COLORADO
ANNUAL MONITORING NETWORK PLAN
2015

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 Division's (APCD) 2015 Ambient Air Monitoring Network Plan is an examination and evaluation of the APCD's network of air pollution monitoring stations. The Annual Network Plan is 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 that have taken place over the past year and which are expected for the year ahead. It is due on or before July 1st of each year.

Purpose of Network Plan

The purpose of the Network Plan is to provide an overview of the APCD's current air quality monitoring network and projected plans for the coming year. This plan shows the general reasoning for monitoring, the location of each monitor, and finally the type and frequency of measurements taken at each location. This is the eighth 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 final approval. This change was initiated due to a change in the Federal Regulations implemented in December 2006. The Colorado APCD currently operates monitors at 54 locations throughout the state of Colorado.

Overview of the Colorado Air Monitoring Network

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 taking into consideration the meteorological monitoring sites which also comprise a large portion of the CDPHE sampling network. Currently, there are PM_{10} monitors at 28 separate locations, $PM_{2.5}$ monitors at 19 locations, and ozone monitors at 18 locations. When referring to meteorological monitoring, there are 19 meteorological sites in the APCD network. These sites all monitor wind speed, wind direction, resultant speed, resultant direction, standard deviation of horizontal wind direction, and temperature. Additionally, relative humidity is also monitored at four of these locations.

Within the particulate sampling network, seven of the 28 PM_{10} monitoring sites have continuous monitors, while 13 of the 19 $PM_{2.5}$ monitoring sites have continuous monitors. Many particulate sites have both continuous and filter based monitoring. Only three continuous $PM_{2.5}$ sites (Boulder Athens, NJH, and Rifle) are not collocated with $PM_{2.5}$ Federal Reference Monitors (FRM) monitors. Historically, 39 of the 54 current monitoring locations have been in operation for 10 or more years, 24 of these have been in operation for 20 or more years, and 14 of the monitoring locations have been in operation for more than 30 years. Conversely, 15 of the 54 current monitoring locations have been in operation for less than 10 years. The APCD operated one Total Suspended Particulate (TSP) site at the Centennial Airport which was used for lead analysis. The Centennial Airport site completed sampling requirements as of 12/31/2014. Currently, the APCD submits low volume PM_{10} samples from La Casa for lead analysis.

The APCD gaseous monitoring network consists of Carbon Monoxide (CO), Ozone (O_3), Nitrogen Dioxide/Oxides of Nitrogen (NO_2/NO_y), and Sulfur Dioxide (SO_2). A majority of the

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

gaseous monitoring conducted by the APCD occurs in the Front Range region, though there is one CO monitor that is located on the Western Slope and O_3 monitoring occurs statewide. Currently, the APCD reports data from nine CO monitor sites, eighteen O_3 monitor sites, four NO_2/NO_y monitor sites, and four SO_2 monitor sites. Three 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, 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. This document provides further detail of the gaseous network in the sections to follow.

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 worsening 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 for maintenance.

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 public's 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 sampling network, 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 SIP's 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 initial and subsequent modifications were made to ensure the 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, at least, a full calendar year, beginning sampling operations of new monitors in January and terminating existing monitors in December. Circumstances both in and out of the Division's control can make that desired schedule difficult

to achieve. In addition, 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 owner's permission 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), all sites currently 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. In the past, new monitoring locations have been added as a result of community concerns about air quality, examples include 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, 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) NCORE 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 NCORE site was relocated to the La Casa site 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 or if the data obtained from a site is redundant with another monitoring site.

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 has changed significantly since the monitor was established, a more suitable location for the monitor may be examined. 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 – CAMP location beginning 3/1/2012.

Table 1 summarizes the locations and monitoring parameters of each site currently in operation, by county, alphabetically. The shaded lines in the table list the site name, site AQS identification number, site address, site start-up date, site elevation, and site longitude and latitude coordinates. Beneath each site description the table lists each monitoring parameter in operation at that site, the orientation and spatial scale, which national monitoring network it belongs to, the type of monitor in use, and the sampling frequency. The parameter date is the date when valid data were first collected.

The following abbreviations are used in **Table 1** below, 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)**[2]
P.O. - Population oriented	Micro - Micro-scale (several m – 100 m)
Back - Background orientation	Middle - Middle Scale (100 – 500 m)
SPM - Special Purpose Monitor	Neigh - Neighborhood Scale (0.5 – 4 km)
H.C. - Highest Concentration	Urban - Urban Scale (4 – 50 km)
POC - Parameter Occurrence Code	Region - Regional Scale (50 – hundreds of km)
SLAMS - State or Local Air Monitoring Stations	

A "+" in the Start column indicates that the monitor has not yet been installed.

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/RH	1	06/2003	P.O. Neigh	RM Young	SPM	Continuous
	Relative Humidity	1	11/2014	P.O. Neigh	RM Young	SPM	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/NO_x	2	01/1976	P.O. Urban	TAPI 200E	SPM	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	P.O. Neigh	Met - One	SPM	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

[2] "Appendix D to Part 58 – Network Design Criteria for Ambient Air Quality Monitoring," 40 Federal Register 58 (1 July 2011), pp. 290-292.

AQS #	Site Name	Address		Started	Elevation (m)	Latitude	Longitude
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
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	P.O. Neigh	Met - One	SPM	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	P.O. Neigh	Met - One	SPM	Continuous
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							
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_{10} Collocated	2	09/2014	P.O. Micro[2]	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/NO_x	1	01/1973	Other	TAPI 200EU	Other	Continuous
	NO_2	1	01/1973	P.O. Neigh	TAPI 200EU	SLAMS	Continuous
	WS/WD/Temp	1	01/1965	P.O. Neigh	Met - One	SPM	Continuous

AQS #	*Site Name*	*Address*		*Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
	PM_{10}	1	08/1986	P.O. Micro[3]	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	04/2013	P.O. Micro[2]	GRIMM EDM 180	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	04/2013	P.O. Micro[2]	GRIMM EDM 180	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.*		*12/1990*	*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
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
	CAPS NO_2	1	07/2014	P.O. Neigh	TAPI 500U	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	02/2014	P.O. Neigh	GRIMM EDM 180	SLAMS	Continuous
	$PM_{2.5}$	1	01/2012	P.O. Neigh	Partisol 2025	NCore	1 in 3
	$PM_{2.5}$	3	02/2014	P.O. Neigh	GRIMM EDM 180	SLAMS	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
08 031 0027	*I-25 Denver*	*971 W. Yuma Street*		*06/2013*		*39.732146*	*-105.015317*
	CO	1	06/2013	Near Road	Thermo 48i-TLE	SLAMS	Continuous
	NO_2	1	06/2013	Near Road	TAPI 200E	NAMS	Continuous
	NO/NO_x	1	06/2013	Near Road	TAPI 200E	SPM	Continuous
	WS/WD/Temp	1	06/2013	Near Road	Met - One	SPM	Continuous

[3] 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**
	PM_{10}	3	12/2013	Near Road	GRIMM EDM 180	SLAMS	Continuous
	$PM_{2.5}$	1	01/2014	Near Road	R & P 2025	SLAMS	1 in 3
	$PM_{2.5}$	3	12/2013	Near Road	GRIMM EDM 180	SPM	Continuous
	$PM_{2.5}$ Carbon	5	10/2013	Near Road	API 633	Supplem. Speciation	Continuous
08 031 0028	*I-25 Globeville*	*4905 N. Acoma Street*		*?*		*39.785823*	*-104.988857*
	NO_2 (Trace)	2	?	Near Road	TAPI 500U	NAMS	Continuous
	$NO/NO_2/NO_x$	1	?	Near Road	ECOTECH Serinus 40	SPM	Continuous
	WS/WD/Temp/RH	1	?	Near Road	Met - One	SPM	Continuous
	PM_{10}	3	?	Near Road	GRIMM EDM 180	SLAMS	Continuous
	$PM_{2.5}$	3	?	Near Road	GRIMM EDM 180	SPM	Continuous
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	P.O. Neigh	Met - One	SPM	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	H.C. 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
	WS/WD/Temp/RH	1	08/2014	P.O. Micro	RM Young	SPM	Continuous
	Relative Humidity	1	08/2014	P.O. Micro	RM Young	SPM	Continuous
08 041 0016	*Manitou Springs*	*101 Banks Pl.*		*04/2004*	*1,955*	*38.853097*	*-104.901289*
	O_3	1	04/2004	H.C. 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
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	P.O. Neigh	RM Young /Vaisala	SPM	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

AQS #	*Site Name*	*Address*		*Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
	$PM_{2.5}$	3	03/2015	P.O. Neigh	BAM 1020	SPM	Continuous
	WS/WD/Temp	1	09/2008	P.O. Neigh	RM Young /Vaisala	SPM	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
	$PM_{10\text{-}2.5}$	3	06/2008	P.O. Neigh	BAM-1020	SPM	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	P.O. Neigh	Met - One	SPM	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	P.O. Neigh	Met - One	SPM	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	P.O. Neigh	Met - One	SPM	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	P.O. Neigh	Met - One	SPM	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*
	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
	$PM_{10\text{-}2.5}$	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*

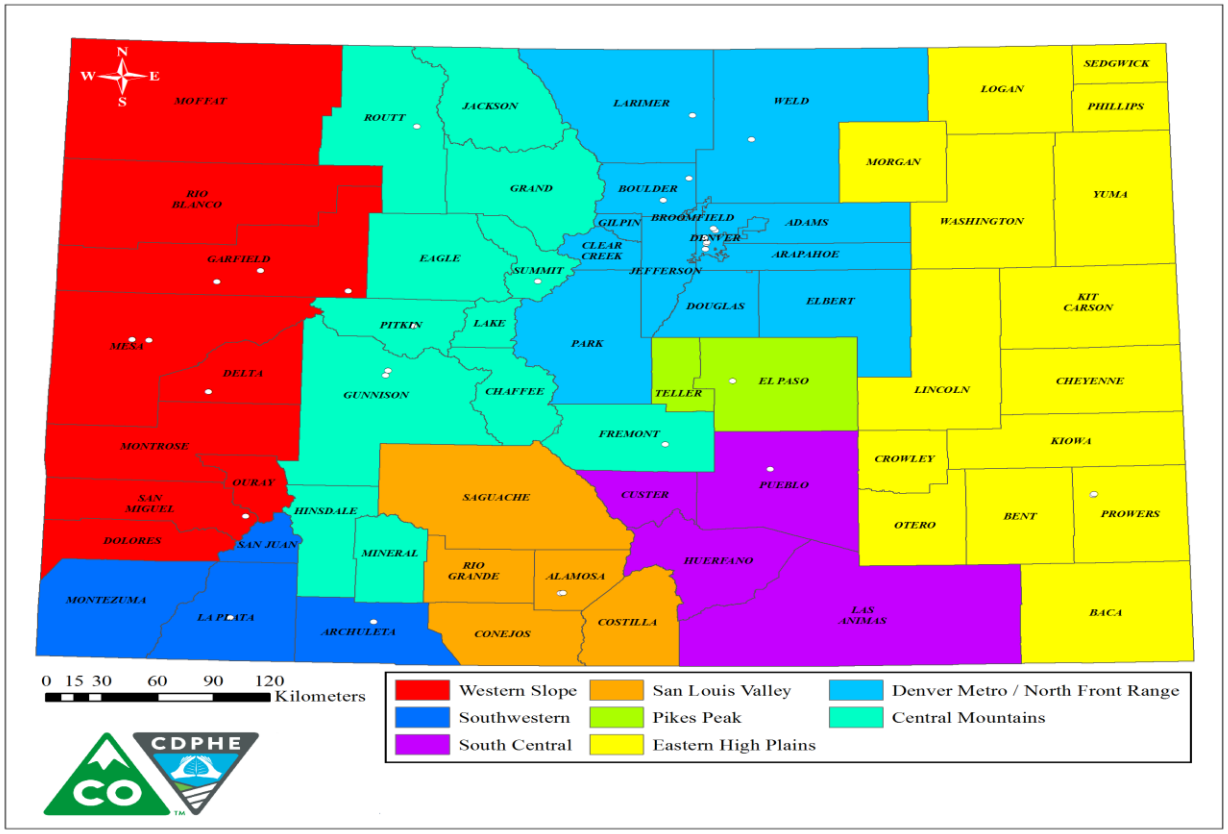
AQS #	*Site Name*	*Address*		*Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
	CO	1	12/1980	P.O. Neigh	Thermo 48C	SLAMS	Continuous
	O_3	1	12/1980	P.O. Neigh	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	01/1981	P.O. Neigh	Met - One	SPM	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	01/2014	P.O. Neigh	GRIMM EDM 180	SPM	Continuous
	$PM_{2.5}$	3	01/2014	P.O. Neigh	GRIMM EDM 180	SPM	Continuous
	$PM_{10-2.5}$	3	01/2014	P.O. Neigh	GRIMM EDM 180	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	P.O. Neigh	MetOne/RM Young	SPM	Continuous
	Relative Humidity	1	01/2004	P.O. Neigh	RM Young	SPM	Continuous
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	P.O. Neigh	RM Young	SPM	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
Pitkin							
08 097 0006	*Aspen – Yellow Brick*	*215 N. Garmisch St.*		*01/2015*	*2,408*	*39.192958*	*-106.823257*
	PM_{10}	1	02/2015	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	P.O. Neigh	Met - One	SPM	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							

