by the remaining ten monitors that are placed throughout the Denver PMSA. The monitor at South Boulder Creek is a highest concentration monitor for the Boulder-Longmont PMSA. The monitors located at Chatfield, Rocky Flats ï North, and NREL are all highest concentration monitors for the Denver PMSA.

Table 7. Maximum O_3 Concentrations in the Denver Metro Area

Site ID	Site Name	1st Eight-hour Max (ppm)	4th Eight-hour Max (ppm)	2010-2012 Design Value (ppm)
08 001 3001	Welby	0.087	0.077	0.071
08 005 0002	Highland Reservoir	0.094	0.080	***0.077***
08 005 0006	Aurora ï East	0.085	0.074	0.073
08 013 0011	South Boulder Creek	0.094	0.076	0.074
08 031 0014	Carriage	0.092	0.077	0.073
08 031 0025	DMAS	0.090	0.073	0.069
08 035 0004	Chatfield State Park	0.098	0.086	***0.082***
08 059 0005	Welch	0.090	0.079	***0.076***
08 059 0006	Rocky Flats ï N	0.101	0.084	***0.080***

Site ID	Site Name	1st Eight-hour Max (ppm)	4th Eight-hour Max (ppm)	2010-2012 Design Value (ppm)
08 059 0011	NREL	0.095	0.081	***0.079***
08 059 0013	Aspen Park	0.090	0.077	0.074

Five of the twelve monitors are in excess of the 8-hour NAAQS standard for ozone. Their values are bolded and italicized to highlight them. Several other sites are within 0.005 ppm of reaching the standard limit. The Arvada site was removed from the ozone network on 12/31/2011. It was determined to be a redundant site in the CDPHEôs 5-Year Network Assessment Plan. That monitor was placed at the CAMP site, located in downtown Denver, on February 2, 2012. The Network Assessment Plan also recommended that ozone monitoring be reinstated at CAMP for weight of evidence determinations and model validation. The CDPHE also closed the Denver ï Carriage site at the end of 2012. It was also determined to be a redundant monitor in the Plan.

Pikes Peak Region

The first and fourth maximum eight-hour concentrations recorded in 2012 for each O_3 monitoring site in the Pikes Peak Region are listed in the table below. Also listed are the three year design values (2010-2012) for each site with enough data available to calculate them.

There is one MSA located in the Pikes Peak Region, the Colorado Springs MSA. According to the 2010 Census data the population is 645,613. Per EPA monitoring requirements the Colorado Springs MSA falls in the 350,000 to 4,000,000 range and therefore requires at least two monitors. This is satisfied by the monitors at the Air Force Academy and Manitou Springs.

Table 8. Maximum O_3 Concentrations in Pikes Peak Region

Site ID	Site Name	1st Eight-hour Max (ppm)	4th Eight-hour Max (ppm)	2010-2012 Design Value (ppm)
08 041 0013	U.S. Air Force Academy	0.078	0.075	0.072
08 041 0016	Manitou Springs	0.079	0.075	0.074

Western Slope Region

The first and fourth maximum eight-hour concentrations recorded in 2012 for each O_3 monitoring site in the Western Slope Region are listed in the table below. Also listed are the three year design values (2010-2012) for each site with enough data available to calculate them. None of these sites recorded ozone concentrations that exceeded the 8-hour ozone standard. The Lay Peak site was established in August of 2011, so there is insufficient data to report at this time.

There is one MSA located on the Western Slope. It is the Grand Junction MSA, which includes all of Mesa County. Per EPA monitoring requirements, this MSA falls in the 50,000 to 350,000 population range, and requires one O_3 monitor. The monitor at the Palisade Water Treatment Plant satisfies this requirement, as well as the highest concentration monitor requirement.

Table 9. Maximum O_3 Concentrations in the Western Slope Region

Site ID	Site Name	1st Eight-hour Max (ppm)	4th Eight-hour Max (ppm)	2010-2012 Design Value (ppm)
08 045 0012	Rifle ï Health	0.078	0.068	0.066
08 077 0020	Palisade Water Treatment	0.075	0.071	0.068
08 083 0006	Cortez	0.072	0.070	0.068

Southwest Region

There is a single O3 monitor in the Southwest Region in Cortez. The first and fourth eight-hour maximum concentration in 2012 were 0.072 and 0.070 ppm respectively, and the 2010-2012 design value is 0.068.

The O3 monitor in Cortez is:

08 083 0006 ï Cortez 106 W. North Street

Planned Changes in O_3 Monitoring

Planned changes for the 2013-2014 plan year include the review of sites in the Front Range for possible enhancement, and the possible installation of a new site in the Pueblo area, pending reviews of industry monitoring data. The monitor from the Arvada site was removed and subsequently installed at the CAMP site. The Near-Roadway O_3 monitor will be installed.

IV. Nitrogen Dioxide/Reactive Oxides of Nitrogen (NO_2/NOy)

The APCD has monitored NO2 at eight locations in Colorado in the past, two of which are still in operation. The Denver CAMP monitor exceeded the NO2 standard in 1977 though the Welby monitor has never exceeded the standard of 53 ppb as an annual average. Nonetheless, concentrations have shown a gradual decline in the past 20 years, and the last decade trend has been nearly flat.

In January 2010, the EPA set a new primary 1-hour NO_2 NAAQS that is in addition to the annual standard. The new standard, both primary and secondary, of 100 ppb is based on the three-year average of the 98th percentile of the yearly distribution of daily maximum one-hour concentrations.

The APCD began monitoring for NOy at the NCore DMAS site in January 2011, which was moved to the La Casa site in January 2013. NOy monitoring is a requirement for an NCore station, but there are no standards for NOy. The EPA has established requirements for an NO_2 monitoring network that will include monitors at locations where maximum NO_2 concentrations are expected to occur, including within 50 meters of major roadways, as well as monitors sited to measure the area-wide NO_2 concentrations that occur more broadly across communities. Per the requirements, at least one monitor must be located near a major road in any urban area with a population greater than or equal to 500,000 people. A second monitor is required near another major road in areas with either: (1) population greater than or equal to 2.5 million people, or (2) one or more road segments with an annual average daily traffic count greater than or equal to 250,000 vehicles. In addition to the near roadway monitoring, there must be one monitoring station in each CBSA with a population of 1 million or more persons to monitor a location of expected highest NO_2 concentrations representing the neighborhood or larger spatial scales. The

CAMP and Welby sites satisfy this requirement.

Denver Metro/Northern Front Range Counties

In 2012, the annual NO_2 concentration at the Welby site was 18.90 ppb. For 2010 through 2012 the one-hour standard design value is 64 ppb, which is well below the 100 ppb NAAQS. The same value for the CAMP site is 89 ppb. The 2012 annual average at CAMP was 24.52 ppb, which is also well below the standard. There are currently no reportable NO_2 values available for the DMAS site. DMAS was moved to the La Casa site in January of 2013.

The NO_2/NOy monitors in this area are:

08 001 3001 Welby, 3174 E. 78th Avenue
08 031 0002 CAMP, 2105 Broadway
08 031 0026 La Casa, 4587 Navajo Street

Planned Changes in NO_2/NOy Monitoring

The only change planned is the addition of a near roadway monitoring site in 2013. Per 40 CFR Part 58, Revision to Ambient Nitrogen Dioxide Monitoring Requirements, Final Rule,

> ñOn February 9, 2010, the EPA promulgated minimum monitoring requirements for the NO_2 monitoring network in support of the revised NO_2 NAAQS (75 FR 6474). The NO_2 NAAQS was revised to include a 1-hour standard with a 98th percentile form averaged over three years and a level of 100 ppb, reflecting the maximum allowable NO_2 concentration anywhere in an area, while retaining the annual standard of 53 ppb.
> As part of the NAAQS rulemaking, the EPA promulgated revisions to requirements for minimum numbers of ambient NO_2 monitors that included new monitoring near major roads in larger urban areas. In addition, those monitoring revisions included requirements to characterize NO_2 concentrations representative of wider spatial scales in larger urban areas (area-wide monitors), and monitors intended to characterize NO_2 exposures of susceptible and vulnerable populations.
> é The first tier of the ambient NO_2 monitoring network requires near-road monitoring. There must be one microscale near-road NO_2 monitoring station in each CBSA with a population of 500,000 or more persons to monitor a location of expected maximum hourly concentrations sited near a major road.ò

Near-roadway stations are also to be designed with a CO monitor, and have the capacity to expand the monitoring suite. The near roadway monitor is sited at 971 Yuma Street in Denver, on the Colorado Department of Transportation right-of-way island between Yuma St. and I-25.

V. Sulfur Dioxide (SO_2)

The Air Pollution Control Division has monitored SO_2 at eight locations in Colorado in the past. Currently, there are four monitoring locations in operation. A new one-hour primary standard was finalized in June 2011. To attain that standard, the three-year average of the 99th percentile of the daily maximum one-hour average at each monitor within an area must not exceed 75 ppb. The secondary NAAQS is a three-hour average not to exceed 500 ppb more than once per year. SO_2 had never approached the level of any of the standards until an SO_2 analyzer was added at Highway 24 in Colorado Springs, which has exceeded the standard in 2013. An exceedance of the standard is a single occurrence of a concentration above the specified NAAQS

concentration and does not take into account the three-year averaging period necessary to determine a violation of the standard. Because the Highway 24 station has less than a year of data for SO_2, there is insufficient data to indicate that a violation of the standard exists. Also note that the data for the first half of 2013 is preliminary and will not be certified until early 2014.

SO_2 monitoring requirements include the need for calculating a Population Weighted Emissions Index (PWEI). This figure is calculated for each MSA by multiplying the population of the MSA by the SO_2 emissions for that MSA and dividing by 1 million. This PWEI value is then used to determine areas in need of SO_2 monitoring. A sum of the most recent emissions data by county (2008) give a total for SO_2 emissions of 15,235 tons per year for the Denver PMSA. The calculated PWEI for this region is 37,930 million persons-tons per year. This indicates the need for one SO_2 monitor in the Denver MSA according to the EPAs monitoring rules for SO_2.

Using the same calculation for the Colorado Springs MSA, the calculated PWEI is 8,207 million persons-tons per year. Because of the increase in population in Colorado Springs, there is a need for one SO_2 monitor in this MSA. The monitors listed in the sections below meet these needs.

Metropolitan Denver Counties

The mean calculated by the one-hour standard design value for the DMAS site does not satisfy summary criteria. The concentration values are listed in ppb in accordance with the EPAôs data reporting rules for this pollutant. It should be noted here that the values listed for the DMAS site are only shown for comparative purposes, and are not of sufficient validity for a comparison to the standard, as the data do not span the entirety of 2012. Also, in late 2012, DMAS was moved to La Casa, which is not included in the table below because of insufficient data collection to date.

Table 10. Maximum SO_2 Concentrations for the Denver Metro Region

Site ID	Site Name	Annual Avg. (ppb)	24-Hour Max (ppb)	One-Hour Max (ppb)[4]
08 001 3001	Welby	0.88	5.0	40.0
08 031 0002	CAMP	2.01	10.3	43.3
08 031 0025	DMAS	1.53	7.5	31.8

Pikes Peak Region

In January of 2013 an SO_2 monitor was added to the Highway 24 monitoring station in Colorado Springs. While insufficient certified data are available to determine if a violation of the NAAQS exists, preliminary data collected at Highway 24 are in exceedance of the NAAQS. Discussion of the SO_2 data will be available in subsequent annual data reports.

Planned Changes in SO_2 Monitoring

In 2013, there are no planned changes to the SO_2 monitoring network. However, the Cimarron exit is planned for future reconstruction, which will require relocation of the Highway 24 site to another location.

[4] The one-hour SO_2 design value is calculated by taking the three year average of the 99th percentile of the daily maximum one-hour averages.

VI. PM_{10}

In 2012, the APCD operated 33 PM_{10} monitors at 30 different locations. 27 of these sites use high volume instruments, six sites use low volume instruments, six sites have continuous monitors collocated with FRM monitors, three of which have continuous dichot particulate monitors, which also monitor $PM_{2.5}$ and PM_{10}. There are two sites with collocated high volume samplers (CAMP and Crested Butte), and one site with a collocated low volume sampler (Grand Junction - Powell). The PM_{10} NAAQS is a 24-hour average of 150 $\mu g/m^3$ not to be exceeded more than an average of 1.0 times in a three year period. This average is also based on the monitoring frequency and the percent of valid data collected at a site.[5]

Denver Metro/Northern Front Range Counties

Motor vehicle activity is a source of particulate matter. Several industries and manufacturing processes also contribute to particulate levels. These industries include breweries, power plants, cement plants, mining, electronics, film manufacturing facilities, and rock quarries. There are also a variety of agricultural sources of PM_{10} including feed lots, grazing, tilling, and other agricultural activities. This region is also an area of significant oil and gas development.

Neither the monitor at the Fort Collins ï CSU site nor the Greeley monitor had any PM_{10} exceedances in 2012. The maximum concentrations recorded were 104 $\mu g/m^3$ at Fort Collins ï CSU, and 102 $\mu g/m^3$ at Greeley.

The PM_{10} monitoring sites in this area are:

08 069 0009 Fort Collins-CSU, 251 Edison Drive
08 123 0006 Greeley-Hospital, 1516 Hospital Road

There were no PM_{10} exceedances by any of the monitors in the Denver Metro area. The table below lists the maximum concentrations recorded at each of the sites in 2012. Site ID numbers that include an asterisk (*) indicate a low volume sampler, while no asterisk indicates high volume samplers.

Table 11. Maximum PM_{10} Concentrations for the Denver Metro Area

Site ID	Site Name	Max. 24-Hour Concentration ($\mu g/m^3$)
08 001 0006*	Commerce City	113
08 001 3001	Welby	91
08 013 0003	Longmont-Municipal	55
08 013 0012	Boulder Chamber Bldg.	72
08 031 0002	CAMP	115
08 031 0017	Denver Visitor Center	87
08 031 0025*	DMAS	93

Eastern High Plains Region

The sources of PM_{10} in the eastern plains are mainly agricultural with some mobile sources

[5] ñAppendix K to Part 50 ï Interpretation of the National Ambient Air Quality Standards for Particulate Matter,ò 40 Federal Regulations 50 (1 July 2011), pp. 80-83.

near cities and towns. Agricultural sources of PM_{10} include feed lots, grazing, tilling, and other dry land agricultural activities. There is also a coal fired power plant in Lamar and a flour mill that contribute to PM_{10} in Lamar.

There were three PM_{10} exceedances at the Lamar Power Plant site, and two at the Lamar Municipal site in 2012. The highest concentration recorded at the Lamar Power Plant site was 220 $\mu g/m^3$, while that at the Lamar Municipal site was 242 $\mu g/m^3$. Both samplers are high volume samplers.

The PM_{10} monitoring sites in this area are:

08 099 0001 Lamar Power Plant, 100 N. 2nd St.
08 099 0002 Lamar Municipal, 104 E. Parmenter Street

Pikes Peak Region

There were no exceedances of the PM10 NAAQS in this region. The highest concentration recorded at the Colorado College site was 64 $\mu g/m^3$. This monitor is a low-volume sampler.

The PM_{10} monitoring site in this area is:

08 041 0017 Colorado College, 130 West Cache la Poudre

San Luis Valley Region

There were nine exceedances in this region in 2012, four at Alamosa ï Adams State College, and five at Alamosa Municipal. The maximum concentration at Alamosa ï Adams State College was 389 $\mu g/m^3$ and the maximum concentration at Alamosa Municipal was 239 $\mu g/m^3$. Both monitors are high volume samplers. The high values seen at these sites are under consideration as exceptional events by the department, and are most likely due to strong wind gusts.

The PM_{10} monitoring sites in this are are:

08 003 0001 Alamosa-Adams State College, 208 Edgemont Boulevard
08 003 0003 Alamosa-Municipal, 425 4th Street

South Central Region

There were no exceedances in this region in 2012. The maximum concentration found at Pueblo ï Fountain School was 62 $\mu g/m^3$.

The PM_{10} monitoring site in this area is:

08 101 0015 Pueblo ï Fountain School, 925 North Glendale Avenue

Central Mountain Region

There was one PM_{10} exceedance in the Central Mountain region at the Mount Crested Butte site. The table below lists the maximum concentrations recorded at each of the sites in 2012.

Table 12. Maximum PM_{10} Concentrations for Mountain Counties

Site ID	Site Name	Max. 24-Hour Concentration ($\mu g/m^3$)
08 043 0003	Cañon City ï City Hall	61
08 051 0004	Crested Butte	50
08 051 0007	Mount Crested Butte	171

Site ID	Site Name	Max. 24-Hour Concentration (μg/m^3)
08 097 0006	Aspen ï Library	87
08 107 0003	Steamboat Springs	124
08 117 0002	Breckenridge	82

Southwestern Region

There were no exceedances of the PM10 standard in 2012. The maximum concentration at Pagosa Springs was 147 μg/m^3, and the maximum concentration at Durango ï River City Hall was 80 μg/m^3.

The PM_{10} monitoring sites in this area are:

08 007 0001 Pagosa Springs, 309 Lewis Street
08 067 0004 Durango ï River City Hall, 1235 Camino Del Rio

Western Slope Region

There was one PM_{10} exceedance in the Western Slope region in 2012 at the Powell site. The table below lists the maximum concentrations recorded at the monitoring sites in this area. Site ID numbers that include a star (*) indicate a low volume sampler, while no star indicates high volume samplers. Sources of PM_{10} in the Western region include motor vehicle activity, industries and manufacturing processes, which include lumber processing, mining, gravel pits, and rock quarries. There are also a variety of agricultural sources of PM_{10} including feed lots, grazing, tilling, and other dry land agricultural activities.