AQS #	*Site Name*	*Address*		*Started*	*Elevation (m)*	*Latitude*	*Longitude*
	Parameter	**POC**	**Started**	**Orient/Scale**	**Monitor**	**Type**	**Sample**
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 – 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	H.C. Neigh	TAPI 400E	SLAMS	Continuous
	WS/WD/Temp	1	02/2012	P.O. Neigh	Met - One	SPM	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

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



Central Mountains Region

The Central Mountains Region consists of 12 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 approximately 255,043, 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 encompasses the 13 counties of Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, Elbert, Gilpin, Jefferson, Larimer, Weld, and Park. It includes the largest population area in the state, with approximately 3,068,024 people living in the eleven-county Denver-metro area and another 610,992 people 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 has complied with all National Ambient Air Quality Standards, except for ozone. The area has been exceeding the EPA's most recent ozone standards since the early 2000s, and in 2007 was formally designated as a "nonattainment" area. This designation was re-affirmed in 2012 when the EPA designated the region as a "marginal" 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 twenty-seven gaseous pollutant monitors at sixteen sites and thirty-two particulate monitors at fifteen sites in the Northern Front Range Region. There are six CO, fourteen O_3, four NO_2, one NOy, and three SO_2 monitoring sites. There are sixteen PM_{10} monitors at 10 sites and twenty-three $PM_{2.5}$ monitors at thirteen sites, keeping in mind that the 1405's and the GRIMM's monitor continuously for both $PM_{2.5}$ and PM_{10} and co-located samplers are also included in the total number of samplers operated by the APCD. There are two air toxics monitoring sites, one located at CAMP, and one at Platteville. In addition, there is one site that measures suspended particulates and visual range by use of a nephelometer and a transmissometer.

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 143,588 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. If the EPA concurs with the Exceptional Event Reports submitted by the APCD, all of the Eastern High Planes Region would comply 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 $PM_{2.5}$ background site was installed at Castlewood Canyon in Douglas County in 2014, which was in the Denver Metro/Northern Front Range region, though this site was discontinued as of 12/31/2014.

Pikes Peak Region

The Pikes Peak Region includes El Paso and Teller counties. The area has a population of approximately 702,925 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 gaseous monitors in this region, as well as one PM_{10} and two $PM_{2.5}$ monitors 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 approximately 48,303 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. If the EPA concurs with the Exceptional Event Reports submitted by the APCD, all of the San Luis Valley Region would comply with federal air quality standards.

Currently, there are no gaseous and two particulate monitoring sites in the area. There are two PM_{10} monitoring sites.

South Central Region

The South Central Region is comprised of Pueblo, Huerfano, Las Animas and Custer counties. Its population is approximately 201,360 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 site in Pueblo that monitors for both PM_{10} and $PM_{2.5}$.

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 approximately 101,670, 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 monitor, 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, with 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 approximately 309,660, 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 three gaseous pollutant monitoring sites and six particulate monitoring sites in the Western Slope region. There are one CO, and two O_3 monitoring sites. There are six $PM_{10,}$ and one $PM_{2.5}$ 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, February 28, 2013), 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 State's monitoring regions as possible.

Table 2. Population Statistics by County and Metropolitan Statistical Area

REGION / MSA / COUNTY	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%***
CENTRAL MOUNTAINS	**225,907**	**255,043**	**288,527**	**2.6%**	**2.8%**
Chaffee	17,809	19,862	23,052	2.3%	2.9%
Eagle	52,197	61,846	71,076	3.7%	3.6%
Fremont	46,824	50,456	54,217	1.6%	1.6%

REGION / MSA / COUNTY	Actual Population	Projected Population		Avg. Annual % Change	
	July 2010	July 2015	July 2020	2010 -15	2010 -20
Grand	14,843	16,989	20,090	2.9%	3.5%
Gunnison	15,324	16,457	17,895	1.5%	1.7%
Hinsdale	843	928	1,027	2.0%	2.2%
Jackson	1,394	1,507	1,598	1.6%	1.5%
Lake	7,310	8,424	9,642	3.0%	3.2%
Mineral	712	804	870	2.6%	2.2%
Pitkin	17,148	19,394	21,929	2.6%	2.8%
Routt	23,509	25,706	28,563	1.9%	2.1%
Summit	27,994	32,670	38,568	3.3%	3.8%
DENVER METRO / NORTH FRONT RANGE	**3,390,504**	**3,679,013**	**4,023,313**	**1.6%**	**1.7%**
BOULDER MSA / BOULDER	***294,567***	***312,668***	***332,107***	***1.2%***	***1.3%***
DENVER-AURURA-LAKEWWOD MSA	***2,543,482***	***2,755,356***	***2,999,591***	***1.7%***	***1.8%***
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%
Clear Creek	9,088	9,757	10,710	1.5%	1.8%
Denver	600,158	645,364	686,613	1.5%	1.4%
Douglas	285,465	322,985	373,308	2.6%	3.1%
Elbert	23,086	28,266	38,173	4.5%	6.5%
Gilpin	5,441	5,972	6,519	2.0%	2.0%
Jefferson	534,543	548,447	571,753	0.5%	0.7%
Park County	16,206	19,614	23,816	4.2%	4.7%
FORT COLLINS MSA / LARIMER	***299,630***	***325,776***	***360,274***	***1.7%***	***2.0%***
GREELEY MSA / WELD	***252,825***	***285,216***	***331,341***	***2.6%***	***3.1%***
EASTERN HIGH PLAINS	**137,009**	**143,588**	**151,837**	**1.0%**	**1.1%**
Baca	3,788	3,822	3,893	0.2%	0.3%
Bent	6,499	6,657	6,832	0.5%	0.5%
Cheyenne	1,836	1,940	2,082	1.1%	1.3%
Crowley	5,823	6,234	6,643	1.4%	1.4%
Kiowa	1,398	1,458	1,509	0.9%	0.8%
Kit Carson	8,270	8,643	8,893	0.9%	0.8%
Lincoln	5,467	5,787	6,193	1.2%	1.3%
Logan	22,709	23,873	25,734	1.0%	1.3%
Morgan	28,159	29,772	32,209	1.1%	1.4%
Otero	18,831	19,813	20,802	1.0%	1.0%
Phillips	4,442	4,540	4,670	0.4%	0.5%
Prowers	12,551	13,065	13,633	0.8%	0.9%

REGION / MSA / COUNTY	Actual Population	Projected Population		Avg. Annual % Change	
	July 2010	July 2015	July 2020	2010 -15	2010 -20
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%
PIKES PEAK	**645,613**	**702.925**	**763,004**	**1.8%**	**1.8%**
COLORADO SPRINGS MSA	**645,613**	**702,925**	**763,004**	**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%
SAN LUIS VALLEY	**45,315**	**48,303**	**51,972**	**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%
Rio Grande	11,982	12,812	13,887	1.4%	1.6%
Saguache	6,108	6,487	7,101	1.2%	1.6%
SOUTH CENTRAL	**185,536**	**201,360**	**763,004**	**1.7%**	**1.8%**
Custer	4,255	4,991	5,866	3.5%	3.8%
Huerfano	6,711	6,996	7,527	0.8%	1.2%
Las Animas	15,507	19,346	19,217	5.0%	2.4%
PUEBLO MSA / PUEBLO	**159,063**	**170,027**	**185,227**	**1.4%**	**1.6%**
SOUTHWEST	**89,652**	**101,670**	**115,796**	**2.7%**	**2.9%**
Archuleta	12,084	14,348	17,127	3.7%	4.2%
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%
WESTERN SLOPE	**309,660**	**345,062**	**387,704**	**2.3%**	**2.5%**
Delta	30,952	35,724	41,311	3.1%	3.3%
Dolores	2,064	2,247	2,436	1.8%	1.8%
Garfield	56,389	65,124	76,939	3.1%	3.6%
Grand Junction MSA / Mesa	**146,723**	**157,878**	**171,581**	**1.5%**	**1.7%**
Moffat	13,795	14,672	15,464	1.3%	1.2%
Montrose	41,276	47,541	54,718	3.0%	3.3%
Ouray	4,436	5,220	5,832	3.5%	3.1%
Rio Blanco	6,666	7,827	9,056	3.5%	3.6%
San Miguel	7,359	8,829	10,367	4.0%	4.1%

II. Carbon Monoxide (CO)

In 2015, the APCD will operate eight 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 2.5 ppm in 2014. 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 a CO monitor to be collocated at one near-roadway NO_2 monitoring site. 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. Currently, a CO monitor is located at the I-25 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 the greater Denver Metro area, and Fort Collins and Greeley located in Laramie and Weld counties respectively. Mobile sources are the main contributor to elevated CO in the Front Range region. However, controlled burns/wild fires and biogenic influences, including oil and gas development, may also contribute to elevated CO levels. Weld County is located in an area of significant oil and gas development.

Table 3 lists the maximum eight-hour and one-hour concentrations recorded in 2014 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	1.6	2.7
08 123 0010	Greeley-West Annex	1.7	2.7

Table 4. Maximum CO Concentrations in Denver Area

Site ID	Site Name	Eight-Hour Max (ppm)	One-Hour Max (ppm)
08 001 3001	Welby	1.8	3.5
08 031 0002	CAMP	2.2	3.1
08 031 0026	La Casa	1.9	2.9
08 031 0027	I-25 Denver	2.5	3.3

It should be noted here that the I-25-Denver, and La Casa monitors are trace level monitors, while the others are not. The monitor located at the Welby site is a Regional Administrator Required Monitor.

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 analyzer is capable of trace-level CO detection, which increases the resolution of concentrations detected by

an order of magnitude. In 2014, the highest eight-hour CO concentration recorded at the Colorado Springs-Hwy 24 monitor was 2.4 ppm with a maximum one-hour concentration of 3.5 ppm.

The CO monitor in this area is:

08 041 0015 Colorado Springs – 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 157,878 people in Mesa County to 8,829 in San Miguel County, according to the April 2010 census data. Grand Junction is the largest city on the western slope with an estimated 2013 population of 59,778 (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 2014, the highest eight-hour CO concentration recorded at the Grand Junction – Pitkin monitor was 1.0 ppm with a one-hour maximum concentration of 1.9 ppm.

The CO monitor in this area is:

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

Planned Changes in CO Monitoring

In 2015, the only planned change for the CO network is for the Greely – Annex CO monitor to be relocated to the Greely – Weld County Tower monitoring site due to building use changes and property access issues. There are no additional planned changes to the CO network for 2015.

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 has proposed a new primary O_3 standard which is set to be final in late 2015 which would reduce the primary and secondary standards to a range between 0.065 to 0.070 ppm. The APCD operates four sites out of 18 that have three-year design values (2012 – 2014) in excess of the current eight-hour O_3 NAAQS standard of 0.075 ppm.

EPA's 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-Aurora-Lakewood Primary Metropolitan Statistical Area (PMSA). This PMSA includes the counties of Adams, Arapahoe, Broomfield, Clear Creek, Denver, Douglas, Elbert, Gilpin, Jefferson, and Park. There are seven different MSAs in Colorado. **Table 5** 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
4–10 million	3	1
350,000–<4 million	2	1
50,000–<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. There are seven MSA areas in Colorado. They are the Denver-Aurora-Lakewood, Boulder, Fort Collins, Greeley, Colorado Springs, Grand Junction, and Pueblo MSAs.

Denver Metro/Northern Front Range

Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors and chemical solvents are some of the major sources of NOx and VOC's in the atmosphere that when in the presence of sunlight form ground level ozone.

In the Northern Front Range, the first and fourth maximum eight-hour concentrations recorded in 2014 for each O_3 monitoring site in Larimer and Weld Counties are listed in the **Table 6**. Also listed in the table below are the three-year design values (2012-2014) for each site with enough data available to calculate them. Weld County is an area of significant oil and gas development which potentially contribute to ozone precursors in the lower atmosphere. There are two MSAs located in Larimer and Weld counties. These are the Fort Collins MSA, and the Greeley MSA. According to the 2010 Census for projected populations for 2015, their populations in 2015 are projected to be 325,776 and 285,216 respectively. Per EPA monitoring requirements, these MSAs fall in the 50,000 to 350,000 population range and each area requires at least one highest concentration O_3 monitor. These requirements are satisfied by the monitors listed below. The monitor located at the Fort Collins – West site is a highest concentration monitor for the Fort Collins MSA, and the Greeley – Tower monitor serves the same purpose for the Greeley 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)	2012 - 2014 Design Value (ppm)
08 069 0011	Fort Collins – West	0.082	0.074	***0.078***
08 069 1004	Fort Collins – Mason	0.074	0.072	0.073
08 123 0009	Greeley – Tower	0.078	0.070	0.074

In the Denver Metro area, only Adams, Arapahoe, Boulder, Denver, Douglas, and Jefferson counties have O_3 monitors. There are 10 monitors currently in operation in this area. The first and fourth maximum eight-hour concentrations recorded in 2014 for each O_3 monitoring site in the metropolitan Denver area are listed in **Table 7** below. Also listed are the three-year design values (2012-2014) for each site with enough data available to calculate them. The La Casa O_3 site has incomplete data from 2012, when the site was being established, so there is insufficient data to report the design value at this time.

There are two MSAs located in the Metropolitan Denver area. These are the Boulder MSA, and the Denver-Aurura-Lakewood MSA. According to the 2010 Census for 2015 population projections, their populations are projected to be 312,668 and 2,755,356 respectively. Per EPA monitoring requirements, the Boulder MSA falls in the 50,000 to 350,000 population range, and the Denver-Aurura-Lakewood MSA falls in the 350,000 to 4,000,000 range. The Boulder MSA therefore requires at least one monitor, which is satisfied by the monitor at South Boulder Creek. By EPA rules, the Denver-Aurura-Lakewood MSA requires at least two monitors. This requirement is satisfied by the remaining nine monitors that are placed throughout the Denver-Aurura-Lakewood MSA. The monitors located at Chatfield, Rocky Flats – North, and NREL are all highest concentration monitors for the Denver-Aurura-Lakewood MSA. The monitor located at the Welby site is a Regional Administrator Required Monitor.

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)	2012-2014 Design Value (ppm)
08 001 3001	Welby	0.073	0.067	0.073
08 005 0006	Aurora – East	0.077	0.067	0.071
08 013 0011	South Boulder Creek	0.075	0.070	*0.075*
08 031 0002	CAMP	0.068	0.061	0.065
08 031 0026	La Casa	0.069	0.066	-----
08 035 0004	Chatfield State Park	0.077	0.074	***0.081***
08 059 0005	Welch	0.070	0.066	*0.075*
08 059 0006	Rocky Flats – N	0.082	0.077	***0.082***
08 059 0011	NREL	0.079	0.076	***0.080***
08 059 0013	Aspen Park	0.070	0.065	0.073

Three of the ten monitors have concentrations greater than the level of the 8-hour NAAQS standard for ozone. Their values are bolded and italicized to highlight them. Of the seven remaining sites, one does not have enough data to calculate the design value, two are within 0.002 ppm of reaching the standard limit, and two are equal to, though do not exceed, the

standard limit.

Pikes Peak Region

The first and fourth maximum eight-hour concentrations recorded in 2014 for each O_3 monitoring site in the Pikes Peak Region are listed in **Table 8** below. Also listed are the three year design values (2012-2014) for each site.

There is one MSA located in the Pikes Peak Region, the Colorado Springs MSA. According to the 2010 Census data, the projected 2015 population is 702,925. 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)	2012-2014 Design Value (ppm)
08 041 0013	U.S. Air Force Academy	0.067	0.064	0.071
08 041 0016	Manitou Springs	0.064	0.062	0.069

Western Slope Region

The first and fourth maximum eight-hour concentrations recorded in 2014 for each O_3 monitoring site in the Western Slope Region are listed in **Table 9** below. Also listed are the three year design values (2012-2014) for each site. None of these sites recorded ozone concentrations that exceeded the 8-hour ozone standard. The Lay Peak site was established in August of 2011 and was removed from the network at the end of 2014. The data for Lay Peak is listed below, though the APCD no longer collects data from this site as of 01/01/2015.

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)	2012-2014 Design Value (ppm)
08 045 0012	Rifle – Health	0.062	0.061	0.063
08 077 0020	Palisade Water Treatment	0.064	0.062	0.066
08 081 0002	Lay Peak	0.067	0.062	0.064

Southwest Region

There is a single O_3 monitor in the Southwest Region in Cortez. The first and fourth eight-hour maximum concentrations in 2014 were 0.063 and 0.062 ppm respectively, and the 2012-2014 design value is 0.065.

The O3 monitor in Cortez is:

08 083 0006 – Cortez 106 W. North Street

Planned Changes in O_3 Monitoring

The following changes to CDPHE's monitoring network are planned for 2015.

- A new location for South Boulder Creek monitoring station will be investigated because the site no longer meets siting criteria due to the presence of large trees near the station that cannot be removed. A new location farther north yet still within or near the City of Boulder is desirable.
- A new location for the Academy monitoring site will be investigated due to land use changes at the United State Air Force Academy that will not allow for continued monitoring at the current location.
- A decision will be made for Highland Reservoir site as to continue sampling at existing location, move sampling location, or discontinue sampling permanently.
- A recommendation from the Federal Land Manager's 2013 3-State Study Network Assessment is the relocation of the Lay Peak site 35 miles SW of its current location near the community of Elk Spring. Efforts are currently underway to relocate this site. The new site will be called Elk Springs. See Appendix E.
- An additional recommendation from the 3-State Study Network Assessment was the inclusion of new ozone monitor in or near the Paradox Basin. Planning for an ozone site within the Paradox Basin is under way. This site will be installed if a suitable location is found.

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

Historically, the APCD has monitored NO_2 at eight locations in Colorado, two of which are still in operation. Currently, there are four NO_2/NOy monitoring locations in operation. The Denver CAMP monitor exceeded the NO_2 standard in 1977 and the Welby monitor has never exceeded the average annual standard of 53 ppb. Concentrations have shown a gradual decline over the past 20 years and during the last decade the trend has been nearly flat, averaging between 20 and 30 ppb.

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 NO_y at the La Casa NCore site in January 2013. NO_y monitoring is a requirement for an NCore station, but there are no standards for NO_y. 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. A second near roadway site is scheduled to be installed in mid 2015 at 4905 Acoma St. to satisfy the requirement for a second near-

roadway site. The CAMP site satisfies the requirement for the neighborhood highest representative concentration site.

Denver Metro/Northern Front Range Counties

In 2014, the annual NO_2 concentration at the Welby site was 18.36 ppb. For 2012 through 2014 the one-hour standard design value for Welby is 61 ppb, which is well below the 100 ppb NAAQS. The 2014 design value for the CAMP site is 72 ppb, which again, is well below the 100 ppb NAAQS. The 2014 annual average at CAMP was 21.61 ppb. The 2014 annual average at the I-25 Denver site was 25.45 ppb. A 3-year design value cannot be calculated for the I-25 site as there is insufficient data to do so. The 2014 annual average at the La Casa site was 21.22 ppb.. It should be noted that the values listed for the La Casa site are shown only for comparative purposes, and are not of sufficient completeness or validity for a comparison to the standard, as the data do not span the entirety of 2014.

The 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, 4545 Navajo Street
08 031 0027 I-25 Denver, 917 Yuma Street
08 031 0028 I-25 Globeville, 4905 N. Acoma Street (proposed)

The CAMP monitor serves as an area-wide monitor. The I-25 Denver site and the future I-25 Globeville site will house the required near-roadway monitors. The I-25 Globeville site will commence operation later in 2015. The Welby monitor is a Regional Administration Required Monitor, and the monitor at the La Casa site serves as the NCore monitor.

Planned Changes in NO_2/NOy Monitoring

The only planned change for the NO_2/NO_y network is the addition of the second near-roadway monitoring site to be installed in mid to late 2015.The second near-roadway station is designed with a $NO/NO_2/NO_x$ monitor, meteorological sensors, and a continuous $PM_{2.5}$ and PM_{10} analyzer. This site will have the capacity to expand upon monitoring capabilities. The second near near-roadway monitor will be sited at 4905 N. Acoma Street in Denver, on the City and County of Denver right-of-way island between N. Acoma 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 2010. 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. In the past, 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 on 1/10/2013; this site exceeded the standard in 2013 on 3/22/13 and 4/16/13 (1hr = 99ppb and 1hr = 81ppb respectively), again on 7/3/14 (1hr = 82ppb), and once again on 3/29/15 (1hr = 87ppb). Each exceedance of the standard were single occurrences of a concentration above the specified NAAQS concentration and did 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 3 years of data for SO_2, there is

insufficient data to indicate that a violation of the standard existed.