Table 13. Maximum PM_{10} Concentrations in Western Slope Counties

Site ID	Site Name	Max. 24-Hour Concentration (μg/m^3)
08 029 0004	Delta	65
08 045 0005	Parachute	65
08 045 0007	Rifle ï Henry Building	50
08 048 0018	Carbondale	40
08 077 0017*	Grand Junction ï Powell	176
08 077 0019	Clifton	74
08 113 0004	Telluride	80

Planned Changes in PM_{10} Monitoring

The Carbondale site was added in September of 2012. The Breckenridge site was closed in December of 2012. The Lamar Power Plant station was closed in December of 2012.

VII. $PM_{2.5}$

$PM_{2.5}$ concentration values are reported in four different groups of readings by the APCD. Data from instruments sampling according to the Federal Reference Method (FRM) are reported with the 88101 parameter code, data from continuous samplers that reasonably compare to the FRM are reported with the 88500 parameter code, data from continuous samplers that don't compare reasonably to the FRM are reported with the 88501 parameter code, and speciation data

is reported with the 88502 parameter code. There are 17 FRM instruments at 15 sites, of the 15 sites eight are collocated with a continuous instrument and two are collocated with an FRM; one site (Rifle) has continuous $PM_{2.5}$ but no FRM. Speciation samples are taken at three sites, all collocated with an FRM.

The annual $PM_{2.5}$ standard of 12 mg/m^3 is compared to the three-year average annual mean $PM_{2.5}$ concentration. The 24-hour $PM_{2.5}$ standard of 35 mg/m^3 is compared to the three-year average of the annual 98th percentile value.

Denver Metro/Northern Front Range Region

Motor vehicle activity is a source of particulate matter. There are also several small industries and manufacturing processes that may contribute to particulate levels. These industries include breweries, power plants, cement plants, mining, electronics and film manufacturing facilities and rock quarries. Weld County is also an area of significant oil and gas development.

The $PM_{2.5}$ sites listed below with manual method FRM sites in the APCD network as of December 31, 2011, are suitable for comparisons to the annual $PM_{2.5}$ NAAQS.

There were two $PM_{2.5}$ exceedances in 2012 in the Larimer and Weld County area, one each at Greeley ï Hospital and Platteville. The table below lists the maximum $PM_{2.5}$ concentrations recorded at each of the sites in Larimer and Weld Counties, as well as the weighted annual average values. The monitoring data listed below are all from FRM monitors. The annual average value for all three sites does not meet EPA statistical summary criteria because of insufficient data, however alternative approaches to calculating a design value are provided in 40 CFR Part 50, Appendix N.

Table 14. Maximum $PM_{2.5}$ Concentrations in Northern Front Range Counties

Site ID	Site Name	Max. 24-Hour Concentration (μg/m^3)	Annual Average Value (μg/m^3)
08 069 0009	Fort Collins ï CSU	30.5	7.31
08 123 0006	Greeley ï Hospital	44.3	7.90
08 123 0008	Platteville	48.0	7.82

There were two exceedances of the $PM_{2.5}$ standard in the Denver Metro area in 2012, one each at the Longmont and CAMP sites. The table below lists the maximum $PM_{2.5}$ concentrations recorded in 2012 for each site in the Denver Metro area. All the monitoring data listed in the table are from FRM monitors. The annual average value for all three sites does not meet EPA statistical summary criteria because of insufficient data, however alternative approaches to calculating a design value are provided in 40 CFR Part 50, Appendix N.

Table 15. Maximum $PM_{2.5}$ Concentrations in the Denver Metro Area

Site ID	Site Name	Max. 24-Hour Concentration (μg/m^3)	Annual Average Value (μg/m^3)
08 001 0006	Commerce City	33.7	8.59
08 005 0005	Arapahoe Community College	34.7	6.76
08 013 0003	Longmont ï Municipal	35.7	7.20
08 013 0012	Boulder Chamber of Commerce	28.5	6.17
08 031 0002	CAMP	32.3	7.95

Site ID	Site Name	Max. 24-Hour Concentration ($\mu g/m^3$)	Annual Average Value ($\mu g/m^3$)
08 031 0023	Swansea	33.5	7.85
08 031 0025	DMAS	35.2	8.18
08 031 0026	La Casa	33.9	6.94
08 035 0004	Chatfield Reservoir	32.7	6.05

The following sites are micro-scale sites and are EPA approved. Based on ongoing data collection and analysis CAMP can be shown to be analogous with sites ranging from Commerce City to DMAS and highly correlated with sites within the Platte Valley from Greeley and Platteville in the north to Chatfield in the south, and is approved as neighborhood scale.

08 031 0002-1 Denver CAMP, 2105 Broadway
08 031 0026-1 La Casa, 4587 Navajo Street
08 035 0004-1 Chatfield Reservoir, 11500 N. Roxborough Park Road

The Boulder Chamber of Commerce building site is considered a middle scale site, but it has been approved by the EPA as representative of a neighborhood scale site. The Division performed a land use and gridded emissions inventory analysis to demonstrate to EPA that the area surrounding the Boulder Chamber of Commerce building has many contiguous middle scale sites with similar emissions densities, meteorology and land uses.

Pikes Peak Region

There were no exceedances of the $PM_{2.5}$ standard in 2012 in the Pikes Peak Region. The maximum 24-hour concentration at the Colorado College site was 18.9 $\mu g/m^3$, and the annual average was 6.91 $\mu g/m^3$, though the average does not satisfy EPA statistical summary criteria because of insufficient data.

The $PM_{2.5}$ monitoring site in this area is:

08 041 0017 Colorado College, 130 West Cache la Poudre

South Central Region

There were no exceedances of the $PM_{2.5}$ NAAQS standard in the South Central region in 2012. The maximum concentration at the Pueblo ï Fountain School was 25.7 $\mu g/m^3$ and the annual average was 6.64 $\mu g/m^3$ though the average does not satisfy summary criteria.

The $PM_{2.5}$ monitoring site in this area is:

08 101 0015 Pueblo ï Fountain School, 925 North Glendale Avenue

Southwest Region

There were no exceedances of the PM2.5 standard in the Southwest region in 2012. The maximum 24-hour concentration at Cortez was 13.4 $\mu g/m^3$, and the annual average was 5.65$\mu g/m^3$.

The $PM_{2.5}$ monitoring site in this area is:

08 083 0006 Cortez, 106 West North Street

Western Slope Region

There were no $PM_{2.5}$ exceedances recorded in the Western Slope region. The maximum 24-hour concentration at Powell 28.3, and the annual average was 7.34, though the average did not satisfy summary criteria.

The $PM_{2.5}$ monitoring site in this area is:

08 077 0017 Grand Junction ï Powell, 650 South Avenue

$PM_{2.5}$, TEOM, and BAM Continuous Monitors not intended for NAAQS Comparison

All Federal Reference Method (FRM) monitors in the Colorado $PM_{2.5}$ network are compared to the NAAQS. The FRM monitors are all filter based 24-hour composite samples. The Division also employs a variety of continuous particulate monitors for forecasting and advising the public of air quality alerts.

The APCD does not collect or report $PM_{2.5}$ FEM data.

These monitors are used to gather near real-time data that are mainly used to inform and alert the public when concentrations are elevated and for short term forecasting of air pollution by the Division. The TEOM 1400ab with 8500 FDMS and the TEOM 1405-DF are federally equivalent monitors, however frequent monitor problems and Division concerns regarding equivalency designation have led the Division not to use these monitors for regulatory purposes. The following sites have continuous $PM_{2.5}$ monitors that are not intended for comparison with the NAAQS:

08 001 0006-3 Commerce City, 7101 Birch Street
08 013 0003-3 Longmont-Municipal, 350 Kimbark Street
08 013 1001-3 Boulder CU/Athens, 2102 Athens St.
08 031 0002-3 CAMP, 2105 Broadway
08 031 0013-3 NJH-E, 14th Avenue and Albion Street
08 031 0026-3 La Casa, 4587 Navajo Street
08 035 0004-3 Chatfield Reservoir, 11500 N. Roxborough Park Road
08 041 0017-3 Colorado College, 130 W. Cache la Poudre
08 045 0007-3 Rifle ï Henry Building, 144 3rd Street
08 069 0009-3 Fort Collins-CSU, 251 Edison Drive
08 077 0017-3 Grand Junction-Powell, 650 South Avenue
08 123 0006-3 Greeley-Hospital, 1516 Hospital Road

Community Monitoring Zones

Community monitoring zones are an additional method of defining an area for comparison with the $PM_{2.5}$ NAAQS where data from two or more monitoring sites are averaged together for comparison with the standard. Currently, the APCD does not have any areas where this technique is used.

The definition of community monitoring zone (CMZ) in 40 CFR Part 58.1 is as follows: ñCommunity monitoring zone (CMZ) means an optional averaging area with established, well defined boundaries, such as county or census block, within a Monitoring Planning Area (MPA)

that has relatively uniform concentrations of annual $PM_{2.5}$ as defined by appendix N of part 50 of this chapter. Two or more community oriented SLAMS monitors within a CMZ that meet certain requirements as set forth in appendix N of part 50 of this chapter may be averaged for making comparisons to the annual $PM_{2.5}$ NAAQS.ò The CMZ is an optional technique that averages the $PM_{2.5}$ 24-hour concentrations from two or more monitors located in the same community.

If the $PM_{2.5}$ monitoring network is changed by the creation/change of a CMZ or changing the location of a violating monitor, then the APCD will ask EPA Region VIII for approval via the current network modification process, and then notify the appropriate governments of affected communities. The APCD will also provide the proposed changes to the affected communities and concerned citizens on our web site. A public comment period will be open for thirty days prior to the APCD selecting a new site.

Planned Changes in $PM_{2.5}$ Monitoring

A possible relocation of the Boulder CU/Athens TEOM site due to new construction near the site is being investigated. The Elbert background site was unexpectedly terminated due to a change in property ownership. The new owner does not want monitoring on his property. A replacement new $PM_{2.5}$ background site is currently being established in Douglas County in Castlewood Canyon State Park.

VIII. TSP/Pb

In December 2006 Total Suspended Particulate (TSP) monitoring by the APCD was reduced from six monitoring sites to a single site at DMAS. In 2012 when DMAS was moved to La Casa, TSP sampling for lead was discontinued at the Divisionôs NCORE site and PM10 sampling for lead began. In the past three years the maximum quarterly lead concentration has generally been less than a tenth of the current standard. In addition, Colorado has not recorded an exceedance of the previous lead standard (1.5 $\mu g/m^3$ averaged over a calendar quarter) since the first quarter of 1980. The new lead standard, which is 0.15 $\mu g/m^3$ averaged over any three rolling consecutive three-month periods, has not been exceeded using data from 2010 - 2012. The new lead standard became effective on December 15, 2008.

With the revision of the standard in mind, the APCD reviewed its stationary sources database for all point sources that emit lead in Colorado. There were 32 lead sources identified in a database retrieval conducted in November, 2008. None of the sources emit greater than one ton(s) per year (TPY) of total lead, which includes elemental lead and all lead compounds. Thus, no new lead monitors are required at any point source facility in Colorado.

The U.S. EPA calculated emissions for lead at general aviation airports due to piston engine aircraft, which continue to use leaded aviation fuel. According to EPA, Centennial Airport had the second highest lead emissions of any airport in the country at 1.18 TPY using data from the 2005 National Emissions Inventory (NEI). Since this emissions estimate exceeded the threshold for lead, the Division has located a lead sampling site at the Centennial Airport. This monitoring site was installed in March 2011 and the first sample was collected on April 3, 2011. Subsequently, EPA has updated the lead emissions inventory for airports using 2008 NEI data. They found that Centennial Airport has dropped to the sixth highest lead emissions of any airport in the country at 1.08 TPY. The decrease in general aviation activity is likely due to the economic recession.

Also, the EPA has lowered the lead emissions threshold from 1.0 TPY to 0.5 TPY. Colorado still has no lead point sources greater than 0.5 TPY. However, the APCD may need to monitor lead at three additional airports, including Pueblo Memorial (0.55 TPY, ranked 47th), Greeley-Weld County (0.54 TPY, ranked 51st), and Rocky Mountain Metropolitan Airport in Jefferson County (0.51 TPY, ranked 59th). This new monitoring is on hold pending an airport lead study being conducted by EPA.

Denver Metro/Front Range Region

There are various industries and manufacturing processes located in the area, but only a very few emit significant amounts of lead into the air.

There were no exceedances of the lead NAAQS in 2012. The maximum TSP value recorded by the primary DMAS TSP monitor was 169 $\mu g/m^3$. The maximum lead value recorded by the DMAS primary lead monitor was 0.014 $\mu g/m^3$. The maximum TSP value recorded by the Centennial TSP monitor was 69 $\mu g/m^3$. The maximum lead value recorded by the Centennial lead monitor was 0.078 $\mu g/m^3$.

The TSP/PM_{10}/Lead monitoring sites in this area include:

08 005 0007 Centennial Airport, near 7800 S. Peoria Street
08 031 0026 La Casa, 4587 Navajo Street

Planned Changes in TSP and Lead Monitoring

There are no planned changes to the network in 2013.

IX. METEOROLOGICAL MEASUREMENTS

Meteorological measurements taken by the APCD consist of Wind Speed, Wind Direction, Temperature, and Humidity. The wind speed and direction measurements are made as both scalar and vector averages. A final parameter that is recorded at the meteorological sites is the standard deviation of horizontal wind direction. This is a calculation, not a direct measurement, of the variation of wind direction over time.

The meteorological monitoring sites are:

08 001 0006 Commerce City, 7101 Birch Street
08 001 3001 Welby, 3174 E. 78th Avenue
08 005 0002 Highland Reservoir, 8100 S. University Boulevard
08 005 0006 Aurora-East, 36001 Quincy Avenue
08 031 0002 Denver-CAMP, 2105 Broadway
08 031 0026 La Casa, 4587 Navajo Street
08 035 0004 Chatfield State Park, 11500 N. Roxborough Park Road
08 045 0005 Parachute ï Elem. School, 100 E. 2nd Street
08 045 0012 Rifle Health Dept., 195 W. 14th Street
08 059 0002 Arvada, 9101 W. 57th Avenue
08 059 0005 Welch, 12400 W. Hwy 285
08 059 0006 Rocky Flats-N, 16600 W. Hwy 128
08 059 0013 Aspen Park, 26137 Conifer Road
08 069 1004 Fort Collins-Mason, 708 S. Mason Street
08 077 0018 Grand Junction-Pitkin, 645 ¼ Pitkin Avenue

08 077 0020 Palisade Water Treatment, Hwy 141 and D Road
08 081 0002 Lay Peak, 17820 County Road 17
08 099 0003 Lamar Port of Entry, 7100 US Hwy 50
08 123 0009 Greeley ï Weld County Tower, 3101 35th Avenue

Planned Changes in Meteorological Monitoring

Meteorological sensors will be installed at the near roadway site.

X. QUALITY ASSURANCE

Continuous Monitors

The APCD staff performs three types of gaseous analyzer performance checks: quality control checks, accuracy audits, and calibrations. These audits/calibrations challenge the analyzer with pollutant gases of known concentration within the range of the analyzer. The APCD Quality Assurance staff conducts accuracy audits on all of the instruments at least twice per year. The APCD field staff conducts quality control checks nominally once every two weeks, and calibrations once every calendar quarter. The details and minimum standards for this program are set out in the Code of Federal Regulations (Part 58 Ambient Air Quality Surveillance). A complete description of the procedures and the results are available from the APCD.

Particulate Monitors

The audit checks performed on the particulate monitors consist of calibrated flow checks. The precision checks that are made on particulate monitors consist of collocated samplers that operate side-by-side and collect a sample from both samplers once every sixth day. EPA requires a minimum of 15% of the FRM network to be collocated. In 2012 Colorado maintained 14 FRM monitoring sites, two of which have collocated instruments (CAMP, Commerce City). The EPA also has a performance evaluation program (PEP), which checks the national network for bias by having a private contractor set up an independent FRM sampler next to the Divisionôs $PM_{2.5}$ sampler (between 1 ï 4 m apart). Once each calendar quarter a collocated sample from 25 % of the network is sent to an independent laboratory (the EPAôs Region X Lab) to compare results and check for bias. All of the samples are then compared to ensure that the data are within federal limits and meet pre-established data quality objectives.

Once each calendar quarter a collocated sample is sent to the EPA Region 9 lab as part of the lead performance evaluation program (Pb-PEP), which checks the national network for bias. The samples are then compared to ensure that the data are within federal limits and meet pre-established data quality objectives.

Meteorological Monitors

Annual calibrations and audit checks are performed on the meteorological equipment to determine proper alignment and operation of the sensors. The details and minimum standards for this program are set out in the Code of Federal Regulations (Part 58 Ambient Air Quality Surveillance). A complete description of the procedures and the results are available from the APCD.

XI. SUMMARY OF NETWORK CHANGES

In 2012, several network changes occurred, and in 2013 several more changes are planned.

This section summarizes the completed and planned changes below.

Completed Changes

The following changes to CDPHEôs monitoring network occurred during 2012.