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-Aurora-Lakewood 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 requirements.

Metropolitan Denver Counties

The concentration values are listed in ppb in accordance with the EPA's data reporting rules for this pollutant. The monitor located at the Welby site is a Regional Administrator Required Monitor.

Table 10. Maximum SO_2 Concentrations for the Denver Metro Region

Site ID	Site Name	2014 99th %-ile 1-Hour Daily Maximum Concentration (ppb)	2012 – 2014 Design Value (ppb)[4]
08 001 3001	Welby	18	25
08 031 0002	CAMP	14	30
08 031 0026	La Casa	15	--

Pikes Peak Region

In January of 2013 an SO_2 monitor was added to the Highway 24 monitoring station in Colorado Springs. The 99th percentile value of the one-hour daily maximum concentration for 2014 was 57 ppb. The three year average design value cannot be calculated as there is not three years worth of data available yet.

The SO_2 monitor in this area is:

08 041 0015, Highway 24, 690 W. Highway 24

Planned Changes in SO_2 Monitoring

No changes are planned for the SO_2 monitoring network in the near future. However, there are plans for reconstruction of the Cimarron exit, which may require relocation of the Highway 24 site sometime in the future.

[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}

Sources of suspended particulate matter in the ambient air include mobile and stationary sources (i.e. diesel trucks, wood burning stoves, power plants, etc). Several industrial and manufacturing processes also contribute to elevated particulate levels. Suspended particulates in the atmosphere vary widely in there chemical and physical composition. Particulate matter can be directly emitted or can be formed in the atmosphere when gaseous pollutants react to form fine particles. There are also a variety of agricultural sources of PM_{10} including feed lots, grazing, tilling, etc.

In 2014, the APCD operated 35 PM_{10} monitors at 29 different locations. 24 of these sites use high volume instruments, 4 sites use low volume instruments, 6 sites have continuous monitors collocated with FRM monitors, 3 of which have continuous dichot particulate monitors, which monitor both $PM_{2.5}$ and PM_{10}. There are three sites with collocated high volume samplers (CAMP, Crested Butte and Longmont), and two sites with collocated low volume samplers (La Casa and Grand Junction - Powell). The PM_{10} NAAQS is a 24-hour average of 150 $\mu g/m^3$ not to be exceeded more than once per year on average over 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

Neither the monitor at the Fort Collins – CSU site nor the Greeley monitor had any PM_{10} exceedances in 2014. The maximum concentrations recorded were 48 $\mu g/m^3$ at Fort Collins – CSU, and 71 $\mu g/m^3$ 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 2014. 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	117
08 001 3001	Welby	77
08 013 0003	Longmont-Municipal	58
08 013 0012	Boulder Chamber Bldg.	56
08 031 0002	CAMP	98
08 031 0017	Denver Visitor Center	72
08 031 0026*	La Casa	66

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

Eastern High Plains Region

The sources of PM_{10} in the eastern plains are mainly agricultural with some mobile sources near cities and towns. There is also a coal fired power plant and a flour mill which may contribute to elevated PM_{10} in Lamar.

There were nine PM_{10} exceedances at the Lamar Municipal site in 2014 with the highest concentration recorded at this site being 387 $\mu g/m^3$. These events are under consideration as being exceptional events and it is anticipated that the EPA will concur with the determinations and recommendations of the APCD as being exceptional events and therefore not exceeding of the NAAQS.

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

08 099 0002 Lamar Municipal, 104 E. Parmenter Street

Pikes Peak Region

There were no exceedances of the PM_{10} NAAQS in this region for 2014. The highest concentration recorded at the Colorado College site was 41 $\mu g/m^3$. 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 three exceedances in this region in 2014, one at Alamosa – Adams State College and two at Alamosa Municipal. The maximum concentration at Alamosa – Adams State College was 172 $\mu g/m^3$ and the maximum concentration at Alamosa Municipal was 201 $\mu g/m^3$. Both monitors are high volume samplers. The high values seen at these sites are under consideration as being exceptional events by the department, and are most likely caused by strong wind gusts and/or microbursts. The EPA is expected to concur with theses exceptional event write-ups.

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

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

South Central Region

There was one exceedance in this region in 2014. The maximum concentration found at the Pueblo – Fountain School was 174 $\mu g/m^3$. The exceedance has been flagged in AQS as an exceptional event, though no further action on this exceptional event is required at this time.

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

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

Central Mountain Region

There were no PM_{10} exceedances in the Central Mountain region during 2014. The table below lists the maximum concentrations recorded at each of the sites.

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 – City Hall	55
08 051 0004	Crested Butte	116
08 051 0007	Mount Crested Butte	74
08 097 0006	Aspen – Library	38
08 107 0003	Steamboat Springs	84

Southwestern Region

There were no exceedances of the PM_{10} standard in 2014 for this area. The maximum concentration at Pagosa Springs was 55 $\mu g/m^3$, and the maximum concentration at Durango – River City Hall was 38 $\mu g/m^3$.

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

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

Western Slope Region

There were no PM_{10} exceedances in the Western Slope region in 2014. 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 a high volume sampler. 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 ($\mu g/m^3$)
08 029 0004	Delta	108
08 045 0005	Parachute	39
08 045 0007	Rifle – Henry Building	47
08 045 0018	Carbondale	46
08 077 0017*	Grand Junction – Powell	46
08 077 0019	Clifton	65
08 113 0004	Telluride	118

Planned Changes in PM_{10} Monitoring

The Clifton PM_{10} particulate monitoring site completed sampling requirements as of 02/28/2015 and there is the potential removal of one of the two high volume PM_{10} monitoring sites located in Alamosa There are no additional planned changes to the PM_{10} monitoring network for 2015. CDPHE will apply for waivers for the Alamosa – Adams State College, and Mt. Crested Butte particulate sites, as they no longer meet siting criteria due to large trees or buildings near the monitors.

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 16 FRM instruments at 14 sites, of the 14 sites 10 are collocated with a continuous instrument and two are collocated with another FRM; two sites (National Jewish Hospital, Boulder Marine St.) have continuous $PM_{2.5}$ but no FRM. Speciation samples are taken at 3 sites; all are collocated with an FRM.

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 98^{th} percentile value.

Sources of fine particulate matter in the atmosphere include all types of combustion activities (motor vehicle, power plants, wood burning, etc) and certain types of industrial activities. Oil and gas development may also contribute to elevated suspended particulate matter.

Denver Metro/Northern Front Range Region

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

There were no $PM_{2.5}$ exceedances in 2014 in the Larimer and Weld County area. The table below lists the 24-hour Design Value (98^{th} percentile averaged over 3 years) recorded at each of the sites in Larimer and Weld Counties as well as the Annual Design Values (annual mean averaged over 3 years). 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 due to a serious laboratory error that invalidated eight weeks of data from all sites within the Colorado network except Cortez in 2012, 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	24-Hour Design Value ($\mu g/m^3$)	Annual Design Value ($\mu g/m^3$)
08 069 0009	Fort Collins – CSU	21	6.9
08 123 0006	Greeley – Hospital	26	7.5
08 123 0008	Platteville	25	7.7

There were no exceedances of the $PM_{2.5}$ standard in the Denver Metro area in 2014. The table below lists the 24-hour and Annual Design Values recorded in 2014 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 these sites does not meet EPA statistical summary criteria because of insufficient data in 2012 (as described above), 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	24-Hour Design Value ($\mu g/m^3$)	Annual Design Value ($\mu g/m^3$)
08 001 0006	Commerce City	26	8.6
08 005 0005	Arapahoe Community College	22	6.5
08 013 0003	Longmont – Municipal	26	7.2
08 013 0012	Boulder Chamber of Commerce	17	6.1
08 031 0002	CAMP	21	7.7
08 031 0026	La Casa	27	7.4
08 035 0004	Chatfield Reservoir	17	5.8
08 035 0005	Castlewood Canyon State Park	10*	4.3*

* = Data set does not meet completeness criteria, site operational for less than 2 years

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 La Casa, and is well correlated with sites within the Platte Valley from Greeley and Platteville in the north to Chatfield in the south, and is thus 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 2014 in the Pikes Peak Region. The 24-Hour Design Value at the Colorado College site was 16 $\mu g/m^3$, and the Annual Design Value was 6.2 $\mu g/m^3$, though the average does not satisfy EPA statistical summary criteria because of insufficient data from 2012.

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 2014. The 24-Hour Design Value at the Pueblo – Fountain School was 15 $\mu g/m^3$ and the Annual Design Value was 6.3 $\mu g/m^3$ though the average does not satisfy summary criteria due to the incomplete data in 2012.

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

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

Southwest Region

There were no exceedances of the $PM_{2.5}$ standard in the Southwest region in 2014. The 24-Hour Design Value at Cortez was 11 $\mu g/m^3$, and the Annual Design Value was 5.7 $\mu g/m^3$.

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

08 083 0006 Cortez, 106 West North Street

The Cortez $PM_{2.5}$ sampling site is scheduled to be decommissioned at the end of June, 2015, leaving the Cortez monitoring station only sampling for O_3.

Western Slope Region

There were no $PM_{2.5}$ exceedances recorded in the Western Slope region. The 24-Hour Design Value at Powell 28 $\mu g/m^3$, and the Annual Design Value was 7.8 $\mu g/m^3$, though the average did not satisfy summary criteria due to incomplete data in 2012.

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

08 077 0017 Grand Junction – 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 GRIMM EDM 180 has received FEM designation for $PM_{2.5}$ from the EPA and is the only real-time continuous data that the division uses to compare to the NAAQS.

The Division also employs a variety of Federal Equivalent Method (FEM) continuous particulate monitors for forecasting and advising the public of air quality alerts. The TEOM 1400ab with 8500 FDMS, the TEOM 1405-DF, and the BAM-1020 are federally equivalent monitors; however frequent monitor problems and Division concerns regarding equivalency designation have forced the Division to consider these instruments not suitable 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 0013-3 NJH-E, 14th Avenue and Albion 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 – Henry Building, 144 3rd Street (not reported to AQS)
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: "Community 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." 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

The only planned change for the PM2.5 network that has not already taken place is the completion of sampling requirements for the Cortez monitoring station at the end of June, 2015. There are no other planned changes at this time.

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 Division's NCORE site and PM_{10} sampling for lead began. Because this is an NCore site, no waiver is required for using PM_{10} sampling in lieu of TSP sampling for lead concentrations. 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 2012 - 2014. 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 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..

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 2014. The maximum TSP value recorded by the Centennial TSP monitor was 83 $\mu g/m^3$. The maximum lead value ever recorded by the Centennial monitor was 0.12 $\mu g/m^3$. The maximum lead value at La Casa was 0.007 $\mu g/m^3$.

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

The Centennial Airport TSP/Lead site completed sampling requirements as of 12/31/2014.

IX. METEOROLOGICAL MEASUREMENTS

Meteorological measurements taken by the APCD consist of Wind Speed, Wind Direction, Temperature, and some sites are equipped with Relative 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 Alsup, 7101 Birch Street
08 001 3001 Welby, 3174 E. 78th Avenue
08 005 0002 Highland Reservoir, 8100 S. University Boulevard (Not currently operational)
08 005 0006 Aurora East, 36001 Quincy Avenue
08 031 0002 Denver-CAMP, 2105 Broadway
08 031 0026 La Casa, 4587 Navajo Street
08 031 0027 I-25, 913 Yuma Street
08 031 0028 I-25 Globeville, 4905 N. Acoma Street, (proposed)
08 035 0004 Chatfield State Park, 11500 N. Roxborough Park Road
08 041 0015 Highway 24, 690 W. Hwy. 24
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
08 099 0003 Lamar Port of Entry, 7100 US Hwy 50
08 123 0009 Greeley – Weld County Tower, 3101 35th Avenue

Planned Changes in Meteorological Monitoring

The Highland Reservoir site is temporarily closed due to construction activities in the area.

This monitoring site will potentially be put back into operation at the current location or be moved to a new location in the vicinity of the current location. There will be a new meteorological tower installed at the new Near-Road site, at I-25 Globeville site, and at the new Elk Springs site.

X. QUALITY ASSURANCE

Continuous Monitors

The Technical Services Program (TSP) 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 (QA) staff conducts independent accuracy audits on all of the instruments at least twice per year. The APCD Gaseous and Meteorology Monitoring (GMM) 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 these procedures is available in the APCD Quality Assurance Project Plan (QAPP) and the results are available from the APCD or through the national EPA AQS database.

Particulate Monitors

The audit checks performed on the particulate monitors consist of calibrated flow rate checks, as well as temperature and pressure sensor checks. The precision checks that are made on filter based particulate monitors consist of collocated samplers that operate side-by-side and collect a sample from both samplers once every sixth day. The precision checks for continuous particulate monitors consist of bi-weekly flow rate verification checks. EPA requires a minimum of 15% of the FRM network to be collocated. In 2014 Colorado maintained 15 FRM monitoring sites, four of which have collocated instruments (CAMP, Commerce City, La Casa, and Grand Junction). 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 Division's $PM_{2.5}$ sampler (between 1 – 4 m apart). 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 or in the APCD QAPP.

XI. SUMMARY OF NETWORK CHANGES

Over the past year, several network changes occurred, and during the next year several more changes are planned. This section summarizes the completed and planned changes below.

Completed Changes

The following changes to the CDPHE monitoring network occurred during 2014/2015.

- A meteorological tower was added to the Colorado Springs, Highway 24 site in April, 2014.
- Meteorological equipment was upgraded from Met One to RM Young at the ALSUP monitoring location in November, 2014.
- The Centennial Airport TSP/Lead site was closed as of December 31, 2014. See Appendix B.
- Particulate sampling at Castlewood Canyon was closed as of December 31, 2014. See Appendix B.
- Lay Peak Ozone and Meteorological Monitoring was closed as of December 31, 2014. See Appendix E.
- Clifton PM-10 site completed sampling requirements as of February 26, 2015. See Appendix B.
- The Aspen Library particulate site was relocated to the Yellow Brick Building and a GRIMM EDM 180 was added to the site in February, 2015.
- A collocated High-Volume sampler was added at the Longmont site in September, 2014.
- The La Casa TEOM's (PM_{10} and $PM_{2.5}$) samplers were replaced with a GRIMM EDM 180 continuous particulate monitor in February, 2015.
- A BAM continuous particulate monitor replaced the Thermo 1405df at the Rifle particulate monitoring site in March, 2015.
- A CAPS NO2 analyzer was added at La Casa in July, 2014.

Planned Changes

The following changes to CDPHE's monitoring network are planned for 2015.

- A second near-roadway NO_2 monitor, as well as particulate and meteorological monitors will be installed during 2015. See Appendix C.
- The Cortez $PM_{2.5}$ sampling site is scheduled to be decommissioned at the end of June, 2015, which would leave the Cortez monitoring station only sampling for O_3. See Appendix D.
- A new location for South Boulder Creek monitoring station will be investigated because the site no longer meets siting criteria due to the presence of large trees near the station that cannot be removed. A new location farther north yet still within or near the City of Boulder is desirable.
- A decision will be made for Highland Reservoir site as to continue sampling at existing location, move sampling location, or discontinue sampling permanently.
- Boulder CU/Athens TEOM site will be considered for removal.
- A recommendation from the Federal Land Manager's 2013 3-State Study Network Assessment is the relocation of the Lay Peak site 35 miles SW of its current location near the community of Elk Spring. Efforts are currently underway to relocate this site. The new site will be called Elk Springs. See Appendix E.
- An additional recommendation from the 3-State Study Network Assessment was the inclusion of new ozone monitor in or near the Paradox Basin. Planning for an ozone

site within the Paradox Basin is under way. This site will be installed if a suitable location is found.

- The Greely West Annex CO monitor will be relocated to the Greely County Tower monitoring site. See Appendix F.

XII. APPENDIX A, C, D, E REQUIRMENTS SUMMARY

This section summarizes the requirements of 40 CFR 58, Appendices A, C, D, and E, as they pertain to the CDPHE's ambient air monitoring network, as well as how these specific requirements are being met.

Appendix A of 40 CFR 58 covers the data quality assurance requirements for SLAMS, SPMs, and PSD monitors. The requirements state the need for, and frequency of zero, span, and precision processes on the analyzer. It also specifies the auditing requirements for each monitor type. Audits of each particulate analyzer are performed on a quarterly basis and most gaseous analyzers on a twice a year basis. These results are tracked in a database at the CDPHE, and are available upon request. A zero/span, or a zero/precision routine is run on each of the gaseous monitoring instruments in the CDPHE's network on a nightly basis and these results are kept "in-house" at the CDPHE, and are available on request. Manual quality control checks are performed on all gaseous instruments on a two week basis and the results of these quality control tests are uploaded to the AQS database.

Appendix C of 40 CFR 58 specifies the criteria pollutant monitoring methods (manual analyzers or automated analyzers) which must be used in SLAMS and NCore stations that are a subset of SLAMS. The monitor types and sampling frequencies are listed in Table 1, as well as in the station summaries found in Appendix A of this document.

Appendix D of 40 CFR 58 specifies the network design criteria for ambient air quality monitoring. It covers the monitoring objectives and spatial scales, the general monitoring requirements, the design criteria for NCore sites, pollutant specific design criteria for SLAMS sites, and the design criteria for Photochemical Assessment Monitoring Stations (PAMS). These requirements are addressed in the individual pollutant sections.

Appendix E of 40 CFR 58 contains the specific location criteria applicable to SLAMS, NCore, and PAMS ambient air quality monitoring probes, inlets, and optical paths after the general location has been selected based on the monitoring objectives and spatial scale of representation discussed in Appendix D of 40 CFR 58. Adherence to these specific siting criteria is necessary to ensure the uniform collection of compatible and comparable air quality data. To ensure that all sites in the network meet the appropriate criteria the CDPHE performs thorough site evaluations annually. These evaluations include measurements of the probe heights and locations, as well as residence time determinations for each gaseous analytical instrument. The results of these site evaluations are available upon request.

Appendix A - Monitoring Site Descriptions

Appendix A 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*	*App. A,C,D,E Reqs. Met?*
08 001 0006	Alsup Elementary School - Commerce City						X	X		X	YES
08 001 3001	Welby	X	X	X	X	X	X			X	NO - trees
08 003 0001	Alamosa – Adams State Coll.						X				NO - trees
08 003 0003	Alamosa – Municipal Bldg.						X				YES
08 005 0002	Highland Reservoir		X							X	NA / Monitoring Suspended
08 005 0005	Arapahoe Comm. Coll.							X			YES
08 005 0006	Aurora – East		X							X	NO - RT
08 007 0001	Pagosa Springs School						X				YES
08 013 0003	Longmont-Municipal Bldg.						X	X			YES
08 013 0011	South Boulder Creek		X								NO - trees
08 013 0012	Boulder Chamber of Commerce						X	X			NO - trees
08 013 1001	Boulder – CU - Athens							X			YES
08 029 0004	Delta Health Dept						X				YES
08 031 0002	Denver – CAMP	X	X	X	X	X	X	X		X	NO – tress RT(SO2)
08 031 0013	Denver - NJH-E							X			NO - trees
08 031 0016	DESCI										YES
08 031 0017	Denver Visitor Center						X				NO - trees
08 031 0026	La Casa	X	X	X	X	X	X	X	X	X	YES
08 031 0027	I-25 Near Road	X		X	X		X	X		X	YES
08 031 0028	I-25 Globeville			X	X		X	X		X	YES
08 035 0004	Chatfield State Park		X					X		X	NO - RT
08 041 0013	U. S. Air Force Academy		X								YES
08 041 0015	Colorado Springs Hwy 24	X				X				X	YES
08 041 0016	Manitou Springs		X								YES
08 041 0017	Colorado College						X	X			YES
08 043 0003	Cañon City – City Hall						X				YES
08 045 0005	Parachute – Elem. School						X			X	YES
08 045 0007	Rifle – Henry Bldg						X	X		X	YES
08 045 0012	Rifle – Health Dept		X								YES
08 045 0018	Carbondale						X				YES
08 051 0004	Crested Butte						X				YES
08 051 0007	Mt. Crested Butte - Realty						X				NO - Building

AQS #	*Site Name*	*CO*	*O_3*	*NO*	*NO_2/NOy*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*	*TSP/Pb*	*Met*	*App. A,C,D,E Reqs. Met?*
08 059 0002	Arvada									X	YES
08 059 0005	Welch		X							X	YES
08 059 0006	Rocky Flats - N		X							X	YES
08 059 0011	NREL		X								YES
08 059 0013	Aspen Park		X							X	NO - trees
08 067 0004	Durango-River City Hall						X				YES
08 069 0009	Fort Collins – CSU - Edison						X	X			NO - trees
08 069 0011	Fort Collins - West		X								YES
08 069 1004	Fort Collins - Mason	X	X							X	YES
08 077 0017	Grand Junction – Powell Bldg						X	X			YES
08 077 0018	Grand Junction - Pitkin	X								X	YES
08 077 0020	Palisade Water Treatment		X							X	YES
08 083 0006	Cortez – Health Dept		X					X			YES
08 097 0006	Aspen – Yellow Bldg						X	X			YES
08 099 0002	Lamar Municipal						X				YES
08 099 0003	Lamar Port of Entry									X	YES
08 101 0015	Pueblo - Fountain School						X	X			YES
08 107 0003	Steamboat Springs						X				YES
08 113 0004	Telluride						X				YES
08 123 0006	Greeley-Hospital						X	X			YES
08 123 0008	Platteville Middle School							X			YES
08 123 0009	Greeley – County Tower		X							X	YES
08 123 0010	Greeley – West Annex	X									YES

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 and continues today with an upgrade to the meteorological monitoring equipment which took place in 2014.

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 site's 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 particulate monitor began operation in June, while the high volume particulate monitor began operation in July.

Meteorological monitoring began in January of 1975.

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

The Alamosa – 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. Currently, the site is not operational due to further construction in the area, and is being considered for permanent shut down.

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 monitor 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. As such, the site completed sampling requirements as of 12/31/2014.

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.

Longmont's 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 "summer 1993 Denver O_3 Study." 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 Division's closest meteorological site (Rocky Flats – 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. A dome is erected each fall over the practice field and remains inflated until early spring when it is removed for 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 current 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. 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 low volume PM_{10}samplers, and a Lo-Vol $PM_{2.5}$ on the shelter roof. The Lo-vol PM_{10} concentrations are very useful as they can be used in conjunction 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. In early 2015, the TEOM/FDMS was replaced with a GRIMM EDM 180 continuous monitor, which concurrently measures both PM_{10} and $PM_{2.5}$.