- The NCore site was relocated from the DMAS location to the La Casa site. The site modification forms were available for public comment from 01/12/2012 to 02/13/2012, and are included in Appendix C.
- A SO_2 monitor was installed at the Highway 24 site in Colorado Springs and began collecting data on January 11, 2013, Appendix D.
- Meteorological equipment was added to the Weld County Tower site, Appendix D.
- The Carbondale site began collecting PM_{10} data in September of 2012.
- The Carriage site was decommissioned at the end of 2012, Appendix D.
- The Swansea site was decommissioned at the end of 2012.
- The Breckenridge site was decommissioned at the end of 2012.
- The Lamar Power Plant site was decommissioned at the end of 2012, Appendix C.

Planned Changes

The following changes to CDPHEôs monitoring network are planned for 2012-2013.

- A near-roadway NO_2 monitor, as well as a trace level CO monitor will be installed by June 1, 2013.
- A second near-roadway site is being considered to be in place by 2015.
- A new background $PM_{2.5}$ site will be installed at Castlewood Canyon State Park by the end of 2013.
- The possible installation of a new ozone site in the Pueblo area will be investigated.
- A new location for South Boulder Creek will be investigated since vegetation in the area is changing siting criteria conditions.
- Waivers may be applied for siting criteria exceptions for Welby and CAMP.
- Rist Canyon will be decommissioned by June of 2013, Appendix F.
- Boulder CU/Athens TEOM site will be considered for removal.
- Lead sampling at Centennial Airport will be considered for removal.

Appendix A - Monitoring Site Descriptions

This appendix includes site information for all sites containing continuous gaseous monitors, meteorological monitors, or particulate monitors. The data is presented first in a tabular format, and is then followed by site descriptions. It is in the order of AQS ID number.

Table 16. Monitoring Site Locations and Instruments

AQS #	*Site Name*	*CO*	*O_3*	*NO*	*NO_2/NOy*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*	*TSP/Pb*	*Met*
08 001 0006	Alsup Elementary School - Commerce City						X	X		X
08 001 3001	Welby	X	X	X	X	X	X			X
08 003 0001	Alamosa ï Adams State Coll.						X			
08 003 0003	Alamosa ï Municipal Bldg.						X			
08 005 0002	Highland Reservoir		X							X
08 005 0005	Arapahoe Comm. Coll.							X		
08 005 0006	Aurora ï East		X							X
08 005 0007	Centennial Airport								X	
08 007 0001	Pagosa Springs School						X			
08 013 0003	Longmont-Municipal Bldg.						X	X		
08 013 0011	South Boulder Creek		X							
08 013 0012	Boulder Chamber of Commerce						X	X		
08 013 1001	Boulder ï CU - Athens							X		
08 029 0004	Delta Health Dept						X			
08 031 0002	Denver ï CAMP	X	X	X	X	X	X	X		X
08 031 0013	Denver - NJH-E							X		
08 031 0016	DESCI									X
08 031 0017	Denver Visitor Center						X			
08 031 0026	La Casa	X	X	X	X	X	X	X	X	X
08 035 0004	Chatfield State Park		X					X		X
08 041 0013	U. S. Air Force Academy		X							
08 041 0015	Colorado Springs Hwy. 24	X				X				
08 041 0016	Manitou Springs		X							
08 041 0017	Colorado College						X	X		
08 043 0003	Cañon City ï City Hall						X			
08 045 0005	Parachute ï Elem. School						X			X
08 045 0007	Rifle ï Henry Bldg						X	X		X
08 045 0012	Rifle ï Health Dept		X							
08 045 0018	Carbondale						X			
08 051 0004	Crested Butte						X			
08 051 0007	Mt. Crested Butte - Realty						X			
08 059 0002	Arvada									X
08 059 0005	Welch		X							X
08 059 0006	Rocky Flats - N		X							X
08 059 0011	NREL		X							
08 059 0013	Aspen Park		X							X
08 067 0004	Durango-River City Hall						X			

AQS #	*Site Name*	*CO*	*O_3*	*NO*	*NO_2/NOy*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*	*TSP/Pb*	*Met*
08 069 0009	Fort Collins ï CSU - Edison						X	X		
08 069 0011	Fort Collins - West		X							
08 069 0012	Rist Canyon		X							X
08 069 1004	Fort Collins - Mason	X	X							X
08 077 0017	Grand Junction ï Powell Bldg						X	X		
08 077 0018	Grand Junction - Pitkin	X								X
08 077 0019	Clifton - Sanitation						X			
08 077 0020	Palisade Water Treatment		X							X
08 081 0002	Lay Peak		X							X
08 083 0006	Cortez ï Health Dept		X					X		
08 097 0006	Aspen - Library						X			
08 099 0002	Lamar Municipal						X			
08 099 0003	Lamar Port of Entry									X
08 101 0015	Pueblo - Fountain School						X	X		
08 107 0003	Steamboat Springs						X			
08 113 0004	Telluride						X			
08 123 0006	Greeley-Hospital						X	X		
08 123 0008	Platteville Middle School							X		
08 123 0009	Greeley ï County Tower		X							X
08 123 0010	Greeley ï West Annex	X								

Alsup Elementary School - Commerce City, 7101 Birch Street (08 001 0006):

The Alsup Elementary School - Commerce City site is in a predominantly residential area with a large commercial and industrial district. It is located north of the Denver Central Business District (CBD) near the Platte River Valley, downstream from the Denver urban air mass. There are two schools in addition to the Alsup Elementary School in the immediate vicinity, a middle school to the north, and a high school to the southeast. There is a large industrial area to the south and east, and gravel pits about a kilometer to the west and northwest.

PM_{10} monitoring began in January 2001 and continues today. $PM_{2.5}$ monitoring began in January 2001 and continues today. There are a collocated set of monitors, along with a continuous monitor, a trends speciation monitor, and a $PM_{2.5}$ carbon monitor all in operation.

Meteorological monitoring began in June of 2003.

Welby, 3174 E. 78th Avenue (08 001 3001):

Located 8 miles north-northeast of the Denver Central Business District (CBD) on the bank of the South Platte River, this site is ideally located to measure nighttime drainage of the air mass from the Denver metropolitan area and the thermally driven, daytime upriver flows. The monitoring shows that high CO levels are associated with winds from the south-southwest. While this is the direction of five of the six major sources in the area, it is also the direction of the primary drainage winds along the South Platte River. This monitor is in the SLAMS network, and is population oriented for a neighborhood scale.

CO monitoring began in 1973 and continued through the spring of 1980. Monitoring was stopped from the spring of 1980 until October 1986 when it began again as a special study. Welby has not recorded an exceedance of either the one-hour or eight-hour CO standard since January 1988. In the last few

years, its primary value has been as an indicator of changes in the air quality index (AQI).

O_3 monitoring began at Welby in July of 1973. The Welby monitor has not recorded an exceedance of the old one-hour O_3 standard since 1998. However, the trend in the 3-year average of the 4th maximum eight-hour average has been increasing since 2002.

The Welby NO_2 monitor began operation in July 1976. The siteøs location provides an indication of possible exceedance events before they hit the Denver-Metro area. The site serves as a good drainage location, but it may be a target for deletion or relocation farther down the South Platte River Valley from Denver.

The Welby SO_2 monitor began operation in July of 1973.

PM_{10} monitoring began at Welby in June and July of 1990. The continuous monitor began operation in June, while the high volume monitor began operation in July.

Meteorological monitoring began in January of 1975.

Alamosa – Adams State College, 208 Edgemont Boulevard (08 003 0001):

The Alamosa ï Adams State College site is located on the science building of Adams State College in a principally residential area. The only significant traffic is on US 160 through the center of town. The site is adjacent to this highway but far enough away to reduce direct impacts on the PM_{10} levels. Meteorological data are not available from the area. The city has a population of 8,780 (2010 Census data). This is an increase of 10.3% from the 2000 census. The major particulate source is wind-blown dust. This site began operation in 1973 as a TSP monitor and was changed to a PM_{10} monitor in June 1990. This is a population oriented neighborhood scale SLAMS monitor that is on a daily sampling schedule.

Alamosa - Municipal, 425 4th Street (08 003 0003):

The Alamosa 425 4th Street was started in May 2002. The site was established closer to the center of the city to be more representative of the population exposure in the area. This is a population oriented neighborhood scale SLAMS monitor that is on a daily sample schedule.

Highland Reservoir, 8100 S. University Boulevard (08 005 0002):

The Highlands site began operation in June of 1978. It was intended to be a background location. However, with urban growth and the construction of C-470, it has become a long-term trend site that monitors changes in the air quality of the area. It is currently believed to be near the southern edge of the high urban O_3 concentrations although it may not be in the area of maximum concentrations. This is a population oriented neighborhood scale SLAMS monitor.

Meteorological monitoring began in July of 1978.

In September of 2010 the site and meteorological tower were relocated to the east by approximately 30 meters to allow for the construction of an emergency generator system. This emergency generator system is located approximately 20 meters northwest of the new site location.

Arapahoe Community College (ACC), 6190 S. Santa Fe Drive (08 005 0005):

The ACC site is located in south suburban metropolitan Denver. It is located on the south side of the Arapahoe Community College in a distant parking lot. The site is near the bottom of the Platte River Valley along Santa Fe Drive (Hwy. 85) in the city of Littleton. It is also near the city of Englewood. There is a large residential area located to the east across the railroad and Light Rail tracks. The $PM_{2.5}$ monitor is located on a mobile shelter in the rarely used South parking lot. Located at 6190 S. Santa Fe

Drive, this small trailer is close to the Platte River and the monitor has excellent 360^0 exposure. Based on the topography and meteorology of the area ACC is in an area where $PM_{2.5}$ emissions may collect. This location may capture high concentrations during periods of upslope flow and temperature inversion in the valley. However, since it is further south in a more sparsely populated area, the concentrations are usually not as high as other Denver locations.

Winds are predominately out of the south-southwest and south, with secondary winds out of the north and north-northeast (upslope). Observed distances and traffic estimates easily fall into the neighborhood scale in accordance with federal guidelines found in the 40 CFR, Part 58, Appendix D. The site meets all other neighborhood scale criteria, making the monitor a population oriented neighborhood scale SLAMS monitor on a 1 in 3 day sample schedule.

Aurora – East, 36001 Quincy Ave (08 005 0006):

The Aurora East site began operation in June 2009. It is intended to act as a regional site and an aid in the determination of the easternmost extent of the high urban O_3 concentrations. It is located along the eastern edge of the former Lowry bombing range, on a flat, grassy plains area. This site is currently outside of the rapid urban growth area taking place around Aurora Reservoir. This was a special projects monitor (SPM) for a regional scale, and became a SLAMS in 2013.

Centennial Airport, 7800 S. Peoria Street (08 005 0007):

The Centennial Airport site was established in April of 2011 in response to the improved lead standards from the EPA. The lead concentrations found in this monitor are well below the improved standards.

Pagosa Springs School, 309 Lewis Street (08 007 0001):

The Pagosa Springs School site was located on the roof of the Town Hall from April 24, 2000 through May 2001. When the Town Hall building was planned to be demolished, the PM_{10} monitor was relocated to the Pagosa Springs Middle School and the first sample was collected on June 7, 2001.

The Pagosa Springs School site is located next to Highway 160 near the center of town. Pagosa Springs is a small town spread over a large area. The San Juan River runs through the south side of town. The town sits in a small bowl like setting with hills all around. A small commercial strip area along Highway 160 and single-family homes surrounds this location. It is representative of residential neighborhood exposure. Pagosa Springs was a PM_{10} nonattainment area and a SIP was implemented for this area. PM_{10} concentrations were exceeded a few times in the late 1990s.

Winds for this area predominantly blow from the north, with secondary winds from the north-northwest and the south. The predominant wind directions closely follow the valley topography in this rugged terrain. McCabe Creek, which is very near the meteorological station that was on the Town Hall building, runs north-south through this area. However, the highest wind gusts come from the west and southwest during regional dust storms. This is a population oriented neighborhood scale SLAMS monitor on a daily sampling schedule.

Longmont – Municipal Bldg., 350 Kimbark Street (08 013 0003):

The town of Longmont is a growing, medium sized Front Range community. Longmont is located between the Denver/Boulder Metro-area and Fort Collins. Longmont is both suburban and rural in nature. The town of Longmont is located approximately 30 miles north of Denver along the St. Vrain Creek and is about six miles east of the foothills. Longmont is partly a bedroom community for the Denver-Boulder area. The elevation is 4978 feet. The Front Range peaks rise to an elevation of 14,000 feet just to the west of Longmont. In general, the area experiences low relative humidity, light precipitation and abundant sunshine.

The station began operations in 1985 with the installation of PM_{10} followed by $PM_{2.5}$ monitors in 1999.

Longmontôs predominant wind direction is from the north through the west due to winds draining from the St. Vrain Creek Canyon. The PM_{10} site is near the center of the city near both commercial and residential areas. This location provides the best available monitoring for population exposure to particulate matter. The distance and traffic estimate for the controlling street easily falls into the neighborhood scale in accordance with federal guidelines found in 40 CFR, Part 58, and Appendix D. This is a population oriented neighborhood scale SLAMS monitor on a 1 in 6 day sample schedule.

South Boulder Creek, 1405½ S. Foothills Parkway (08 013 0011):

The city of Boulder is located about 30 miles to the northwest of Denver. The Boulder Foothills, South Boulder Creek site was established as a special-purpose O_3 monitor as a part of the ñsummer 1993 Denver O_3 Study.ò During that summer a one-hour level of 0.128 ppm was recorded on July 2, 1993. In 1994, the monitor was converted from an SPM to a seasonal SLAMS monitor. In 1995 it was converted to a year-round O_3 monitoring site when the instruments were moved into a new shelter.

This is a highest concentration oriented urban scale SLAMS monitor.

Boulder Chamber of Commerce, 2440 Pearl Street (08 013 0012):

The city of Boulder is located on the eastern edge of the Rocky Mountain foothills. Most of the city sits on rolling plains. The Boulder $PM_{2.5}$ site is approximately 7,000 feet east of the base of the Front Range foothills and about 50 feet south of a small branch of Boulder Creek, the major creek that runs through Boulder.

PM_{10} monitoring began at this site in December of 1994, while the $PM_{2.5}$ monitoring did not begin until January of 1999.

The predominant wind direction at the Divisionôs closest meteorological site (Rocky Flats ï North) is from the west with secondary maximum frequencies from the west-northwest and west-southwest. The distance and traffic estimate for Pearl Street and Folsom Street falls into the middle scale, but the site has been justified to represent a neighborhood scale site in accordance with federal guidelines found in 40 CFR, Part 58 and Appendix D. This is a population oriented neighborhood scale SLAMS monitoring site on a 1 in 6 day sample schedule.

Boulder – CU - Athens, 2102 Athens Street (08 013 1001):

The Boulder - CU site is located at the edge of a low usage parking lot to the immediate north of the site and south of the University of Colorado football practice fields. This location provides a good neighborhood representation for particulates. The site began operation in November 2004, and may be removed in 2013 due to construction of a new covered air-filled dome covering the practice fields that obstructs air flow. The dome is erected each fall, and remains inflated until early spring. It is removed during the summer months.

Delta, 560 Dodge Street (08 029 0004):

Delta is a small agricultural community midway between Grand Junction and Montrose. The topography in and around Delta is relatively flat as it sits in the broad Uncompaghre River Valley surrounded by high mesas and mountains. Delta sits in a large bowl shaped basin that can effectively trap air pollution, especially during persistent temperature inversions.

The Delta County Health Department site was chosen because it is a one story building near the downtown area. The site began operation in August 1993, and is representative of the large basin with the potential for high PM_{10} due to agricultural burning, automobile traffic, and the former Louisiana

Pacific wafer board plant. This is a population oriented neighborhood scale SLAMS monitor on a 1 in 3 day sample schedule.

CAMP, 2105 Broadway (08 031 0002):

The City and County of Denver is located approximately 30 miles east of the foothills of the Rocky Mountains. Denver sits in a basin, and the terrain of the city is characterized as gently rolling hills, with the Platte River running from southwest to northeast, just west of the downtown area. The CAMP site is located in downtown Denver.

CO monitoring began in February 1965 as a part of the Federal Continuous Air Monitoring Program. It was established as a maximum concentration (micro-scale), population-oriented monitor. The CAMP site measures the exposure of the people who work or reside in the central business district (CBD). Its location in a high traffic street canyon causes this site to record most of the high pollution episodes in the metro area. The street canyon effect at CAMP results in variable wind directions for high CO levels and as a result wind direction is less relevant to high concentrations than wind speed. Wind speeds less than 1 mph, especially up-valley, combined with temperature inversions trap the pollution in the area.

Sampling for all parameters at the site was discontinued from June of 1999 to July of 2000 for the construction of a new building.

The NO_2 monitor began operation in January 1973 at this location.

The SO_2 monitor began operation in January 1967.

O_3 monitoring began originally in 1972 and has been intermittently monitored through January 2008.

The O_3 monitor began operation in February 2012.

The PM_{10} monitoring began in 1986 with the installation of collocated monitors, and was furthered by the addition of a continuous monitor in 1988.

The $PM_{2.5}$ monitoring began in 1999 with a continuous and an FEM monitor, and was furthered by the addition of a collocated FEM monitor in 2001.

Meteorological monitoring began at this site in January of 1965.

NJH-E, 14th Avenue & Albion Street (08 031 0013):

This site is located three miles east of the Denver CBD, close to a very busy intersection (Colorado Boulevard and Colfax Avenue). The current site began operations in 1982. Two previous sites were located just west of the current location. The first operated for only a few months before it was moved to a new site in the corner of the laboratory building at the corner of Colorado Boulevard and Colfax Avenue. Data from this continuous TEOM monitor is not compared with the NAAQS. It is used for short term forecasting and public notifications. The monitor here is a population oriented middle scale special project monitor.