PM_{10}/lead (Pb-TSP) monitoring began in January 2013. Lead sampling at La Casa is accomplished via PM_{10} filter sample collection.

I-25, 913 Yuma Street (08 031 0027):

The I-25 site is an EPA required near roadway NO_2 monitoring site. It was established in June 2013. Trace level CO, particulates, and meteorological parameters are also monitored here.

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.

Castlewood Canyon, Castlewood Canyon State Park (08 035 0005):

The Castlewood Canyon site was added to the $PM_{2.5}$ network in late 2013 as a replacement background concentration site for particulate monitoring. This site replaced the previous background site located in Elbert County. There are multiple sites in Colorado better situated to satisfy the $PM_{2.5}$ background requirement, so this monitoring location was deemed redundant and completed sampling requirements as of 12/31/2014. The APCD will designate the White River IMPROVE site as the representative background $PM_{2.5}$ monitoring location for the state of Colorado (.

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 Air Force 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 APCD 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 Highway 24 monitoring site. 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. This site now includes two population oriented neighborhood scale special project PM_{10} monitoring sites: one time-integrated high volume sampler on a 1 in 3 day sample schedule and one that is continuous. The continuous particulate monitor measures both $PM_{2.5}$ and PM_{10}. Additionally, this site includes a meteorological tower.

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 approximately 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 located approximately 30 miles north of Gunnison, Colorado. 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}.

This is a population oriented neighborhood scale SLAMS monitor on a 1 in 3 day sample schedule with a collocated sampler on a 1 in 6 day sample schedule.

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 a crustal material as the most 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 foothill's 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 former 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 APCD's 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 – 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.

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 site is equipped with a high volume PM10 sampler and is a population oriented neighborhood scale SLAMS monitor on a 1 in 3 day sample schedule.

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 ozone 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.

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 was located in the town of Clifton which is a southeastern suburb of Grand Junction. The monitor was in a low usage parking lot operated by the sanitation district. It was located one half mile north of the Colorado River. The Clifton PM_{10} site was established in October 2007 due to citizen's complaints of dust from nearby industry trucking operations, which have since been mitigated by paving a significant portion of the property. The site was established at the request of the Mesa County Health Department.

The population oriented neighborhood scale SLAMS monitor operated on a 1 in 3 day sample schedule. This site completed sampling requirements as of 02/28/2015 due to low measured PM10 concentrations, which correlated well with the Grand Junctions Powell sampling location.

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. This site completed sampling requirements and all sampling equipment was taken offline as of 12/31/2014.

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. There is currently a high volume time-integrated PM_{10} and continuous $PM_{10}/PM_{2.5}$ monitor operated at this site.

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- Clifton, Castlewood Canyon and Centennial Airport Site Modifications

COLORADO
Department of Public Health & Environment

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

March 9, 2015

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 Environment's (CDPHE) Air Pollution Control Division (APCD) is submitting three network site modification request forms for the proposed decommissioning of the Clifton PM10 site, the Castlewood Canyon $PM_{2.5}$ site and the Centennial Airport TSP-Pb site. A 30-day public notice was posted to our website on January 10, 2015 and closed on February 11, 2015. No public comments were received. Site names, AQS ID and proposed actions are as follows:

- Clifton AQS ID: 08-077-0019
  - Removal - PM_{10} FRM instrument
- Castlewood Canyon AQS ID: 08-035-0005
  - Removal - $PM_{2.5}$ FRM instrument
- Centennial Airport AQS ID: 08-005-0007
  - Removal - TSP-Pb sampler

Clifton- AQS ID: 08-077-0019
The Clifton PM_{10} site was established in October 2007 due to citizen complaints of dust from nearby industry trucking operations, which have mostly been mitigated by paving significant portions of the property. The proposed last sample to be collected from the Castlewood Canyon $PM_{2.5}$ sampler is planned for February 26, 2015, with the instrument, stand, and platform removed as weather and time permits. The APCD plans to shut down the Clifton monitor for the following reasons:

- The site has measured low concentrations of PM_{10} that correlate well with the Grand Junction Powell site.
- The nearby industry trucking operations have been mitigated by paving significant portions of the property.

Castlewood Canyon - AQS ID: 08-035-0005
Castlewood Canyon was established in late 2013 to serve as APCD's $PM_{2.5}$ background site. The proposed last sample to be collected from the Castlewood Canyon $PM_{2.5}$ sampler is planned for

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

December 31, 2014, with the instrument, stand, and platform removed as weather and time permits. The APCD plans to shut down the Castlewood Canyon monitor for the following reasons:

- The instrument at the site, a R&P 2000 FRM is the only one in APCD's network and as such violates EPA QA precision requirement pertaining to collocation requirements, specifically :
  "Each EPA designated Federal reference method (FRM) or Federal equivalent method (FEM) within a primary quality assurance organization must:
  (a) Have 15 percent of the monitors collocated (values of 0.5 and greater round up); and
  (b) Have at least 1 collocated monitor (if the total number of monitors is less than 3). The first collocated monitor must be a designated FRM monitor..." (40 CFR Part 58, Appendix A, Section 3.2.5.1)
- There are multiple sites in Colorado that can satisfy the $PM_{2.5}$ background monitoring requirement including APCD's Chatfield State Park or IMPROVE sites such as Rocky Mountain National Park, White River National Forest, Weminuche Wilderness Area, and Mount Zirkel Wilderness. Choosing any one of these would allow APCD to meet EPA's QA monitoring requirement.
- Additionally according to EPA guidance, "properly sited background stations should measure PM2.5 typical of the lowest ambient concentrations in a state or region." And, "background sites are intended to represent regional-scale $PM_{2.5}$ concentrations that may be a combination of contributions from several (Monitoring Planning Areas) MPAs and non-urban source areas, as well as natural emissions. These are usually located in pristine areas, such as National Parks and Wilderness areas, and possibly at elevations higher than MPAs, but still within the typical mixed layer of the atmosphere." Background monitoring sites should be located >100 km from large population centers, and >100 m from roads and wood burning. The Castlewood Canyon site is only 20 km from Parker and 25 km from Lone Tree, which are in the Denver metropolitan region. Downtown Denver is only 50 km from the site. To meet the CFR requirements to have monitoring background concentrations of $PM_{2.5}$, the APCD will designate the White River IMPROVE site as representative of background $PM_{2.5}$ concentrations in Colorado.

Centennial Airport - AQS ID: 08-005-0007
TSP Monitoring at Centennial Airport began in April of 2010 to comply with EPA's lead standard promulgated in October 2008. The rule, effective in January 2009, set the primary standard for lead in air as a rolling three month average evaluated over a three year period not to exceed 0.15 $\mu g/m^3$. The APCD proposes to collect the last sample at the site on December 31, 2014, with the instrument, stand, and platform removed as weather and time permits. The APCD plans to shut down the Centennial Airport monitor for the following reasons:

- Since monitoring for lead began at Centennial Airport, APCD has not recorded a single sample value in excess of 0.15 $\mu g/m^3$ (NAAQS rolling 3-month average), let alone any possible rolling three-month average of this threshold, APCD feels additional monitoring at the site will provide no additional information.
- The 2011 NEI shows emissions of 0.83 tons per year of lead from Centennial Airport which is less than the 1.0 tons per year requirement in CFR:
  "At a minimum, there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year based on either the most recent National Emission Inventory (http://www.epa.gov/ttn/chief/eiinformation.html) or other scientifically justifiable methods and data (such as improved emissions factors or site-specific data) taking into account logistics and the potential for population exposure." (40 CFR Part 58, Appendix D, Section 4.5)

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) 692-3235.

Sincerely,

Patrick R. McGraw
Particulate Monitoring Supervisor

cc: Gordon Pierce

Enclosures:
Attachment 1: Castlewood Canyon - Ambient Air Monitoring Network Modification Form
Attachment 2: Centennial Airport - Ambient Air Monitoring Network Modification Form
Attachment 3: Clifton- Ambient Air Monitoring Network Modification Form

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Attachment 1
Castlewood Canyon - Ambient Air Monitoring Network Modification Form

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

DATE: 12/03/2014	CITY: Franktown	STATE: CO
AQS SITE ID: 08-035-0005	SITE NAME: Castlewood Canyon	

PROPOSED MODIFICATION/REASON WHY:
Proposed closure of PM2.5 monitoring site. Established in 2013, fails to meet EPA QA criteria regarding monitoring method precision. Alternative sites within Colorado can serve as the PM2.5 "background monitoring" location.

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	
PM2.5	SLAMS				X	R&P2000

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: Removal after January 1, 2015

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM'S): Lat = 39.33294 Long = -104.74509

SITE ELEVATION (M. MSL): 6122 Feet	PROBE HEIGHT (M. AGL): 2 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	ESE	10	ENE	9	

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
941 Meters	US Hwy 86	South			Highway	

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: Patrick R. McGraw Signature: Patrick R. McGraw

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

Attachment 2

Centennial Airport - Ambient Air Monitoring Network Modification Form

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

DATE: 12/03/2014	CITY: Englewood	STATE: CO
AQS SITE ID: 08-005-0007	SITE NAME: Centennial Airport	

PROPOSED MODIFICATION/REASON WHY: Proposed closure of TSP monitoring site. NEI Pb limits below threshold specified for EPA monitoring. Additionally, more than three years of monitoring has demonstrated compliance with Pb NAAQS

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	
TSP	SLAMS	x	x			Hi Vol TSP RFP-1171-001

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: On / After December 31, 2014

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM'S): Lat = 39.572313 Long = -104.848868

SITE ELEVATION (M. MSL): 5839 ft				PROBE HEIGHT (M. AGL): 1.2m	
DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS
n/a					

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

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

DISTANCE TO INTERSECTIONS (M): n/a			DISTANCE FROM SUPPORTING STRUCTURES (M): n/a			
DISTANCE TO EDGE OF NEAREST ROADWAY	NAME OF ROADWAY	DIRECTION	DAILY TRAFFIC ESTIMATES	YEAR OF TRAFFIC ESTIMATES	TYPE OF ROADWAY	COMMENTS

DISTANCE TO NEAREST POINT SOURCES (MILES)	DIRECTION TO POINT SOURCES	DISTANCE TO NEAREST AREA SOURCES (MILES)	DIRECTION TO AREA SOURCES	COMMENTS
		Within boundary of Centennial Airport	0 - 360	

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

Printed Name: Patrick R. McGraw Signature: Patrick R. McGraw

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

Attachment 3
Clifton - Ambient Air Monitoring Network Modification Form

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

DATE: 3/03/2015	CITY: Grand Junction	STATE: CO
AQS SITE ID: 08-077-0019	SITE NAME: Clifton	

PROPOSED MODIFICATION/REASON WHY: Proposed closure. PM10 monitoring is no longer needed as the original purpose was satisfied with new dust controls in the area, and PM10 concentrations are redundant with the Powell 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	
PM10	SLAMS			X		2 Sierra 1200's

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: Removal after February 26, 2015

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM'S): Lat = 39.062514 Long = -108.457382