DESCI:

A visibility site was installed in Denver in late 1990 using a long-path transmissometer. Visibility in the downtown area is monitored using a receiver located near Cheesman Park at 1901 E. 13th Avenue, and a transmitter located on the roof of the Federal Building at 1929 Stout Street (Figure 15). Renovations at the Federal Building forced the transmissometer to temporarily move to 1255 19th Street in 2010, and quality control measurements showed no meaningful difference between old and new locations. This instrument directly measures light extinction, which is proportional to the ability of atmospheric particles and gases to attenuate image-forming light as it travels from an object to an observer. The

station also monitors relative humidity in order to resolve low visibility because of fog or rain.

Denver Visitor Center, 225 W. Colfax Avenue (08 031 0017):

The Denver Visitor Center site is located near the corner of Colfax Avenue and Tremont Street. It began operation on December 28, 1992. In 1993, this site along with the Denver CAMP and Gates monitors recorded the first exceedances of the 24-hour PM_{10} standard in the Denver metropolitan area since 1987. The Visitor Center recorded a PM_{10} level of 161 $\mu g/m^3$ on January 14, 1993. Since then, high values have been observed but have been below the NAAQS of 150 $\mu g/m^3$. In the past ten years, the 24-hour maximum levels have trended downward. This is a population oriented middle scale SLAMS monitor operating on a daily sample schedule.

La Casa, 4587 Navajo Street (08 031 0026):

The La Casa site was established in January of 2013 as a replacement for the Denver Municipal Animal Shelter (DMAS) site when a land use change forced the relocation of the site. The La Casa location has been established as the NCore site for the Denver Metropolitan area. In late 2012 the DMAS site was decommissioned and moved to La Casa in northwest Denver and includes a trace gas/precursor-level CO analyzer, and a NOy analyzer, in addition to the trace level SO_2, O_3, meteorology, and particulate monitors. La Casa has been certified in 2013 as an NCore compliant site by the EPA. The site represents a population oriented neighborhood scale monitoring area.

The trace level SO_2, CO, and NOy analyzers began operation in January 2013.

The meteorological monitoring began at La Casa in January 2013.

PM_{10} monitoring began at La Casa in January 2013. Currently, there is a pair of collocated high volume samplers, and a Lo-Vol PM_{10} on the shelter roof. These concurrent PM_{10} measurements will be compared prior to removing the Hi-Vol PM_{10} monitors. The Lo-vol PM_{10} concentrations are more useful as they can be used with the $PM_{2.5}$ measurements to calculate $PM_{10-2.5}$ or coarse PM.

$PM_{2.5}$ monitoring began at La Casa in January 2013 with an FRM monitor, a continuous TEOM/FDMS FEM instrument, a supplemental $PM_{2.5}$ speciation monitor, and a carbon speciation monitor.

PM_{10}/lead (Pb-TSP) monitoring began in January 2013. Lead sampling at La Casa is accomplished via PM_{10} filter sample collection and sampling for TSP, as practiced at DMAS, was discontinued.

Chatfield State Park, 11500 N. Roxborough Park Road (08 035 0004):

The Chatfield State Park location was established as the result of the 1993 Summer O_3 Study. The original permanent site was located at the campground office. This site was later relocated on the south side of Chatfield State Park at the park offices. This location was selected over the Corps of Engineers Visitor Center across the reservoir because it was more removed from the influence of traffic along C-470. Located in the South Platte River drainage, this location is well suited for monitoring southwesterly O_3 formation in the Denver metro area.

$PM_{2.5}$ monitoring began at this site in 2004 with the installation of a continuous monitor, and was furthered by the addition of an FEM monitor in 2005.

Meteorological monitoring began in April of 2004.

Colorado Springs, USAFA Road 640 (08 041 0013):

The United States Air Force Academy site was installed as a replacement maximum concentration O_3 monitor for the Chestnut Street (08 041 0012) site. Modeling in the Colorado Springs area indicates that high O_3 concentrations should generally be found along either the Monument Creek drainage to the

north of the Colorado Springs central business district (CBD), or to a lesser extent along the Fountain Creek drainage to the west of the CBD. The decision was made to locate this site near the Monument Creek drainage, approximately 9 miles north of the CBD. This location is near the south entrance of the Academy but away from any roads. This is a population oriented urban scale SLAMS monitor.

Colorado Springs Hwy-24, 690 W. Highway 24 (08 041 0015):

The Highway 24 site is located just to the west of I-25 and just to the east of the intersection of U.S. Highway 24 and 8th Street, approximately 0.8 miles to the west of the Colorado Springs CBD. Commencing operation in November 1998, this site is a replacement for the Tejon Street (08 041 0004) CO monitor. The site is located in the Fountain Creek drainage and is in one of the busiest traffic areas of Colorado Springs. Additionally, traffic is prone to back-up along Highway 24 due to a traffic light at 8th Street. Thus, this site is well suited for the SLAMS network to monitor maximum concentrations of CO in the area both from automotive sources and also from nearby industry, which includes a power plant. It also provides a micro-scale setting for the Colorado Springs area, which has not been possible in the past.

In January of 2013 an SO_2 monitor was added to Highway 24 to meet monitoring criteria for an increased population found during the 2010 census.

Manitou Springs, 101 Banks Place (08 041 0016):

Manitou Springs is a located 4 miles west of Colorado Springs. It was established because of concern that the high concentration urban O_3 area was traveling farther up the Fountain Creek drainage and the current monitoring network was not adequate. The Manitou Springs monitor began operations in April 2004. It is located in the foothills above Colorado Springs in the back of the city maintenance facility. It has not recorded any levels greater than the current standard. This is a population oriented neighborhood scale SLAMS monitor.

Colorado College, 130 W. Cache la Poudre Street (08 041 0017):

The Colorado College monitoring site was established in January, 2007 after the revised particulate regulations required that Colorado Springs needed a continuous $PM_{2.5}$ monitor. The Division elected to collocate the new $PM_{2.5}$ monitor with the corresponding filter based monitors from the RBD site at the Colorado College location, which included a FRM $PM_{2.5}$ monitor and added a low volume FEM PM_{10} monitor in November, 2007. The continuous monitor began operation in April of 2008.

The nearest representative meteorological site is located at the Colorado Springs Airport. Wind flows at the Colorado College site are affected by its proximity to Fountain Creek, so light drainage winds will follow the creek in a north/south direction. The three monitoring sites here are population oriented neighborhood scale monitors, two on the SLAMS network (PM_{10} and $PM_{2.5}$) and one that is a special projects monitor ($PM_{2.5}$ continuous).

Cañon City - City Hall, 128 Main Street (08 043 0003):

Cañon City is located 39 miles west of Pueblo. Particulate monitoring began on January 2, 1969 with the operation of a TSP monitor located on the roof of the courthouse building at 7th Avenue and Macon Street. The Macon Street site was relocated to the City Hall in October of 2004.

The Cañon City PM_{10} site began operation in December 1987. On May 6, 1988, the Macon Street monitor recorded a PM_{10} concentration of 172 $\mu g/m^3$. This is the only exceedance of either the 24-hour or annual NAAQS since PM_{10} monitoring was established at Cañon City. This is a population oriented neighborhood scale SLAMS monitor on a 1 in 6 day sample schedule.

Parachute – Elementary School, 100 E. 2nd Street (08 045 0005):

The Parachute site began operation in May 2000 with the installation of a PM_{10} monitor at the high school. This is a population oriented neighborhood scale SLAMS monitor on a 1 in 3 day sample schedule.

Rifle - Henry Building, 144 3rd Street (08 045 0007):

The first Rifle site began monitoring for particulates in June 1985 and ended operation in May 1986. The next site began operation in December 1987 and continued until 2001. The levels at that site, with the exception of the March 31, 1999 high wind event, were always less than one half of both the annual and the 24-hour standards. The current location on the Henry Building began operation in May of 2005 with the installation of a PM_{10} monitor as a part of the Garfield County study. There are now two population oriented neighborhood scale special project PM_{10} monitoring sites: one on a 1 in 3 day sample schedule, and one that is continuous. There is also a continuous monitor measuring $PM_{2.5}$ and PM_{10}, and meteorological monitors.

Rifle – Health Dept., 195 14th Ave (08 045 0012):

The Rifle Health site is located at the Garfield County Health Department building. The site is 1 kilometer to the north of the downtown area and next to the Garfield County fairgrounds. The site is uphill from the downtown area. A small residential area is to the north and a commercial area to the east. This site was established to measure O_3 in Rifle, which is the largest population center in the oil and gas impacted area of the Grand Valley. Monitoring commenced in June 2008. This is a SLAMS with a neighborhood scale.

Carbondale, 1493 County Road 106 (08 045 0018):

Carbondale is in the fairly narrow Roaring Fork valley between Aspen and Glenwood Springs. The Carbondale site is located just south of the confluence of the Crystal and Roaring Fork rivers and was established to monitor PM_{10} in January of 2013. This is a population oriented neighborhood scale special project monitoring site.

Crested Butte, 603 6th Street (08 051 0004):

The Crested Butte PM_{10} site began operation in June 1985. Crested Butte is a high mountain ski town. The monitor is at the east end of town near the highway and in the central business district. Any wood burning from the residential area to the west directly affects this location. The physical setting of the town, near the end of a steep mountain valley, makes wood burning, street sanding, and wintertime inversions a major concern. The town is attempting to regulate the number of wood burning appliances, since this is a major source of wintertime PM_{10}.

There are two population oriented neighborhood scale monitors here, one in the SLAMS network (1 in 3 day sample schedule) and one that is a continuous monitor.

Mt. Crested Butte Realty, 19 Emmons Road (08 051 0007):

Mount Crested Butte is located at an elevation of 8,940 feet (2,725 m) at the base of the Crested Butte Mountain Resort ski area. Mount Crested Butte is a unique location for high particulate matter concentrations because it is located on the side of a mountain (Crested Butte 12,162 ft. or 3,707 m), not in a bowl, valley, or other topographic feature that would normally trap air pollutants. There is not a representative meteorological station in or near Mt. Crested Butte.

The location for the Mt. Crested Butte site was selected because it had an existing PM_{10} site that had several high PM_{10} concentrations including five exceedances of the 24-hour standard in 1997 and one in

1998. Mt. Crested Butte also exceeded the PM_{10} annual average standard in 2011. A CMB source apportionment from 10 PM_{10} filters identified crustal material as the mostly likely source (91%) of PM_{10}. Carbon, which is most likely from residential wood smoke, made up 8% of the statistically composite sample and secondary species made up the remaining one percent. The Mt. Crested Butte site was also selected because it is an area representative of the residential impact of PM_{10}. This is a population oriented neighborhood scale SLAMS monitor on a daily sample schedule.

Arvada, 9101 57th Avenue (08 059 0002):

The city of Arvada is located 15 miles west-northwest of the Denver central business district (CBD). The Arvada site began operation before 1973. It is located to the northwest of the Denver CBD near the western end of the diurnal midday wind flow of the high concentration urban O_3 area. As a result, when conditions are proper for daylong O_3 production, this site has received some of the highest levels in the city. In the early and mid 1990s, these wind patterns caused Arvada to have the most exceedances in the metro area. In the 5-Year Network Assessment Plan the Arvada site was deemed to be redundant. The last valid O_3 sample was taken 12/31/2011, and the instrument was removed shortly after that.

Meteorological monitoring began in 1975 and continues today.

Welch, 12400 W. Highway 285 (08 059 0005):

The Division conducted a short-term O_3 study on the grounds of Chatfield High School from June 14, 1989 until September 28, 1989. The Chatfield High School location was chosen because it sits on a ridge southwest of the Denver CBD. Wind pattern studies showed a potential for elevated O_3 levels in the area on mid to late afternoon summer days. There were no exceedances of the NAAQS recorded at the Chatfield High School site, but the levels were frequently higher than those recorded at the other monitoring sites south of the metro area.

One finding of the study was the need for a new, permanent site further north of the Chatfield High School location. As with most Denver locations, the predominant wind pattern is north/south. The southern flow occurs during the upslope, daytime warming period. The northern flow occurs during late afternoon and nighttime when drainage is caused by cooling and settling. The major drainages of Bear Creek and Turkey Creek were selected as target downwind transport corridors. These are the first major topographical features north of the Chatfield High School site. A point midway between the valley floor (Englewood site) and the foothillôs hogback ridge was modeled to be the best estimate of the maximum downwind daytime transport area. These criteria were used to evaluate available locations. The Welch site best met these conditions. This site is located off State Highway 285 between Kipling Street and C-470. This is a population oriented urban scale SLAMS monitor.

Rocky Flats - N, 16600 W. Highway 128 (08 059 0006):

The Rocky Flats - N site is located north-northeast of the plant on the south side of Colorado Highway 128, approximately 1¼ miles to the west of Indiana Street. The site began operation in June 1992 with the installation of an O_3 monitor and meteorological monitors as a part of the first phase of the APCDôs monitoring effort around the Rocky Flats Environmental Technology Site.

O_3 monitoring began as a part of the Summer 1993 Ozone Study. The monitor recorded some of the highest O_3 levels of any of the sites during that study. Therefore, it was included as a regular part of the APCD O_3 monitoring network. The Rocky Flats ï N monitor frequently exceeds the current standard. This is a highest concentration oriented urban scale SLAMS monitor.

NREL Solar Radiation Research Laboratory, 2054 Quaker Street (08 059 0011):

The National Renewable Energy Laboratory (NREL) site is located on the south rim of South Table

Mountain, near Golden, and was part of the Summer 1993 Ozone Study. Based on the elevated concentrations found at this location, it was made a permanent monitoring site in 1994. This site typically records some of the higher eight-hour O_3 concentrations in the Denver area. It frequently exceeds the current standard. This is a highest concentration oriented urban scale SLAMS monitor.

Aspen Park, 26137 Conifer Road (08 059 0013):

The Aspen Park site began operation in May 2009. It is intended to verify/refute model predictions of above normal O_3 levels. In addition, passive O_3 monitors used in the area in a 2007 study indicated the possibility of higher O_3 levels. The monitor is located in an urban setting at a Park and Ride facility off of Highway 285, at an elevation of just over 8,100 feet. Because the site is nearly 3,000 feet higher than the average metro area elevation, it should see O_3 levels that are larger than those seen in the metro area, as O_3 concentrations increase with increasing elevation. Whether or not the increased concentrations will be a health concern will be determined with the data gathered from this monitor. This is a SLAMS neighborhood scale monitor.

Durango - River City Hall, 1235 Camino del Rio (08 067 0004):

Durango is the second largest city on the western slope. The town is situated in the Animas River Valley in southwestern Colorado. Its elevation is approximately 6,500 feet (1,981 meters) above mean sea level. The Animas valley through Durango is steep and narrow. Even though little meteorological information is available for the area, the microclimate of Colorado mountain communities is characterized by cold air subsidence, or drainage flows during the evening and early morning hours and up valley flows during afternoon and early evening hours when solar heating is highest. Temperature inversions that trap air pollutants near the surface are common during night and early morning hours. This is a population oriented neighborhood scale SLAMS monitor that samples continuously.

Fort Collins – CSU – Edison, 251 Edison Street (08 069 0009):

Fort Collins does not have the population to require a particulate monitor under Federal regulations. However, it is one of the largest cities along the Front Range. There are two population oriented neighborhood scale SLAMS monitors, a PM_{10} and a $PM_{2.5}$, that sample on a 1 in 3 day sample schedule. There is also continuous monitor measuring PM_{10} and $PM_{2.5}$.

Fort Collins - West, 3416 W. La Porte Avenue (08 069 0011):

The Fort Collins-West monitor began operation in May of 2006. The location was established based on modeling and to satisfy permit conditions for a major source in the Fort Collins area. The levels recorded for the first season of operation showed consistently higher concentrations than the 708 S. Mason Street monitor. This is a highest concentration oriented urban scale SLAMS monitor.

Rist Canyon, 11838 Rist Canyon Road, (08 069 0012):

The Rist Canyon site began operation in May 2009. The monitor is located within the Rist Canyon Volunteer Fire Department Station Number 1, in the foothills west of Fort Collins. The monitor is at an elevation of 6,750 feet, which is roughly 1,600 feet above the Fort Collins ï West monitor. Model predictions have indicated possible elevated O_3 levels in this area. The site is intended to verify/refute the model prediction. This is an urban scale special purpose monitor that has achieved its monitoring objectives and will be decommissioned in 2013. Concentrations at this site closely follow Fort Collins ï West, so it is viewed as redundant. There are also some logistical problems with this monitoring location; an unusually long sample inlet line was required, and some trees are too close to fully meet EPA siting criteria.

Fort Collins- Mason, 708 S. Mason Street (08 069 1004):

The 708 S. Mason Street site began operation in December 1980 and is located one block west of College Avenue in the Central Business District. The one-hour CO standard of 35 ppm as a one-hour average has only been exceeded on December 1, 1983, at 4:00 P.M. and again at 5:00 P.M. The values reported were 43.9 ppm and 43.2 ppm respectively. The eight-hour standard of 9 ppm was exceeded one or more times a year from 1980 through 1989. The last exceedances were in 1991 on January 31 and December 6 when values of 9.8 ppm and 10.0 ppm respectively were recorded.

Fort Collins does not have the population to require a CO monitor under Federal regulation. However, it is one of the largest cities along the Front Range and was declared in nonattainment for CO in the mid-1970s after exceeding the eight-hour standard in both 1974 and 1975. The current level of monitoring is in part a function of the resulting CO State Maintenance Plan (SMP) for the area. It is a population oriented neighborhood scale SLAMS monitor.

O_3 monitoring began in 1980, and continues today.

In March 2012 the meteorological tower was relocated from a freestanding tower on the west side of the shelter to a shelter mounted tower on the south side of the shelter due to the Mason Street Redevelopment Project.

Grand Junction - Powell, 650 South Avenue (08 077 0017):

Grand Junction is the largest city on the western slope in the broad valley of the Colorado River. The monitors are on county owned buildings in the south side of the city. The site is on the southern end of the central business district and close to the industrial area along the train tracks. It is about a half a mile north of the river and about a quarter mile east of the railroad yard. This site monitors for 24-hour and hourly PM_{10} as well as for 24-hour and hourly $PM_{2.5}$.

Grand Junction - Pitkin, 645¼ Pitkin Avenue (08 077 0018):

The Grand Junction-Pitkin CO monitor began operation in January 2004. This monitor replaced the site at the Stocker Stadium. The Stocker Stadium location had become less than ideal with the growth of the trees surrounding the park and the Division felt that a location nearer to the CBD would provide a better representation of CO concentration values for the city. The CO concentrations at the Stocker Stadium site had been declining from an eight-hour maximum in 1991 of 7.8 ppm to 3.3 ppm in 2003. It is a population oriented, micro-scale SLAMS monitor.

Meteorological monitors were installed in 2004, and include wind speed, wind direction, temperature and relative humidity sensors.

Clifton, Hwy 141 & D Road (08 077 0019):

The Clifton PM_{10} monitor is located in the town of Clifton which is a southeastern suburb of Grand Junction. The monitor is in a low usage parking lot operated by the sanitation district. It is one half mile north of the Colorado River. The site was established at the request of the Mesa County Health Department to address concerns of oil and gas related industries in the area.

The population oriented neighborhood scale SLAMS monitor began operations in October 2007, and operates on an every third day schedule.

Palisade Water Treatment, Rapid Creek Rd (08 077 0020):

The Palisade site is located at the Palisade Water Treatment Plant. The site is 4 km to the east-northeast of downtown Palisade, just into the De Beque Canyon area. The site is remote from any significant population and was established to measure maximum concentrations of O_3 that may result from

summertime up-flow conditions into a topographical trap. Monitoring commenced in May 2008. This is an urban scale special purpose monitor.

Lay Peak, (08 081 0002):

The Lay Peak site was established in support of the 3-State Pilot Study program. It began operations in August of 2011. The site monitors for O_3 and meteorological parameters, including relative humidity. The purpose for this site and other Three State Study sites is for the development of monitoring data sets in geographic areas that have no monitoring data to support modeling efforts in NEPA assessments and in determinations of NAAQS compliance. The Lay Peak site is located approximately 18 miles west of the town of Craig and 2 miles south of Highway 40 on County Road 17. The site sits on the north flank of Lay Peak and is approximately 200 ft above the valley floor. The surrounding terrain is high desert, dominated by sagebrush, pinion pines, and riparian vegetation. The site is in open terrain with a 360-degree exposure. There are no significant sources nearby, however, the oil and gas development potential is high for lands to the north and east of the site, and development of these resources is expected to increase in the future. It is a regional site.

Cortez, 106 W. North St (08 083 0006):

The Cortez site is located in downtown Cortez at the Montezuma County Health Department building. Cortez is the largest population center in Montezuma County in the southwest corner of Colorado. Currently, there are O_3 and $PM_{2.5}$ monitors in operation at this site.

The O_3 site was established to address community concerns of possible high O_3 from oil and gas and power plant emissions in the area. Many of these sources are in New Mexico. Monitoring commenced in May 2008. This is an urban scale SLAMS monitor.

Aspen - Library, 120 Mill Street (08 097 0006):

Aspen is at the upper end of a steep mountain valley. Aspen does not have an interstate running through it. Aspen was classified as nonattainment for PM_{10}, but it is now under an attainment/maintenance plan. The valley is more restricted at the lower end, and thus forms a tighter trap for pollutants. The transient population due to winter skiing and summer mountain activities greatly increases the population and traffic during these seasons. There is also a large down valley population that commutes to work each day from as far away as the Glenwood Springs area, which is 41 miles to the northeast.

The population oriented neighborhood scale SLAMS monitor is operating on a 1 in 3 sample schedule.

Lamar - Municipal Building, 104 Parmenter Street (08 099 0002):

The Lamar Municipal site was established in January of 1996 as a more population oriented location than the Power Plant. The Power Plant site was located on the northern edge of town (until it was decommissioned in 2012) while the Municipal site is near the center of the town. Both sites have recorded exceedances of the 24-hour standard of 150 $\mu g/m^3$, and both sites regularly record values above $100\mu g/m^3$ as a 24-hour average. This is a population oriented neighborhood scale SLAMS monitor on a daily sample schedule.

Lamar Port of Entry, 7100 US Highway 50, (08 099 0003):

The particulate monitors in Lamar have recorded some of the highest readings in the state. These readings are primarily associated with east winds in excess of 20 mph. The Division first established a meteorological monitor in Lamar at the Municipal Building but this location was too protected and the meteorological monitor was moved to the Port of Entry location in March of 2005.

Pueblo – Fountain School, 925 N. Glendale Ave (08 101 0015):

Pueblo is the third largest city in the state, not counting communities that are part of Metropolitan Denver. Pueblo is principally characterized by rolling plains and moderate slopes with elevations ranging from 4,474 ft to 4,814 ft (1,364 to 1,467 m). The Rocky Mountain Front Range is about 25 miles (40 km) west and the sight of Pikes Peak is easily visible on a clear day.

Meteorologically, Pueblo can be described as having mild weather with an average of about 300 days of sunshine per year. Generally, wind blows up valley from the southeast during the day and down valley from the west at night. Pueblo experiences average wind speed ranges from 7 miles per hour in the fall and early winter to 11 miles per hour in the spring.

This site was formerly located on the roof of the Public Works Building at 211 E. D St., in a relatively flat area found two blocks northeast of the Arkansas River. At the end of June in 2011 the Public Works site was shut down and moved to the Magnet School site as the construction of a new multi-story building caused a major change in the flow dynamics of the site. The new site began operations in 2011. The distance and traffic estimate for the surrounding streets falls into the middle scale in accordance with federal guidelines found in 40 CFR, Part 58, and Appendix D.

Steamboat Springs, 136 6th Street (08 107 0003):

Like other ski towns, Steamboat Springs has problems with wintertime inversions, high traffic density, wood smoke, and street sand. These problems are exacerbated by temperature inversions that trap the pollution in the valleys.

The first site began operation in Steamboat Springs in June 1985 at 929 Lincoln Avenue. It was moved to the current location in October 1986. The 136 6th Street location not only provides a good indication of population exposure, since it is more centrally located, but it has better accessibility than the previous location. This is a population oriented neighborhood scale SLAMS monitor on a daily sample schedule.

Telluride, 333 W. Colorado Avenue (08 117 0002):

Telluride is a high mountain ski town in a narrow box end valley. The San Miguel River runs through the south end of town and the town is only about ½ mile wide from north to south. The topography of this mountain valley regime creates temperature inversions that can last for several days during the winter. Temperature inversions can trap air pollution close to the ground. Telluride sits in a valley that trends mainly east to west, which can trap air pollutants more effectively since the prevailing winds in this latitude are the westerly and the San Miguel River Valley is closed off on the east end. This is a population oriented neighborhood scale SLAMS monitor on a 1 in 3 day sample schedule.

Greeley - Hospital, 1516 Hospital Road (08 123 0006):

The Greeley PM_{10} monitor is on the roof of a hospital office building at 1516 Hospital Road. Greeley Central High School is located immediately to the east of the monitoring site. Overall, this is in an area of mixed residential and commercial development that makes it a good population exposure, neighborhood scale monitor. The distance and traffic estimate for the most controlling street easily falls into the neighborhood scale in accordance with federal guidelines found in 40 CFR, Part 58. This is a population oriented neighborhood scale SLAMS monitor on a 1 in 3 day sample schedule.

Winds in this area are primarily out of the northwest, with dominant wind speeds less than 5 mph. Secondary winds are from the north, north-northwest and east-southeast, with the most frequent wind speeds also being less than 5 mph. The most recent available wind data for this station is for the period December 1986 to November 1987. Predominant residential growth patterns are to the west and north with large industrial growth expected to the west. There are two feedlots located about 11 miles east of

the town. There was a closer feedlot on the east edge of town, but it was shut down in early 1999, after the town of Greeley purchased the land in 1997.

Platteville, 1004 Main Street (08 123 0008):

Platteville is located immediately west of Highway 85 along the Platte River valley bottom approximately five miles east of I -25, at an elevation of 4,825 feet. The area is characterized by relatively flat terrain and is located about one mile east of the South Platte. The National Oceanic and Atmospheric Administration operated the Prototype Regional Observational Forecasting System Mesonet network of meteorological monitors from the early 1990s through the mid 1990s in the northern Colorado Front Range area. Based on this data, the area around Platteville is one of the last places in the wintertime that the cold pool of air that is formed by temperature inversions will burn off. This is due to solar heating. The upslope/down slope Platte River Valley drainage and wind flows between Denver and Greeley make Platteville a good place to monitor $PM_{2.5}$. These characteristics also make it an ideal location for chemical speciation sampling, which began at the end of 2001.

The Platteville site is located at 1004 Main Street at the South Valley Middle School, located on the south side of town on Main Street. The school is a one-story building and it has a roof hatch from a locked interior room providing easy access to its large flat roof. There is a 2-story gym attached to the building approximately 28 meters to the Northwest of the monitor. The location of the Platteville monitor falls into the regional transport scale in accordance with federal guidelines found in 40 CFR, Part 58, and Appendix D. There are three monitors here. Two are population oriented regional scale monitors, one of which is on the SLAMS network and the other is for supplemental speciation. The SLAMS monitor is operating on a 1 in 3 day sample schedule, while the speciation monitor is operating on a 1 in 6 day schedule. The remaining monitor is a population oriented neighborhood scale supplemental speciation monitor on a 1 in 6 day sample schedule.

Greeley - Weld County Tower, 3101 35th Avenue (08 123 0009):

The Weld County Tower O_3 monitor began operation in June 2002. The site was established after the 811 15th Street building was sold and was scheduled for conversion to other uses. The Weld County Tower site has generally recorded levels greater than the old site. This is a population oriented neighborhood scale SLAMS monitor.

Meteorological monitoring began in February of 2012.

Greeley West Annex Bldg, 905 10th Avenue (08 123 0010):

Greeley does not have the population to require a CO monitor under Federal regulation. However, it is one of the larger cities along the Front Range and was declared in nonattainment for CO in the late-1970s after exceeding the eight-hour standard in 1976 and 1977. The first Greeley monitor operated from December 1976 to December 1980. It was located at 15th Street and 16th Avenue and exceeded the eight-hour standard numerous times from 1976 through 1980. The monitor is a population oriented neighborhood scale SLAMS monitor.

The 811 15th Street location began operation in November 1981 and was discontinued in 2002. The current monitor is located in the Weld County West Annex building, and began operations in December 2003. This location is in the Greeley CBD. The levels recorded at this site are comparable but slightly lower than those at the former 811 15th Street site, about a quarter of the eight-hour standard.

Appendix B- La Casa NCore Approval

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

MAR 0 7 2013

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Gordon Pierce
Program Manager
Air Pollution Control Division
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive, South
Denver, Colorado 80246-1530

Dear Mr. Pierce:

This letter transmits our approval of Colorado's request to move the NCore station from the Denver Animal Shelter location, AQS # 08-031-0025, to a new location known as LaCasa Quigg-Newton, AQS # 08-031-0026, as required by the Ambient Air Monitoring Regulations. According to these rules (see 40 CFR 58.11(c)), NCore network design and changes must be approved by the Environmental Protection Agency's (EPA) Administrator. This authority has been delegated to the Director of the Air Quality Assessment Division in EPA's Office of Air Quality Planning and Standards.

In considering approving the move of the NCore monitoring station, we worked with EPA Region 8 on a review of your request, including the rationale of why the first NCore site could no longer be supported, and assessed the location and characteristics of the area at the new location to be monitored. This included a site visit to the new location on October 24, 2011. After careful consideration of your request to move the site, we are pleased to approve the new location for this station as part of the NCore network.

We understand the NCore station at the new location is fully operational. Thank you for your program's efforts in working through the issues of having to move the NCore station and establish the new site. For any technical questions, you may contact Tim Hanley at hanley.tim@epa.gov and 919-541-4417.

Sincerely,

Richard A. Wayland

Richard A. Wayland
Director
Air Quality Assessment Division

cc: Deirdre Rothery, EPA, Region 8
Richard Payton, EPA, Region 8
Tim Hanley, EPA, OAQPS

Appendix C- NCore (DMAS and La Casa), Lamar, and Longmont Modifications

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

AUG 28 2012

Ref: 8P-AR

Mr. Gordon Pierce
Technical Services Program
Air Pollution Control Division
4300 Cherry Creek Drive South
Denver, CO 80246

Re: Various Network Modification Requests

Dear Gordon:

Thank you for submitting the Network Modification Request Forms (NMRFs) described below. The table below summarizes the proposed changes that have been requested, including the date of the individual request, the common name of the air monitoring station, the Air Quality System (AQS) identification number, the affected parameters and the type of change proposed.

Date	Common Name	AQS Identification Number	Parameters	Type of Change
12/30/2011	Lamar Power Plant	08-099-0001	PM_{10}	close
1/11/2012	LaCasa Quigg-Newton	08-031-nnnn	NCore*	open
1/12/2012	Denver Municipal Animal Shelter	08-031-0025	NCore*	close
5/30/2012	Longmont – Main Street	08-013-0009	CO	close

*Standard suite of NCore parameters, including CO, NO-NO_y, O_3, SO_2 (trace), PM_{10}, $PM_{2.5}$ mass (criteria pollutant monitoring), $PM_{2.5}$ (speciated) and lead.

Lamar Power Plant, 08-099-0001. The only criteria pollutant being monitored at this station, and thus the only parameter to be affected by its closure, is PM_{10}. Under a cover letter dated November 21, 2011, the Air Pollution Control Division (APCD) submitted a NMRF describing the proposed closure. Following a public comment period that ran from November 28 to December 29, 2011, during which no comments were received, the APCD submitted a letter dated December 30, 2011 to Region 8. In that

letter, the APCD pointed out that the proposal to close this station had been addressed in the Colorado Annual Monitoring Network Plan, 2011 – 2012. The network plan stated that, "The Lamar Power Plant monitor will be considered for removal in 2011 because it is no longer located in ambient air." Monitoring of PM_{10} would continue at the Lamar Municipal Building station (08-099-0002). Neither the Power Plant station nor the Municipal station is producing precision data with collocated PM_{10} samplers; accordingly, the proposed change will not cause the loss of a collocated site.

Denver Municipal Animal Shelter, 08-031-0025. The Animal Shelter station has served as Colorado's NCore station since 2005. Due to significant changes in planned land use on adjacent property, the APCD finds that this station "will no longer be suitable for ambient air quality monitoring," according to the NMRF dated November 12, 2011. After examining various locations in Denver as alternative sites for the NCore station, the APCD has selected the La Casa – Quigg Newton Family Health Center at 4545 Navajo Street for this purpose. Representatives of the APCD, EPA's Office of Air Quality Planning and Standards and Region 8 evaluated the La Casa site on October 24, 2011.

Longmont – Main Street, 08-013-0009. Although the APCD has monitored other criteria pollutants in Boulder County, the Main Street station in Longmont strictly has monitored carbon monoxide (CO). Monitoring began there in November 1989. Due to an alley construction project, the APCD recently found it necessary to close the station. The CO analyzer stopped reporting data to AQS effective December 31, 2011, and the APCD proposes not to resume monitoring at the same location. The NMRF cites steadily declining CO concentrations in the Longmont maintenance area. The APCD has been in communication with Region 8 regarding the ability to surrogate CO data from the Denver CAMP station (08-031-0002) for data from Longmont in order to support the Longmont Maintenance Plan.

Thank you for submitting the site description packages discussed above. Region 8 concurs with the network changes described. In the case of your NCore station, however, Region 8 does not have approval authority for the network modification. While we concur with moving the NCore operation from the Denver Municipal Animal Shelter to the La Casa site, we intend to email this letter and electronic copies of the two NCore-related NMRFs, to the Office of Air Quality Planning and Standards for review and approval.

If you have any questions or comments, contact me at (303) 312-6431 or Richard Payton of my staff at (303) 312-6439.

Sincerely,

Deirdre Rothery, Chief
Air Permitting, Monitoring, & Modeling Unit

Appendix D- Carriage, Highway 24, Lay Peak, and Weld County Network Modifications

STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
Located in Glendale, Colorado

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department of Public Health and Environment

Date:

Richard Payton
8P-AR
US Environmental Protection Agency Region VIII
1595 Wynkoop Street
Denver, CO 80202-1129

Dear Mr. Payton,

As required, the Colorado Department of Public Health and Environmentôs (CDPHE) Air Pollution Control Division (APCD) is submitting four network site modification request forms for the proposed decommissioning of the Carriage site (ozone and meteorology), the commissioning of sulfur dioxide monitoring at the Colorado Springs Highway 24 site, the commissioning of ozone and meteorology monitors at the Lay Peak site, and the commissioning of Weld County Tower meteorology monitors. Sites common name, AQS ID and proposed actions are as follows:

- Carriage (Denver) AQS ID: 08-031-0014

Removal - Ozone SLAMS Monitor
Removal - Meteorological Special Purpose Monitors

- Highway 24 (Colorado Springs) AQS ID: 08-041-0015
- Addition - Sulfur Dioxide SLAMS Monitor
-
- Lay Peak (Moffat County) AQS ID: 08-081-0002
- Addition - Ozone Special Purpose Monitor

Addition - Meteorological Special Purpose Monitors

-
- Weld County Tower (Greeley) AQS ID: 08-123-0009

Addition - Meteorological Special Purpose Monitors

This letter and the enclosed network modification forms were made available for a 30 day public comment period from 11/27/12 to 12/27/12. The Air Pollution Control Division received one set of public comments from the Sierra Club. These comments and APCDôs response to these comments are contained in Attachment 5 and Attachment 6 of this letter, respectively.