SITE ELEVATION (M. MSL): 1,413 m (4,636 Ft)				PROBE HEIGHT (M. AGL): 3.7m	
DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS
29.8 m	North	n/a			

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

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
18.5 m	D Road	North	< 2,000	2014	Local	Est. only
178.6 m	U.S. Hwy 141	West	16,300	2006	Major Highway	CDOT 2006

DISTANCE TO NEAREST POINT SOURCES (MILES)	DIRECTION TO POINT SOURCES	DISTANCE TO NEAREST AREA SOURCES (MILES)	DIRECTION TO AREA SOURCES	COMMENTS
Not Applicable.		On site disturbed land and gravel pit 855 m to South 13.76 TPY PM10 in 2011		Surrounded by Agricultural land 225 degrees

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

Printed Name: Patrick R. McGraw Signature: Patrick R. McGraw

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

Appendix C- Near Roadway Site #2 Proposed Location/Installation Documentation

COLORADO
Department of Public Health & Environment

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

10/27/2014

Joseph Cordts – ERA Manager
Denver Public Works and Engineering
Regulatory & Analytics
City and County of Denver

Feasibility of Application for Major Encumbrance Permit – Near Roadway Air Monitoring Site #2

Mr. Joseph Cordts:

The Air Pollution Control Division (APCD), located within the Colorado Department of Public Health and Environment (CDPHE), is tasked by the Environmental Protection Agency (EPA) under a Performance Partnership Agreement to monitor outdoor air quality and use that data to determine compliance with existing National Ambient Air Quality Standards (NAAQS). In February of 2010, EPA promulgated new minimum monitoring requirements for the nitrogen dioxide (NO_2) monitoring network in support of a newly revised 1-hour NO_2 NAAQS (75 FR 6474). In the new monitoring requirements, state and local air monitoring agencies are required to install near-road NO_2 monitoring stations at locations where peak hourly NO_2 concentrations are expected to occur within the near-road environment in larger urban areas. The Denver-metro area is required to install two near-road NO_2 monitoring sites. In June 2013, the APCD installed Denver's first near-road NO_2 monitoring station on the east side of I-25 near the 8th Avenue. on-ramp, on the strip of land between I-25 and Yuma Street. The address for this site is 971 Yuma Street, Denver, 80204. This site was permitted through the Colorado Department of Transportation's (CDOT) Special Use Permit process. The APCD is now looking for a site to locate Denver's second near-road NO_2 monitoring station for a period of at least 10 years.

State air agencies are required to consider traffic volumes, fleet mix, roadway design, traffic congestion patterns, local terrain or topography, and meteorology in determining where a required near-road NO_2 monitor should be placed. Annual average daily traffic (AADT) counts and "fleet equivalent" calculations (where heavy duty vehicles are assumed to have 10 times the emissions of a light duty vehicle) from CDOT traffic count data were used to develop a ranked list of candidate sites. For physical characteristics, the location needs to be suitable for placing a shelter near the road and needs to have good exposure for meteorology. The roadway design and roadside structures also play a factor. In general, a roadway design that has the site at-grade or where the road is slightly elevated with sloping walls is optimal. Depressed roadways or roadways on bridges, and noise barriers reduce measurement effectiveness. The surrounding terrain should be relatively flat.

Base upon the above considerations, the APCD has identified a location for a second near-road NO_2 site along the I-25 corridor that meets EPA criteria, and is within the City and County of Denver Public Right of Way (ROW). This ROW must be utilized in order to meet all the siting criteria required by EPA for near-roadway NO_2 monitoring. We are requesting the City and County of Denver's consideration in determining the feasibility, and the identification of logistical hurdles that need to be attained, for the development and permitting of an air quality site at this location.

The area of interest is located on the strip of land between northbound I-25 and Acoma Street, just north of the I-70 interchange, near the terminus of the northbound on-ramp from eastbound and westbound I-70, at approximately 49th Avenue (Figure 1). The area of interest along this strip of land is at its southern extent, approximately 60 ft. north of the Acoma Street and 49th Avenue intersection. Conversations with CDOT have indicated that this location is in the City and County of Denver's Public ROW, just outside the Valley Highway Dedication in which CDOT maintains land usage authority.

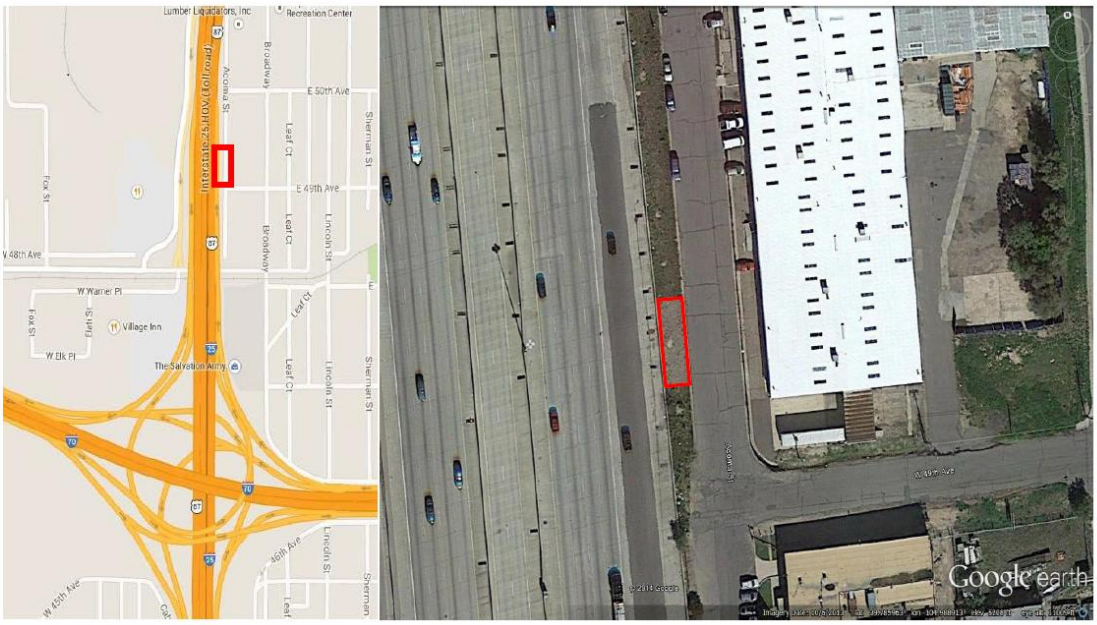


Figure 1. Area of Interest (left) and Detail Map of Area (right)

The red rectangles in Figure 1 roughly identify the most desirable location for a near-road air quality monitoring shelter. Ideally, the shelter would be located within 15 meters from the closest thru lane of I-25 traffic which is achievable at this location. This area is protected by concrete barriers which is a requisite for maintenance personnel and site infrastructure safety. The ground is relatively level and is covered by grasses and low growth vegetation. Figure 2 shows four pictures taken of the site. The top two photos are taken from the north end of the site looking south, and the bottom two photos are taken from the south end of the site looking north.

Figure 2. Looking South (top), and Looking North (bottom)

The site location will support an 8' x 20' skid mounted air quality monitoring shelter and one 10-meter meteorological tower that will be attached to the shelter. This shelter will be placed within 15 meters of the outside edge of the nearest lane of thru traffic. Ideally, the shelter will rest upon, and be anchored to, a 6" concrete slab that extends 2 to 4 feet beyond the footprint of the shelter and will be surrounded by a security fence. The shelter will be temperature controlled, require at least 100 amp electrical service, and have access to wireless communications. The shelter will be uninhabited and will not require gas, water or sewer hookups. Maintenance of the meteorological tower will be accomplished by rotating the tower down through a gate in the security fence into the grassy area to either the north or the south of the shelter. Figure 3 shows a model sketch of the station with approximate dimensions. This site will be configured similarly to Denver's first near-roadway site (Figure 4).

This site will be installed, operated and maintained entirely by the Air Pollution Control Division and will require 24 hr/day, 365 day/year access. Typical air quality monitoring shelters require weekly or 2x weekly visits to ensure the security of the shelter and equipment operability. Additional visits will also be made quarterly (once every three months) to perform instrument calibrations and audits and as needed to make repairs. Otherwise, the shelter will operate unattended. Data from this site will be polled hourly and made public on the Department's website at http://www.colorado.gov/airquality/report.aspx.

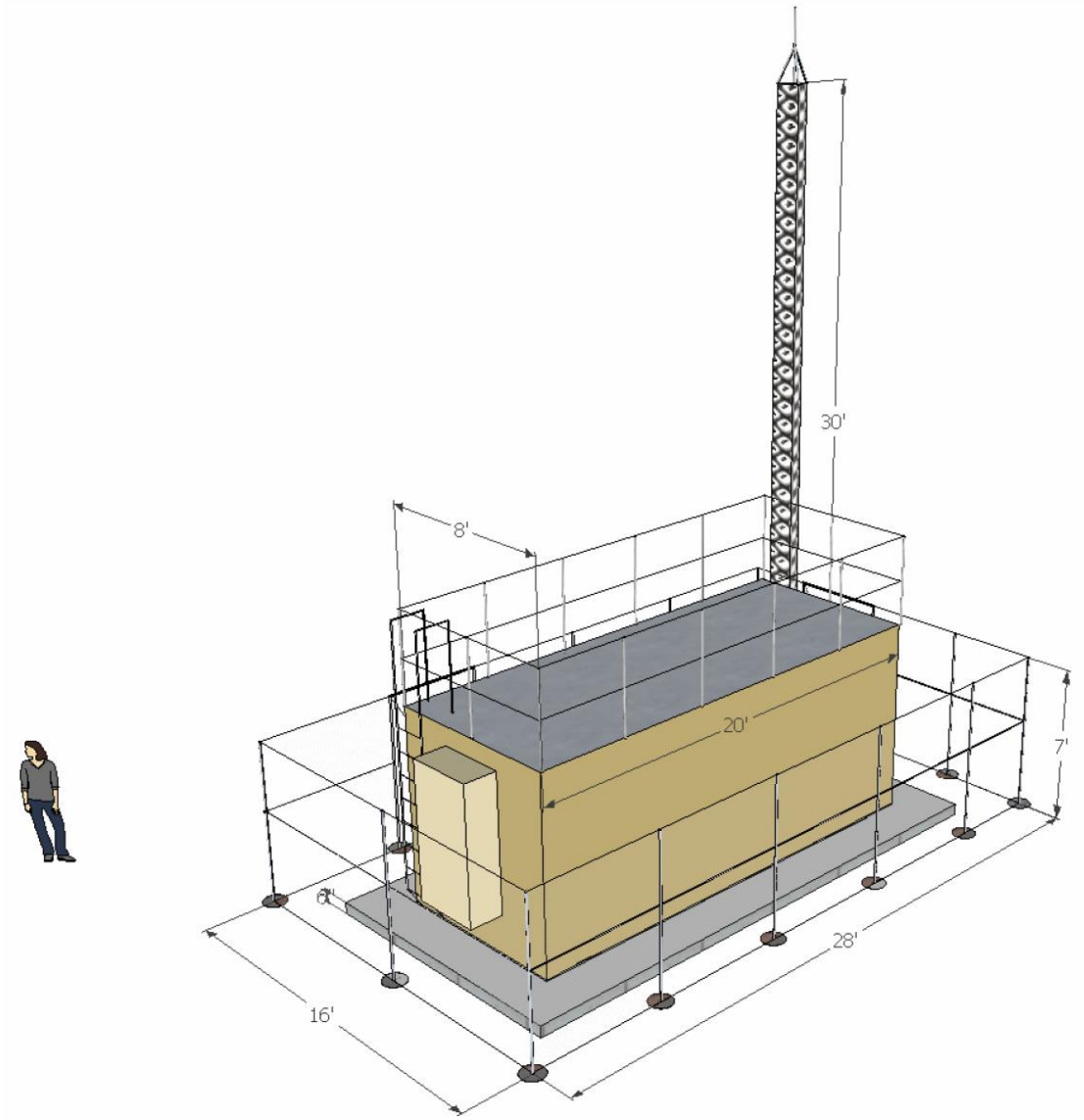


Figure 3. Air quality monitoring shelter - model view

Figure 4. Pictures of Existing Denver Near-Road Monitoring Site (971 Yuma Street)

Listed below are more specifics about the proposed site and operational logistics.