Carriage - AQS ID: 08-031-0014

The proposed last sample to be collected from the Carriage ozone monitor and meteorological sensors is planned for December 31, 2012 at 23:00 hr, with the shelter, monitor and sensors to be removed early January 2013 as weather and time permits. The decommission of the Carriage site was initially identified in Coloradoôs 2010 5-Year Network Assessment and slated for removal in Coloradoôs 2012 Annual Network Plan. The APCD plans to shut down the Carriage ozone monitor for the following reasons:

- The site no longer meets siting criteria for both ozone and meteorology. The dripline of tree located to the ENE of the ozone sample probe inlet is within 10 meters of the probe. Additionally, a different tree located to the ENE and a tree located SE of the sample probe inlet are obstacles. These trees are also obstacles to the wind speed and direction measures. All of the above listed trees are located on private land and are outside the control of the APCD. Exact measurements to the above mentioned trees can be provided upon request.
-
- The Carriage site has become increasingly redundant with the new ozone analyzer at CAMP and the proposed La Casa NCore ozone analyzer (to be installed in the fall of 2012). If the Carriage site is decommissioned on December 31, 2012, one year of concurrent sampling will have occurred with CAMP ozone analyzer and 3 months of concurrent sampling will have occurred with the La Casa ozone analyzer. The closure of this monitor is in accordance with EPAôs effort to disinvest in redundant sites so that resources can be reallocated to further enhance multi-pollutant sites where applicable and/or further expand the existing network as needed.

Highway 24 - AQS ID: 08-041-0015

As per the 2010 revision of the Primary Sulfur Dioxide National Ambient Air Quality Standard, Core Based Statistical Areas (CBSA) with Population Weighted Emission Index (PWEI) values in excess of 5,000 requires the operation of at least one sulfur dioxide monitor. To comply with the 2010 rule, the Colorado Springs area requires the inclusion of a sulfur dioxide monitor. The existing Highway 24 site is the proposed location for this site because of its proximity to the Drake Power Plant. While this location is not ideal, it is considered acceptable for the near term. Ultimately, the future reconstruction of the Cimarron exit will require the relocation of the Highway 24 site to a more appropriate location. The APCD plans to have the sulfur dioxide monitor operational by January 1, 2013.

Lay Peak – AQS ID: 08-081-0002

As a courtesy to the Environmental Protection Agency, the APCD is including a network modification form for the commissioning of ozone and meteorological parameters at the Lay Peak site. This site was originally installed in support of the state and federal agenciesô Three-State Study Pilot Project. This site was purchased, installed and is operated by a contractor. The site began operation in August 2011and is planned to continue operations for at least three years.

Weld County Tower - AQS ID: 08-123-0009

As a courtesy to the Environmental Protection Agency, the APCD is including a network modification form for the commissioning of meteorological parameters at the Weld County Tower site. Meteorological monitoring began on February 25, 2012 and will continue indefinitely into the future. Meteorological parameters were added at the Weld County Tower site to assist in modeling efforts in the Weld County area.

Enclosed are the associated Ambient Air Monitoring Network Modification Request Forms. If you have any questions or need further information, you can reach me at (303) 692-3232.

Sincerely,

Gregory Harshfield
Continuous Monitoring and Data Systems Support Supervisor

cc: Gordon Pierce
Enclosures:
Attachment 1: Carriage - Ambient Air Monitoring Network Modification Form
Attachment 2: Highway 24 - Ambient Air Monitoring Network Modification Form
Attachment 3: Lay Peak - Ambient Air Monitoring Network Modification Form
Attachment 4: Weld County Tower - Ambient Air Monitoring Network Modification Form
Attachment 5: Sierra Club Comments ï Air Quality Monitoring Network Modification
Attachment 6: APCD Response ï Sierra Club Comments ï Air Quality Monitoring Network Modification

Attachment 1

Carriage - Ambient Air Monitoring Network Modification Form

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: 11/20/2012	CITY: Denver	STATE: CO
AQS SITE ID: 08-031-0014	SITE NAME: Carriage	

PROPOSED MODIFICATION/REASON WHY:
Proposed closure of ozone site and met tower. Site, established in 1983, is no longer a maximum ozone location. The site no longer meets siting criteria due to tree growth on private property surrounding the site. This ozone monitoring site will be somewhat redundant with the ozone measurements at the new NCORE site.

AIR QUALITY PARAMETER (PM10, SO2, CO, NO2, ETC.)	MONITOR TYPE (NAMS, SLAMS, SPM, TRIBAL, etc.)	CHECK ONE OR MORE OF THE APPLICABLE CATEGORIES BELOW:				LIST SAMPLER EQUIPMENT
		MAX CONC	SOURCE IMPACT	POPULATION EXPOSURE	BACKGROUND	
Ozone	SLAMS			X		API 400E
Meteorological Parameters	SPM					Met One

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: Removal after January 1, 2013

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM′S): Lat = 39.751767 Long = -105.030733 WGS84

SITE ELEVATION (M. MSL): 1615 Meters				PROBE HEIGHT (M. AGL): 4 Meters	
DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS
Tree 1002	ENE	10	ENE	9	Tree drip line is too close.
Tree 1003	ENE` `	14	ENE` `	15	Tree is too high.
Tree 1006	SE	18	SE	14`	Tree is too high.

UNRESTRICTED AIR FLOW: >270 DEG. >180 DEG. <CRITERIA_____DEG. = 270 Degrees

DISTANCE TO FLUES/INCINERATORS (M): Not applicable.

DISTANCE TO INTERSECTIONS (M): See below			DISTANCE FROM SUPPORTING STRUCTURES (M): VERT.___1_____HORIZ.__1_____			
DISTANCE TO EDGE OF NEAREST ROADWAY	NAME OF ROADWAY	DIRECTION	DAILY TRAFFIC ESTIMATES	YEAR OF TRAFFIC ESTIMATES	TYPE OF ROADWAY	COMMENTS
68 Meters	24th Avenue	NORTH			LOCAL ST	
58 Meters	Irving Street	EAST			LOCAL ST	
56 Meters	23rd Avenue	SOUTH			LOCAL ST	
69 Meters	Julian Street	WEST			LOCAL ST	

DISTANCE TO NEAREST POINT SOURCES (MILES)	DIRECTION TO POINT SOURCES	DISTANCE TO NEAREST AREA SOURCES (MILES)	DIRECTION TO AREA SOURCES	COMMENTS
Not Applicable.				

CERTIFICATION: I certify the network modification proposed above meets all 40 CFR 58, Appendix E siting criteria, except as noted with submittal.

Printed Name:_____ **Signature:**_____

FOR EPA USE ONLY: Received Date:_____ **Follow-up Actions:**_____ **Approval Status Given:**_____ **Email Response Date:**_____ **Letter Response Date:**_____

FOR METEOROLOGICAL PARAMETERS ONLY:

MONITORING PURPOSE/OBJECTIVES: Data for evaluation of ozone concentrations.

PROPOSED MONITORING SCHEDULE/DURATION: Continuous

PROPOSED START / REMOVAL DATE
OR DATE STARTED / REMOVED: : Removal on / after January 1, 2013

DATA ACQUISITION SYSTEM:			
PRIMARY ESC 8816	PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
BACKUP DataChart	WIND SPEED/DIRECTION	Yes	10 Meters
EQUIPMENT MANUFACTURER/MODEL: MET One	SOLAR RADIATION	No	
	RELATIVE HUMIDITY	No	
WILL THE DATA BE USED FOR MODELING? YES NO	PRESSURE	No	
IS SITE REQUIRED FOR SIP? YES NO	SIGMA THETA	Yes	10 Meters
UNRESTRICTED AIRFLOW? YES NO	PRECIPITATION	No	
DISTANCE TO TREE DRIPLINE (M): See attached report.	TEMPERATURE	Yes	6 Meters
NEARBY TERRAIN: SMOOTH ROLLING ROUGH	OTHER (DESCRIBE)		

TOPOGRAPHIC FEATURES (E.G HILLS, MOUNTAINS, VALLEYS, RIDGES, BODIES OF WATER):
Urban Neighborhood.

COMMENTS: Site for met will no longer be needed if ozone is removed.

FORM KEY:
PAGE 1:

MONITOR TYPE: NAMS = 1, SLAMS = 2, SPM = 3, TRIBAL = A
SITE ELEVATION = GROUND LEVEL ELEVATION
PROBE HEIGHT (M. AGL) = PROBE HEIGHT METERS ABOVE GROUND LEVEL

Attachment 2

Highway 24 - Ambient Air Monitoring Network Modification Form

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: November 20, 2012	CITY: Colorado Springs	STATE: CO
AQS SITE ID: 080410015	SITE NAME: Highway 24	

PROPOSED MODIFICATION/REASON WHY: The Colorado Spring Highway 24 site has been a carbon monoxide monitoring site for many years. Carbon monoxide will continue to be monitored, but as a trace pollutant. An SO_2 monitor will be added to the station. This will satisfy Colorado's requirement to monitor SO_2 in Colorado Springs, as directed in the 2010 SO_2 NAAQS revision.

AIR QUALITY PARAMETER (PM10, SO2, CO, NO2, ETC.)	MONITOR TYPE (NAMS, SLAMS, SPM, TRIBAL, etc.)	CHECK ONE OR MORE OF THE APPLICABLE CATEGORIES BELOW:				LIST SAMPLER EQUIPMENT
		MAX CONC	SOURCE IMPACT	POPULATION EXPOSURE	BACKGROUND	
CO - Trace	SLAMS	x		x		TECO 48-TLE
SO_2 - Trace	SLAMS	x	x	x		API 100EU

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: On / After December 31, 2012

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM's): Lat = 38.83092 Long = -104.83927 WGS84

SITE ELEVATION (M. MSL): 1819 Meters				PROBE HEIGHT (M. AGL): 3.6	
DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS
Tree 1038	E	20 Meters	E	13 Meter tree is 9.4 meters above probe.	Top of Tree is dead. Bottom 7.7 meters is alive. Tree is not an obstruction – 20 meters away.
Tree 1039	ESE	29 Meters	ESE	12 Meter tree is 8.4 meters above probe	Tree is not an obstruction – 29 meters away.

UNRESTRICTED AIR FLOW: >270 DEG. >180 DEG. <CRITERIA_____360_____DEG.

DISTANCE TO FLUES/INCINERATORS (M): Not Applicable.

DISTANCE TO INTERSECTIONS (M): See Below.			DISTANCE FROM SUPPORTING STRUCTURES (M): VERT.____0.8____HORIZ.____1____			
DISTANCE TO EDGE OF NEAREST ROADWAY	NAME OF ROADWAY	DIRECTION	DAILY TRAFFIC ESTIMATES	YEAR OF TRAFFIC ESTIMATES	TYPE OF ROADWAY	COMMENTS
137 Meters	Cucharras St	NORTH			LOCAL ST OR HY	
271 Meters	Chestnut Street	EAST			LOCAL ST OR HY	
7 Meters	Highway 24	SOUTH			LOCAL ST OR HY	
109 Meters	Eighth Street	WEST			LOCAL ST OR HY	

DISTANCE TO NEAREST POINT SOURCES (MILES)	DIRECTION TO POINT SOURCES	DISTANCE TO NEAREST AREA SOURCES (MILES)	DIRECTION TO AREA SOURCES	COMMENTS

Martin Drake Power Plant	SE – 0.5 Mile	In urban area – surrounded by sources		

CERTIFICATION: I certify the network modification proposed above meets all 40 CFR 58, Appendix E siting criteria, except as noted with submittal.

Printed Name:_____ **Signature:**_____

FOR EPA USE ONLY: Received Date:_____ **Follow-up Actions:**_____ **Approval Status Given:**_____ **Email Response Date:**_____ **Letter Response Date:**_____

FOR METEOROLOGICAL PARAMETERS ONLY:

MONITORING PURPOSE/OBJECTIVES: There is no meteorological tower at this location.

PROPOSED MONITORING SCHEDULE/DURATION:

PROPOSED START / REMOVAL DATE
OR DATE STARTED / REMOVED:

DATA ACQUISITION SYSTEM:			
PRIMARY	PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
BACKUP	WIND SPEED/DIRECTION		
EQUIPMENT MANUFACTURER/MODEL:	SOLAR RADIATION		
	RELATIVE HUMIDITY		
WILL THE DATA BE USED FOR MODELING? YES NO	PRESSURE		
IS SITE REQUIRED FOR SIP? YES NO	SIGMA THETA		
UNRESTRICTED AIRFLOW? YES NO	PRECIPITATION		
DISTANCE TO TREE DRIPLINE (M):	TEMPERATURE		
NEARBY TERRAIN: SMOOTH ROLLING ROUGH	OTHER (DESCRIBE)		

TOPOGRAPHIC FEATURES (E.G HILLS, MOUNTAINS, VALLEYS, RIDGES, BODIES OF WATER):

COMMENTS:

FORM KEY:
PAGE 1:

MONITOR TYPE: NAMS = 1, SLAMS = 2, SPM = 3, TRIBAL = A
SITE ELEVATION = GROUND LEVEL ELEVATION
PROBE HEIGHT (M. AGL) = PROBE HEIGHT METERS ABOVE GROUND LEVEL

Attachment 3

Lay Peak Ambient Air Monitoring Network Modification Form

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: September 14, 2012	CITY: Rural Area 10 Miles East of Maybell	STATE: CO
AQS SITE ID: 080810002	SITE NAME: Lay Peak	

PROPOSED MODIFICATION/REASON WHY: Monitor ozone in Northwestern Colorado. This is an area that has not been monitored recently., and has been installed in support of the State and Federal Resource Managers' Three State Study. Nearby portions of Wyoming and Utah have shown high levels of ozone.

AIR QUALITY PARAMETER (PM10, SO2, CO, NO2, ETC.)	MONITOR TYPE (NAMS, SLAMS, SPM, TRIBAL, etc.)	CHECK ONE OR MORE OF THE APPLICABLE CATEGORIES BELOW:				LIST SAMPLER EQUIPMENT
		MAX CONC	SOURCE IMPACT	POPULATION EXPOSURE	BACKGROUND	
Ozone	SLAMS				X	API 400E
Met Tower	SLAMS					Met One

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: Station has been in-place as an SPM for a year. Monitoring started Aug 16, 2011.

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM′S): Lat 40.506946 Long -107.891109 WGS84

SITE ELEVATION (M. MSL): 1902 Meters				PROBE HEIGHT (M. AGL): 4.5 Meters	
DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS
No trees at site					
No obstacles at site.					

UNRESTRICTED AIR FLOW: >270 DEG. >180 DEG. <CRITERIA____360_____DEG.

DISTANCE TO FLUES/INCINERATORS (M): Not applicable

DISTANCE TO INTERSECTIONS (M): 2470 Meters			DISTANCE FROM SUPPORTING STRUCTURES (M): VERT.___1.5_____HORIZ._____0___			
DISTANCE TO EDGE OF NEAREST ROADWAY	NAME OF ROADWAY	DIRECTION	DAILY TRAFFIC ESTIMATES	YEAR OF TRAFFIC ESTIMATES	TYPE OF ROADWAY	COMMENTS
~ 1800 Meters	US Highway 40	NORTH	910	2010	MAJOR ST OR HY	
		EAST				
		SOUTH				
~ 35 Meters	County Road 17	WEST	50	2011	LOCAL ST OR HY	
DISTANCE TO NEAREST POINT		DIRECTION TO	DISTANCE TO NEAREST AREA		DIRECTION TO	COMMENTS

SOURCES (MILES)	POINT SOURCES	SOURCES (MILES)	AREA SOURCES	
Not applicable		Not applicable		

CERTIFICATION: I certify the network modification proposed above meets all 40 CFR 58, Appendix E siting criteria, except as noted with submittal.

Printed Name:_____ **Signature:**_____

FOR EPA USE ONLY: Received Date:_____ **Follow-up Actions:**_____ **Approval Status Given:**_____ **Email Response Date:**_____ **Letter Response Date:**_____

FOR METEOROLOGICAL PARAMETERS ONLY:

MONITORING PURPOSE/OBJECTIVES: Monitor meteorology to assess ozone monitoring results.

PROPOSED MONITORING SCHEDULE/DURATION: Continuous, as long as ozone is run.

PROPOSED START / REMOVAL DATE
OR DATE STARTED / REMOVED: Tower has been in-place for a year, as an SPM.

DATA ACQUISITION SYSTEM:

PRIMARY Run by Air Resource Specialists under state contract

BACKUP None

EQUIPMENT MANUFACTURER/MODEL: MetOne

WILL THE DATA BE USED FOR MODELING? YES NO

IS SITE REQUIRED FOR SIP? YES **NO**

UNRESTRICTED AIRFLOW? YES NO

DISTANCE TO TREE DRIPLINE (M): No trees in area.

NEARBY TERRAIN: SMOOTH ROLLING ROUGH

PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
WIND SPEED/DIRECTION	Yes	10
SOLAR RADIATION	Yes	
RELATIVE HUMIDITY	Yes	
PRESSURE	Yes	
SIGMA THETA	Yes	10
PRECIPITATION	No	
TEMPERATURE	Yes	
OTHER (DESCRIBE)	Delta Temperature	

TOPOGRAPHIC FEATURES (E.G HILLS, MOUNTAINS, VALLEYS, RIDGES, BODIES OF WATER):

Rolling terrain with hills – see site diagrams.

COMMENTS: Site is run by a subcontractor for the State of Colorado. Current contractor is Air Resource Specialists of Fort Collins, CO.

FORM KEY:

PAGE 1:

MONITOR TYPE: NAMS = 1, SLAMS = 2, SPM = 3, TRIBAL = A
SITE ELEVATION = GROUND LEVEL ELEVATION
PROBE HEIGHT (M. AGL) = PROBE HEIGHT METERS ABOVE GROUND LEVEL

Attachment 4

Weld County Tower Ambient Air Monitoring Network Modification Form

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM
(VERSION 2, 4/1/04)

DATE: November 21, 2012	CITY: Greeley	STATE: Colorado
AQS SITE ID: 08-123-0009	SITE NAME: Weld County Tower	

PROPOSED MODIFICATION/REASON WHY: APCD is adding a meteorological tower to this ozone monitoring location. The new tower will enable the collection of wind data. The inclusion of meteorological data in the Weld County area will improve prediction capabilities for high pollution forecasting, allow improved analysis of high events, and enhance the accuracy of air quality models.

AIR QUALITY PARAMETER (PM10, SO2, CO, NO2, ETC.)	MONITOR TYPE (NAMS, SLAMS, SPM, TRIBAL, etc.)	CHECK ONE OR MORE OF THE APPLICABLE CATEGORIES BELOW:				LIST SAMPLER EQUIPMENT
		MAX CONC	SOURCE IMPACT	POPULATION EXPOSURE	BACKGROUND	
Ozone	SLAMS	X		X		API 400 E/ 401 X

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: Ongoing for ozone. Meteorology started in2012.

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM′S): Zone 13 UTM Northing: 4470674 Easting 522288 WGS 84

SITE ELEVATION (M. MSL): 1468				PROBE HEIGHT (M. AGL): 3.8	
DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS
64	NE	_____	_____	11	Stand of willow trees. Not an obstacle.
		87	ENE	14	Building at 3101 35th Avenue
		12	S	5	Building at Base of Weld County Tower
		23	SSE	43	Weld County Tower – Open Lattice

UNRESTRICTED AIR FLOW: >270 DEG. >180 DEG. <CRITERIA__360_____DEG.

DISTANCE TO FLUES/INCINERATORS (M): No flues

DISTANCE TO INTERSECTIONS (M):			DISTANCE FROM SUPPORTING STRUCTURES (M): VERT.__1.0_____HORIZ._____N/A___			
DISTANCE TO EDGE OF NEAREST ROADWAY	NAME OF ROADWAY	DIRECTION	DAILY TRAFFIC ESTIMATES	YEAR OF TRAFFIC ESTIMATES	TYPE OF ROADWAY	COMMENTS
		NORTH				
185	35th Avenue	EAST			Local Highway	
		SOUTH				
		WEST				

DISTANCE TO NEAREST POINT SOURCES (MILES)	DIRECTION TO POINT SOURCES	DISTANCE TO NEAREST AREA SOURCES (MILES)	DIRECTION TO AREA SOURCES	COMMENTS
Neighborhood area – houses and				

Retail - No major sources				

CERTIFICATION: I certify the network modification proposed above meets all 40 CFR 58, Appendix E siting criteria, except as noted with submittal.

Printed Name:_____ Signature:_____

FOR EPA USE ONLY: Received Date:_____ Follow-up Actions:_____ Approval Status Given:_____ Email Response Date:_____ Letter Response Date:_____

FOR METEOROLOGICAL PARAMETERS ONLY:

MONITORING PURPOSE/OBJECTIVES: Pollution forecasting, high event analysis, modeling.

PROPOSED MONITORING SCHEDULE/DURATION: Ongoing

PROPOSED START / REMOVAL DATE
OR DATE STARTED / REMOVED: 2012 – Added tower to existing station.

DATA ACQUISITION SYSTEM:

PRIMARY AirVision

BACKUP Data card / strip chart for ozone. No backup for mets.

EQUIPMENT MANUFACTURER/MODEL:

Met One 010 / 020 Wind Sensors.

WILL THE DATA BE USED FOR MODELING? **YES** NO

IS SITE REQUIRED FOR SIP? YES **NO**

UNRESTRICTED AIRFLOW? **YES** NO

DISTANCE TO TREE DRIPLINE (M): 64

NEARBY TERRAIN: **SMOOTH** ROLLING ROUGH

PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
WIND SPEED/DIRECTION	X	10 M
SOLAR RADIATION		
RELATIVE HUMIDITY		
PRESSURE		
SIGMA THETA	X	10 M
PRECIPITATION		
TEMPERATURE	X	10 M
OTHER (DESCRIBE)		

TOPOGRAPHIC FEATURES (E.G HILLS, MOUNTAINS, VALLEYS, RIDGES, BODIES OF WATER):

Gently rolling area on southern edge of Greeley.

COMMENTS: Nearby trees / buildings are not obstructions. Weld County Tower hovers over site, but is an open-lattice structure.

FORM KEY:
PAGE 1:

MONITOR TYPE: NAMS = 1, SLAMS = 2, SPM = 3, TRIBAL = A
SITE ELEVATION = GROUND LEVEL ELEVATION
PROBE HEIGHT (M. AGL) = PROBE HEIGHT METERS ABOVE GROUND LEVEL

Appendix E- Denver Municipal Animal Shelter Decommission Network Modification

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: 1-12-12	CITY: Denver	STATE: Colorado
AQS SITE ID: 08-031-0025	SITE NAME: Denver Municipal Animal Shelter	

PROPOSED MODIFICATION/REASON WHY:

Site Closure. The Denver Municipal Animal Shelter will be relocated due to a change in use of the adjacent former animal shelter building and land use changes that will create an environment that will no longer be suitable for ambient air quality monitoring. The site will be relocated to the LaCasa Quigg-Newton Family Health Center located at 4545 Navajo St, Denver Colorado. The proposed decommissioning data is 5/1/2012.

AIR QUALITY PARAMETER (PM10, SO2, CO, NO2, ETC.)	MONITOR TYPE (NAMS, SLAMS, SPM, TRIBAL, etc.)	CHECK ONE OR MORE OF THE APPLICABLE CATEGORIES BELOW:				LIST SAMPLER EQUIPMENT
		MAX CONC	SOURCE IMPACT	POPULATION EXPOSURE	BACKGROUND	
CO (trace)	NCore			X		Thermo 48i-TLE
NO/NOy	NCore			X		T-API 200EU
O3	NCore			X		T-API 400E
SO2 (trace)	NCore			X		T-API 100EU
PM10	NCore			X		R&P 2025 & Thermo 1400 TEOM
PM2.5	NCore			X		R&P 2025 & Thermo 1400 TEOM
PM2.5 Speciation	NCore			X		MetOne SASS & URG 3000N Carbon
Pb	NCore			X		SA hi-vol TSP

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: Proposed Closed Date 5/1/2012

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS

LOCATION (LAT./LONG. OR UTM′S):

SITE ELEVATION (M. MSL):	PROBE HEIGHT (M. AGL):

DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS

UNRESTRICTED AIR FLOW: >270 DEG. >180 DEG. <CRITERIA_____DEG.

DISTANCE TO FLUES/INCINERATORS (M):

DISTANCE TO INTERSECTIONS (M): DISTANCE FROM SUPPORTING STRUCTURES (M): VERT._____HORIZ._____

DISTANCE TO EDGE OF NEAREST ROADWAY	NAME OF ROADWAY	DIRECTION	DAILY TRAFFIC ESTIMATES	YEAR OF TRAFFIC ESTIMATES	TYPE OF ROADWAY	COMMENTS
		NORTH				
		EAST				
		SOUTH				
		WEST				

DISTANCE TO NEAREST POINT SOURCES (MILES)	DIRECTION TO POINT SOURCES	DISTANCE TO NEAREST AREA SOURCES (MILES)	DIRECTION TO AREA SOURCES	COMMENTS

CERTIFICATION: I certify the network modification proposed above meets all 40 CFR 58, Appendix E siting criteria, except as noted with submittal.

Printed Name:___Gregory Harshfield_____ **Signature:**_____

_____

FOR EPA USE ONLY: Received Date:_____ **Follow-up Actions:**_____ **Approval Status Given:**_____ **Email Response Date:**_____ **Letter Response Date:**_____

FOR METEOROLOGICAL PARAMETERS ONLY:

MONITORING PURPOSE/OBJECTIVES:

Site Closure. The Denver Municipal Animal Shelter will be relocated due to a change in use of the adjacent former animal shelter building and land use changes that will create an environment that will no longer be suitable for ambient air quality monitoring. The site will be relocated to the LaCasa Quigg-Newton Family Health Center located at 4545 Navajo St, Denver Colorado. The proposed decommissioning data is 5/1/2012.

PROPOSED MONITORING SCHEDULE/DURATION: Proposed Closed Date 5/1/2012

PROPOSED START / REMOVAL DATE

OR DATE STARTED / REMOVED:

DATA ACQUISITION SYSTEM:			
PRIMARY	PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
BACKUP	WIND SPEED/DIRECTION		
EQUIPMENT MANUFACTURER/MODEL:	SOLAR RADIATION		
	RELATIVE HUMIDITY		
WILL THE DATA BE USED FOR MODELING? YES NO	PRESSURE		
IS SITE REQUIRED FOR SIP? YES NO	SIGMA THETA		
UNRESTRICTED AIRFLOW? YES NO	PRECIPITATION		
DISTANCE TO TREE DRIPLINE (M):	TEMPERATURE		
NEARBY TERRAIN: SMOOTH ROLLING ROUGH	OTHER (DESCRIBE)		

TOPOGRAPHIC FEATURES (E.G HILLS, MOUNTAINS, VALLEYS, RIDGES, BODIES OF WATER):

COMMENTS:

FORM KEY:

PAGE 1:

MONITOR TYPE: NAMS = 1, SLAMS = 2, SPM = 3, TRIBAL = A

SITE ELEVATION = GROUND LEVEL ELEVATION

PROBE HEIGHT (M. AGL) = PROBE HEIGHT METERS ABOVE GROUND LEVEL

Appendix F- Rist Canyon Network Modification

STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
Located in Glendale, Colorado

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

Date: February 20, 2013

Richard Payton
8P-AR
US Environmental Protection Agency Region VIII
1595 Wynkoop Street
Denver, CO 80202-1129

Dear Mr. Payton,

As required, the Colorado Department of Public Health and Environmentôs (CDPHE) Air Pollution Control Division (APCD) is submitting a network site modification request form for the proposed decommissioning of the Rist Canyon site (ozone and meteorology). Site common name, AQS ID and proposed actions are as follows:

- Rist Canyon AQS ID: 08-069-0012

Removal - Ozone SPM Monitor
Removal - Meteorological Special Purpose Monitors

This letter, the enclosed Comparison of Top Ranked Daily 8-Hour Average Maximum Values (Attachment 1), the enclosed network modification form (Attachment 2), and site assessment form (Attachment 3) was made available for a 30 day public comment period from 1/16/2013 to 2/16/2013. The Air Pollution Control Division did not receive any comments related to this network modification request.

Rist Canyon - AQS ID: 08-069-0012
The proposed last sample to be collected from the Rist Canyon ozone monitor and meteorological sensors is to be based upon EPAôs concurrence of this network modification request. The Rist Canyon site was established in 2009 in support of an EPA recommendation to verify a modeling hot spot in the foothills to the west of Fort Collins. This hot spot was originally presented in the 2010 Ozone Projections for the 2010 Base Case and 2010 Sensitivity Tests and 2010 Ozone Source Apportionment

Modeling for the Denver 8-hour Ozone State Implementation Plan document. The APCD proposes to shut down the Rist Canyon ozone monitor and meteorological sensors for the following reasons:

- The monitored concentrations observed at the Rist Canyon site do not appear to validate the modeled hot spot. Attachment 1 shows a comparison of the top ranked daily 8-hour average maximum values for sites located in the Fort Collins area. The APCD believes the 3.5 year data set is sufficient to adequately demonstrate attainment of the site's objectives. The Rist Canyon site has a calculated design value 7 ppb lower than the Fort Collins West site and 2 ppb higher than the Fort Collins CSU site. A comparison of values shows the Rist Canyon site to be redundant with the Fort Collins sites. The closure of this monitor is in accordance with EPAôs effort to disinvest in redundant sites so that resources can be reallocated to further expand the existing network as needed.
-
- Even though the site has been in operation in excess of three years, the analyzer is still currently classified as a Special Purpose Monitor. Continued monitoring at the Rist Canyon site would require a conversion of the siteôs monitoring type designation, from a Special Purpose Monitoring Station (SPM) to a State and Local Air Monitoring Station (SLAMS). This conversion would imply a longer term commitment to continue monitoring at this location. The APCD believes long term monitoring at this site is not in the best interest of the air monitoring network. The monitoring resources spent on the Rist Canyon site are better spent expanding the air monitoring network elsewhere.

- The site marginally fails to meet siting criteria for ozone and meteorology. A tree located 15 meters west of the ozone probe is 18 meters above the probe; thus making it by definition an obstacle. A tree located to the southwest of the meteorological tower is also by definition an obstacle to the meteorological measurements. The location of the analyzer within the Rist Canyon Fire Station requires the use of long sample lines. The long sample line results in sample retention times in excess of 20 sec. The conversion to thick walled sample lines (smaller internal diameter) has decreased sample retention times; however, sample retention times remain marginal.

Enclosed is the associated Ambient Air Monitoring Network Modification Request Form and a copy of the Rist Canyon Site Assessment Form. If you have any questions or need further information, you can reach me at (303) 692-3232.

Sincerely,

Gregory Harshfield
Continuous Monitoring and Data Systems Support Supervisor

cc: Gordon Pierce
Enclosures:

Attachment 1: Northern Front Range - Comparison of Top Ranked Daily 8-Hour Avg. Maximum Values
Attachment 2: Rist Canyon - Ambient Air Monitoring Network Modification Form
Attachment 3: Rist Canyon ï Site Assessment Form

Attachment 1

Front Range - Comparison of Top Ranked Daily 8-Hour Avg. Maximum Values

Northern Front Range - Annual Comparison of Top Ranked Daily 8-Hour Average Maximum Values

2009 - Daily 8 Hour Average Max		
Rank	**Rist Canyon**	**ppm**
1	21-AUG-2009	0.071
2	19-JUN-2009	0.069
3	22-JUN-2009	0.069
4	11-AUG-2009	0.069
5	13-AUG-2009	0.067
6	04-AUG-2009	0.066
7	17-JUN-2009	0.064
8	08-JUL-2009	0.064
	4th Max:	0.069
	3 Year Avg:	n/a

Rank	**Fort Collins West**	**ppm**
1	22-AUG-2009	0.082
2	11-AUG-2009	0.074
3	13-MAY-2009	0.073
4	08-JUL-2009	0.073
5	19-JUN-2009	0.072
6	04-AUG-2009	0.071
7	12-AUG-2009	0.071
8	15-JUL-2009	0.070
	4th Max:	0.073
	3 Year Avg:	n/a

Rank	**Fort Collins CSU**	**ppm**
1	22-AUG-2009	0.074
2	13-MAY-2009	0.069
3	19-JUN-2009	0.063
4	11-AUG-2009	0.063
5	25-JUN-2009	0.062
6	08-JUL-2009	0.061
7	04-AUG-2009	0.061
8	17-JUN-2009	0.060
	4th Max:	0.063
	3 Year Avg:	n/a

2010 - Daily 8 Hour Average Max		
Rank	**Rist Canyon**	**ppm**
1	14-APR-2010	0.074
2	16-JUN-2010	0.072
3	24-JUN-2010	0.071
4	13-AUG-2010	0.071
5	13-APR-2010	0.071
6	23-JUN-2010	0.070
7	29-JUN-2010	0.070
8	28-JUN-2010	0.069
	4th Max:	0.071
	3 Year Avg:	n/a

Rank	**Fort Collins West**	**ppm**
1	24-JUN-2010	0.077
2	14-APR-2010	0.075
3	01-JUL-2010	0.075
4	03-AUG-2010	0.075
5	16-JUN-2010	0.074
6	28-JUN-2010	0.074
7	04-JUN-2010	0.073
8	13-AUG-2010	0.073
	4th Max:	0.075
	3 Year Avg:	n/a

Rank	**Fort Collins CSU**	**ppm**
1	13-APR-2010	0.068
2	04-JUN-2010	0.067
3	14-APR-2010	0.066
4	01-JUL-2010	0.066
5	24-JUN-2010	0.065
6	03-AUG-2010	0.065
7	23-JUN-2010	0.064
8	28-JUN-2010	0.064
	4th Max:	0.066
	3 Year Avg:	n/a

2011 - Daily 8 Hour Average Max		
Rank	**Rist Canyon**	**ppm**
1	25-Jul-2011	0.080
2	15-Jun-2011	0.075
3	10-May-2011	0.073
4	24-Jun-2011	0.073
5	09-Aug-2011	0.073
6	29-Jul-2011	0.072
7	24-Jul-2011	0.071
8	22-Jun-2011	0.070
	4th Max:	0.073
	3 Year Avg:	0.071

Rank	**Fort Collins West**	**ppm**
1	25-Jul-2011	0.086
2	24-Jun-2011	0.081
3	15-Jun-2011	0.080
4	19-Jul-2011	0.080
5	28-Jun-2011	0.079
6	09-Aug-2011	0.079
7	31-Jul-2011	0.078
8	10-May-2011	0.076
	4th Max:	0.080
	3 Year Avg:	0.076

Rank	**Fort Collins CSU**	**ppm**
1	24-Jun-2011	0.071
2	25-Jul-2011	0.070
3	19-Jul-2011	0.069
4	15-Jun-2011	0.068
5	17-Jul-2011	0.067
6	31-Jul-2011	0.067
7	09-Aug-2011	0.066
8	10-May-2011	0.065
	4th Max:	0.068
	3 Year Avg:	0.065

2012 - Daily 8 Hour Average Max		
Rank	**Rist Canyon**	**ppm**
1	9-Aug-2012	0.077
2	6-Apr-2012	0.076
3	15-May-2012	0.072
4	26-Mar-2012	0.071
5	9-Sep-2012	0.071
6	8-Jun-2012	0.069
7	28-Apr-2012	0.068
8	28-May-2012	0.068
	4th Max:	0.071
	3 Year Avg:	0.071

Rank	**Fort Collins West**	**ppm**
1	22-Jun-2012	0.093
2	13-Jul-2012	0.086
3	9-Aug-2012	0.086
4	31-Aug-2012	0.08
5	9-Sep-2012	0.079
6	17-Jun-2012	0.077
7	26-Jul-2012	0.077
8	15-May-2012	0.076
	4th Max:	0.080
	3 Year Avg:	0.078

Rank	**Fort Collins CSU**	**ppm**
1	22-Jun-2012	0.094
2	13-Jul-2012	0.08
3	20-Jul-2012	0.075
4	14-Jul-2012	0.074
5	19-Jul-2012	0.074
6	4-Jul-2012	0.073
7	11-Jul-2012	0.073
8	6-Apr-2012	0.072
	4th Max:	0.074
	3 Year Avg:	0.069

Attachment 2

Rist Canyon - Ambient Air Monitoring Network Modification Form

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: 1/9/2013	CITY: Larimer County – Foothills area west of Fort Collins	STATE: CO
AQS SITE ID: 08-069-0012	SITE NAME: Rist Canyon	

PROPOSED MODIFICATION/REASON WHY: Site results are very similar to the Fort Collins – West location. Meteorological tower does not meet siting criteria due to nearby trees. According to EPA siting criteria, one nearby tree, to the west, is an obstruction to the ozone probe. Siting of the ozone monitor within the fire station requires an unusually long inlet line that has not always met the requirement that sample residence time be less than 30 seconds.

AIR QUALITY PARAMETER (PM10, SO2, CO, NO2, ETC.)	MONITOR TYPE (NAMS, SLAMS, SPM, TRIBAL, etc.)	CHECK ONE OR MORE OF THE APPLICABLE CATEGORIES BELOW:				LIST SAMPLER EQUIPMENT
		MAX CONC	SOURCE IMPACT	POPULATION EXPOSURE	BACKGROUND	
Ozone	SPM	x		x		API 400 E
Meteorological Tower	SPM					Met One Wind speed, wind direction, temp.

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: Proposed removal March 1, 2013

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS: Ozone and Meteorology

LOCATION (LAT./LONG. OR UTM′S): Latitude 40.64191 Longitude -105.27525 WGS 84

SITE ELEVATION (M. MSL): 2057 Meters				PROBE HEIGHT (M. AGL): 3.6 Meters	
DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS
Tree 1052 - 15 Meters	NW	15 Meters	NW	14.4 Meters	Tree 1052 to NW is on a hill, which
					Makes it more of an obstruction.

UNRESTRICTED AIR FLOW: >270 DEG. >180 DEG. <CRITERIA___270_____DEG.

DISTANCE TO FLUES/INCINERATORS (M): None

DISTANCE TO INTERSECTIONS (M): No intersections nearby	DISTANCE FROM SUPPORTING STRUCTURES (M): VERT.____1.2____HORIZ.__2.1_____ Probe comes out of building side

DISTANCE TO EDGE OF NEAREST ROADWAY	NAME OF ROADWAY	DIRECTION	DAILY TRAFFIC ESTIMATES	YEAR OF TRAFFIC ESTIMATES	TYPE OF ROADWAY	COMMENTS
		NORTH				
17 Meters	Rist Canyon Road	EAST			Local Highway	
		SOUTH				
		WEST				

DISTANCE TO NEAREST POINT SOURCES (MILES)	DIRECTION TO POINT SOURCES	DISTANCE TO NEAREST AREA SOURCES (MILES)	DIRECTION TO AREA SOURCES	COMMENTS
No nearby point sources.				
Forested foothills area.				

CERTIFICATION: I certify the network modification proposed above meets all 40 CFR 58, Appendix E siting criteria, except as noted with submittal.

Printed Name:_____ Signature:_____

FOR EPA USE ONLY: Received Date:_____ Follow-up Actions:_____ Approval Status Given:_____ Email Response Date:_____ Letter Response Date:_____

FOR METEOROLOGICAL PARAMETERS ONLY:

MONITORING PURPOSE/OBJECTIVES: Monitor wind speed, temperature, and wind direction at ozone site.

PROPOSED MONITORING SCHEDULE/DURATION: Proposed shut down on March 1, 2013.

PROPOSED START / REMOVAL DATE Proposed shut down on March 1, 2013.
OR DATE STARTED / REMOVED:

DATA ACQUISITION SYSTEM: Air Vision

PRIMARY Air Vision

BACKUP

EQUIPMENT MANUFACTURER/MODEL:
Met One 010/020 Wind Speed
Also temperature probe

WILL THE DATA BE USED FOR MODELING? YES NO

IS SITE REQUIRED FOR SIP? YES NO

UNRESTRICTED AIRFLOW? YES NO
Obstructions to NW and SE

DISTANCE TO TREE DRIPLINE (M): A number of trees are obstructions – see attachment.

NEARBY TERRAIN: SMOOTH ROLLING ROUGH

PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
WIND SPEED/DIRECTION	X	10 Meters
SOLAR RADIATION		
RELATIVE HUMIDITY		
PRESSURE		
SIGMA THETA	X	10 Meters
PRECIPITATION		
TEMPERATURE	X	6 Meters
OTHER (DESCRIBE)		

TOPOGRAPHIC FEATURES (E.G HILLS, MOUNTAINS, VALLEYS, RIDGES, BODIES OF WATER): In valley in foothills area of the Rocky Mountains, to the west of the city of Fort Collins, CO.

COMMENTS:

Appendix G – Response to Comments

Colorado Springs Utilities
it's how we're all connected

June 21, 2013

By e-mail, cdphe.commentsapcd@state.co.us

Colorado Air Pollution Control Division
Attention: Bob True, APCD-B1
4300 Cherry Creek Drive South
Denver, CO 80246-1530

SUBJECT: Public Comment – 2013 Network Monitoring Plan

Thank you for the opportunity to participate in the development of Colorado Air Quality plans. Colorado Springs Utilities is providing comment on the Colorado Annual Monitoring Network Plan, 2013. In the last five years, monitoring plan requirements have become extremely complicated. Generally, you may wish to consider greatly simplifying future monitoring plans, deleting any discussions that are not required, so that there is less need to assure the plan is consistent with, for example, annual data reports.

It is important to keep public documents clear and consistent when discussing compliance with the complicated three-year average National Ambient Air Quality Standards (NAAQS). Since 2008, all new NAAQS are in the form of a three year average. The SO_2 and NO_2 NAAQS are the three year average of the 99th (for SO_2) and 98th (for NO_2) percentile of the yearly distribution of 1-hour daily maximum concentrations. The ozone NAAQS is a three year average of the 4th highest daily maximum 8 hour concentration. The $PM_{2.5}$ NAAQS is similarly assessed over three years.

Colorado Springs Utilities makes the following comments primarily to clarify statements in the Monitoring Network Plan that compare station data to the NAAQS. We are not aware of any requirement for the Plan to evaluate NAAQS compliance, so our preference is to delete these discussions entirely. If that is not desirable, please make the following changes to the monitoring plan:

Page 22: Please replace the last two sentences of paragraph "Ozone (O_3)" with "The three year average of the 4th highest daily maximum 8 hour concentration is not to exceed 0.075ppm." The original statement is confusing and the discussion of design values on pages 23 through 26 accurately describes air quality, if you wish to include this discussion.

Page 26: The paragraph discussing NO_2/NOy concentrations is confusing. It appears that there is insufficient data to assess compliance with the new standard and that, overall, NO_2/NOy air concentrations are improving. Consider simplifying or deleting this paragraph.

Page 27: The paragraph discussing Planned Changes in NO2/NOy Monitoring does not describe the plan for the required near-road monitor. It would be useful for the public to understand potential locations of this monitor.

121 South Tejon Street, Fourth Floor
P.O. Box 1103, Mail Code 940
Colorado Springs, CO 80947-0940
Phone 719-668-8688
Fax 719-668-8666
http://www.csu.org

Page 27, last sentence, continuing onto page 28: Please replace this sentence with "All stations attain the standard. The Highway 24 site was established in 2013, so there is insufficient data to report at this time." Alternatively, the statement may be deleted entirely.

Page 28, paragraph labeled "Pikes Peak Region," 2nd sentence is incorrect and should be modified. Please replace the second sentence with "Insufficient data is available to compare to the NAAQS."

Page 28, paragraph labeled "Planned Changes in SO_2 Monitoring." Consider noting EPA's ongoing development of SO_2 implementation guidance by adding a statement such as "The network will be reviewed when EPA's Technical Assistance Document is finalized." Additionally, this statement from page C-4 "Ultimately, the future reconstruction of the Cimarron exit will require the relocation of the Highway 24 site to a more appropriate location," is important information and should be added to this section.

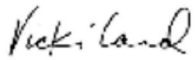
Page 31, last paragraph incorrectly describes the $PM_{2.5}$ NAAQS. Please delete this sentence or replace the second half of the sentence with ". . . . and the 98th percentile of 24-hour average concentration, averaged over three years."

Page 32, paragraphs 3 and 4. Please replace these discussions with "Monitoring results for 2012 are listed in Tables 14 and 15. Since there is only one year of data at this time, there is insufficient data to determine compliance with the NAAQS."

Page 33. Please delete the first sentence in each regional paragraph.

We appreciate and support the Division's effort to maintain a sulfur dioxide (SO_2) monitor in the Colorado Springs area. This is an important step for demonstrating attainment of the new SO_2 standard. Thank you for considering these comments.

Sincerely,



Vicki Card
Colorado Springs Utilities
Permitting Services Supervisor

STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

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Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department of Public Health and Environment

Vicki Card

Colorado Springs Utilities

Permitting Services Supervisor

SUBJECT: Response to public comment ï 2013 Network Monitoring Plan

Thank you for the comments provided for the Monitoring Network Plan. The Air Pollution Control Division (Division) is working to unify its message to the public. As part of this effort, the Division is working to simplify documents where possible while still meeting the requirements for the Annual Monitoring Network Plan and periodic network assessment and associated appendices as outlined in 40 CFR § 58.10. Much of the language from previous Monitoring Network Plans that discusses National Ambient Air Quality Standards (NAAQS) comparison has been removed from the 2013 Monitoring Network Plan prior to the public comment period to strike a balance between the amount of data required by the U.S. Environmental Protection Agency (EPA) to support our Plan and the need for clarity in our public documents.

The Division agrees that a clear consistent message to the public regarding compliance with the NAAQS is important. As such, a common understanding of terms is necessary concerning any data comparison with the NAAQS. An exceedance of a NAAQS is defined in 40 CFR § 50.1(I) as

> …one occurrence of a measured or modeled concentration that exceeds the specified concentration level of such standard for the averaging period specified by the standard.

A violation of the NAAQS consists of one or more exceedances of a NAAQS. The precise number of exceedances necessary to cause a violation depend on the form of the standard and other factors, including quality of the data, defined in federal rules such as 40 CFR § 50.

Since expected and/or observed concentration levels may influence decisions about network plans it is necessary to provide information in the Plan about a given monitor in terms of the NAAQS.

Concerning specific comments:

Page 22: Please replace the last two sentences of paragraph "Ozone (O_3)" with "The three year average of the 4th highest daily maximum 8 hour concentration is not to exceed 0.075ppm." The original statement is confusing and the discussion of design values on pages 23 through 26 accurately describes air quality, if you wish to include this discussion.

Language in the last paragraph has been revised to:

> On March 12, 2008, the U.S. Environmental Protection Agency promulgated a new level of the NAAQS for O_3 of 0.075 ppm as an annual fourth-highest daily maximum eight-hour concentration, averaged over three years. This made a significant change in the number of O_3 monitors that violate the standard.

Page 26: The paragraph discussing NO_2/NOy concentrations is confusing. It appears that there is insufficient data to assess compliance with the new standard and that, overall,NO_2/NOy air concentrations are improving. Consider simplifying or deleting this paragraph.

The paragraph has been rewritten as:

> The APCD has monitored NO2 at eight locations in Colorado in the past, two of which are still in operation. The Denver CAMP monitor exceeded the NO2 standard in 1977 though the Welby monitor has never exceeded the standard of 53 ppb as an annual average. Nonetheless, concentrations have shown a gradual decline in the past 20 years, and the last decade trend has been nearly flat.
>
> In January 2010, the EPA set a new primary 1-hour NO_2 NAAQS that is in addition to the annual standard. The new standard, both primary and secondary, of 100 ppb is based on the three-year average of the 98th percentile of the yearly distribution of daily maximum one-hour concentrations.

Page 27: The paragraph discussing Planned Changes in NO2/NOy Monitoring does not describe the plan for the required near-road monitor. It would be useful for the public to understand potential locations of this monitor.

The following language has been added to describe the location of the near roadway monitor:

> The near roadway monitor is sited at 971 Yuma Street in Denver, on the Colorado Department of Transportation right-of-way island between Yuma St. and I-25.

Page 27, last sentence, continuing onto page 28: Please replace this sentence with "All stations attain the standard. The Highway 24 site was established in 2013, so there is insufficient data to report at this time." Alternatively, the statement may be deleted entirely.

The following language was added to the end of the paragraph. Existing language in the paragraph was not altered. See the discussion of exceedance vs. violation above.

> An exceedance of the standard is a single occurrence of a concentration above the specified NAAQS concentration and does not take into account the three-year averaging period necessary to determine a violation of the standard. Also Because the Highway 24 station has less than a year of data for SO2, there is insufficient data to indicate that a violation of the standard exists. Note that the data for the first half of 2013 is preliminary and will not be certified until early 2014.

Page 28, paragraph labeled "Pikes Peak Region," 2nd sentence is incorrect and should be modified. Please replace the second sentence with "Insufficient data is available to compare to the NAAQS."

The second sentence has been modified to read:

> While insufficient certified data are available to determine if a violation of the NAAQS exists, preliminary data collected at Highway 24 are in exceedance of the NAAQS.

Page 28, paragraph labeled "Planned Changes in SO_2 Monitoring." Consider noting EPA's ongoing development of SO_2 implementation guidance by adding a statement such as "The network will be reviewed when EPA's Technical Assistance Document is finalized." Additionally, this statement from page C-4 "Ultimately, the future reconstruction of the Cimarron exit will require the relocation of the Highway 24 site to a more appropriate location," is important information and should be added to this section.

The monitoring network is scheduled by regulation to be formally reviewed once per year submitted to the EPA by July 1. In practice, the network is under constant review as guidance including Technical Assistance Documents, land use, and other influences change. The following language was added to the end of the paragraph:

> However, the Cimarron exit is planned for future reconstruction, which will require relocation of the Highway 24 site to another appropriate location.

Page 31, last paragraph incorrectly describes the $PM_{2.5}$ NAAQS. Please delete this sentence or replace the second half of the sentence with ". . . . and the 98th percentile of 24-hour average concentration, averaged over three years."

The draft Plan inaccurately described the $PM_{2.5}$ 24-hour NAAQS, and the primary $PM_{2.5}$ annual NAAQS. The paragraph now reads:

> The annual $PM_{2.5}$ standard of 12 $\mu g/m^3$ is compared to the three-year average annual mean $PM_{2.5}$ concentration. The 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$ is compared to the three-year average of the annual 98th percentile value.

Page 32, paragraphs 3 and 4. Please replace these discussions with "Monitoring results for 2012 are listed in

Tables 14 and 15. Since there is only one year of data at this time, there is insufficient data to determine compliance with the NAAQS."

The summary criterion for this data set was not met because of an eight week window wherein samples were invalidated because of quality criteria. However, the EPA provides for alternative methods of calculating the design value for a station in such cases. The following language has been added to the end of both paragraphs:

é , however alternative approaches to calculating a design value are provided in 40 CFR Part 50, Appendix N.

Page 33. Please delete the first sentence in each regional paragraph.

The first sentence in each regional paragraph describes the number, even if it is zero, of exceedances in a region. This pattern is consistent throughout the document and is intended to briefly inform the reader about the number of exceedances in their region. This language will remain in the Plan.

Sincerely,

Gordon Pierce, Program Manager

Technical Services Program

Air Pollution Control Division