- Shelter

  The air monitoring shelter will be a prefabricated skid mounted portable 8' x 20' (max) shelter (Figure 4). The shelter will meet all building and electrical code requirements and have a Colorado Division of Housing Certification Insignia. The shelter will require 100A line power to operate analytical equipment and the building's HVAC system. The shelter will be uninhabited and will not require gas, water or sewer hookups. The installation of a 10 meter meteorological tower requires vertical and horizontal clearances from overhead power and phone lines. This area of interest contains no overhead lines to inhibit the operations of a meteorological tower. The closest overhead power line is 120 ft to the southeast.

  The proposed site location (Figure 1) is a strip of land that is 18' wide. The concrete slab will have a width of 16 ft to accommodate the shelter (8' wide) plus a 4' egress easement on both sides of the shelter. A security fence will surround the concrete slab. This will allow for a 1' buffer between the fence and Acoma Street, and the fence and the concrete barrier adjacent to I-25. The width of the concrete slab can be reduced to allow for a greater buffer area around the site.

- Utilities and Locates

  An initial round of utility locates have been performed and documented. Figure 5 is a Google Earth photo showing nearby utilities in relation to the proposed shelter location. Figure 6 and Figure 7 are deliverables from Denver Water Department and from Metro Wastewater Reclamation District. All other utilities reported no infrastructure in the immediate area.

  Access to line power can be attained from a power pole and transformer located across the street on the northeast corner of the Acoma Street and 49th Avenue intersection. An existing secondary power line runs from this transformer underground, under Acoma Street to a junction box near the site location. Metering of this power appears to be done downstream, so access to this power

from the junction box may be a possibility. If access to power through the nearby electrical junction box is not possible, then power will be brought to the site underground from the above mentioned power pole and transformer.

- Safety & Security
  A concrete barrier exists between the area of interest and I-25. Because of the sites close proximity to I-25, this barrier is required to ensure safety to maintenance staff. A security fence will be installed surrounding the shelter to help prevent vandalism to site infrastructure.

- Access
  Access to this location will be attained from Acoma Street and will utilize on-street parking for maintenance vehicles. Recent visits to the site during business hours have shown that on-street parking from surrounding business at the proposed site location has been minimal, and the impact from weekly site visits by APCD maintenance staff is expected to be minimal.

- Communications
  The site will utilize an upgradeable high-speed wireless cellular router for primary and backup broadband network connectivity on the standard 3G/4G cellular networks. Site data acquisition systems will be polled hourly (at a minimum) to acquire ambient concentration and diagnostic data.

- Other
  Other concerns include future development plans for the area and the attainment of environmental clearances.

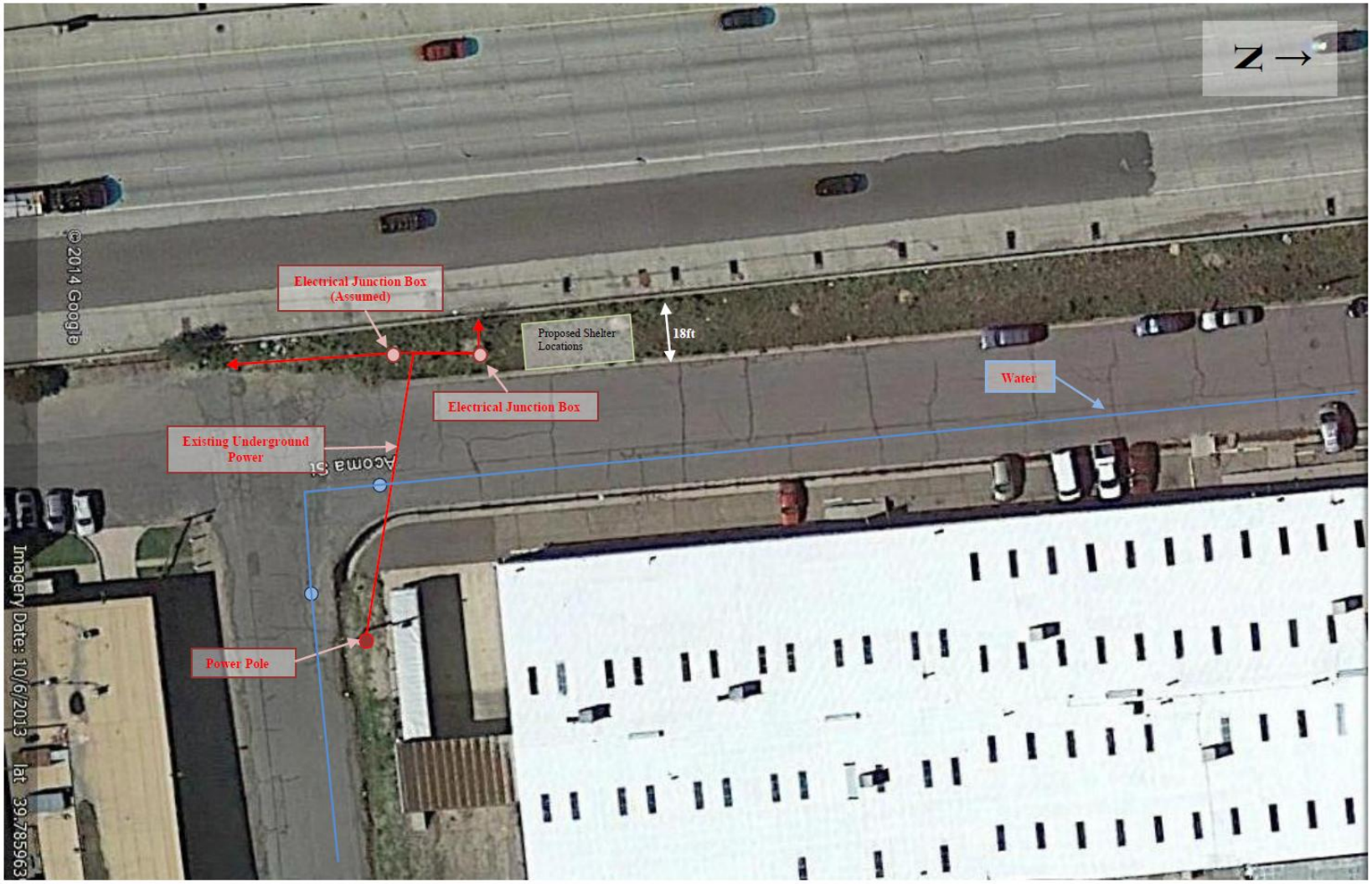


Figure 5. Utility Locate Map

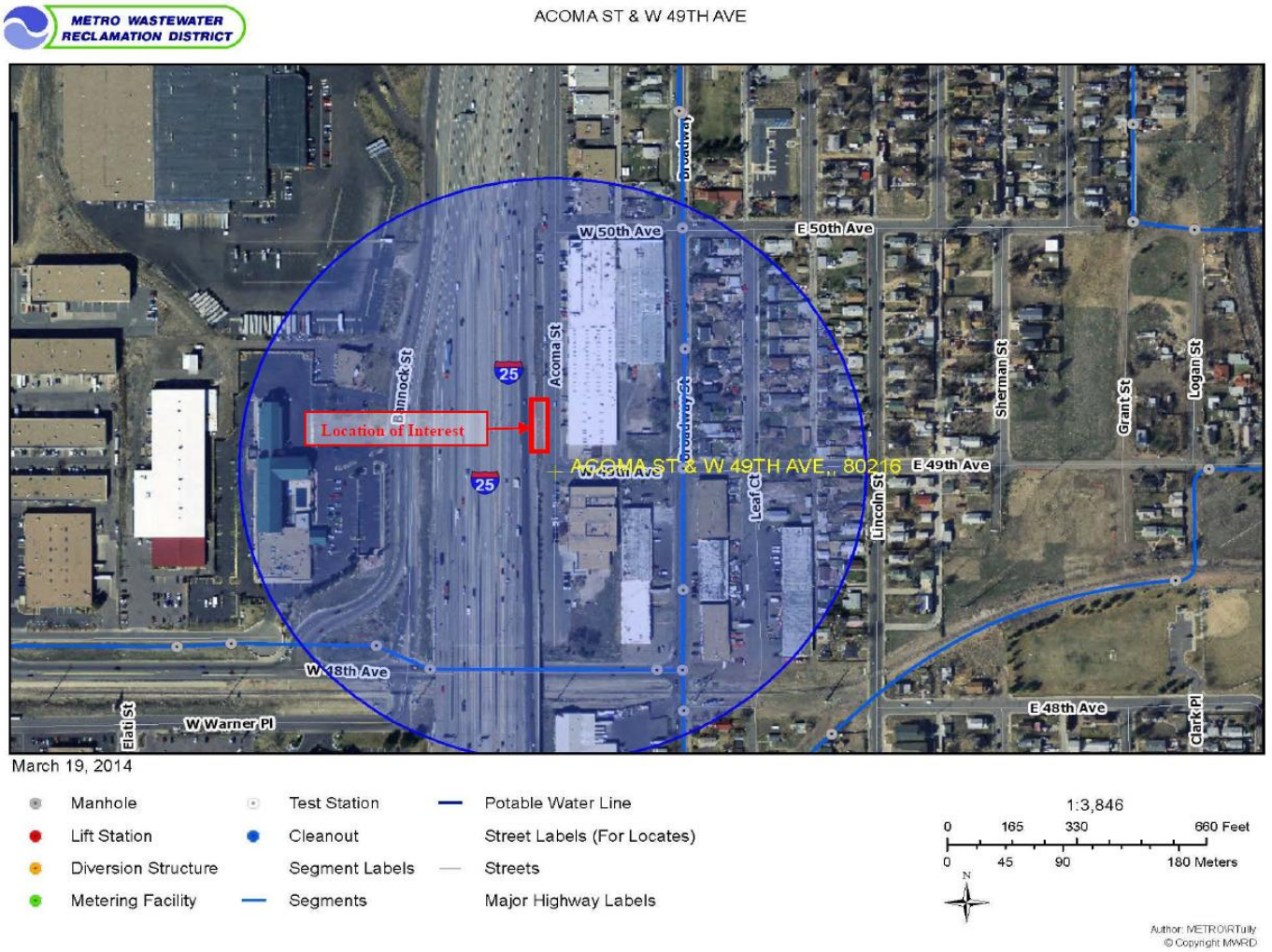


Figure 6. Metro Wastewater Reclamation District Utilities Map

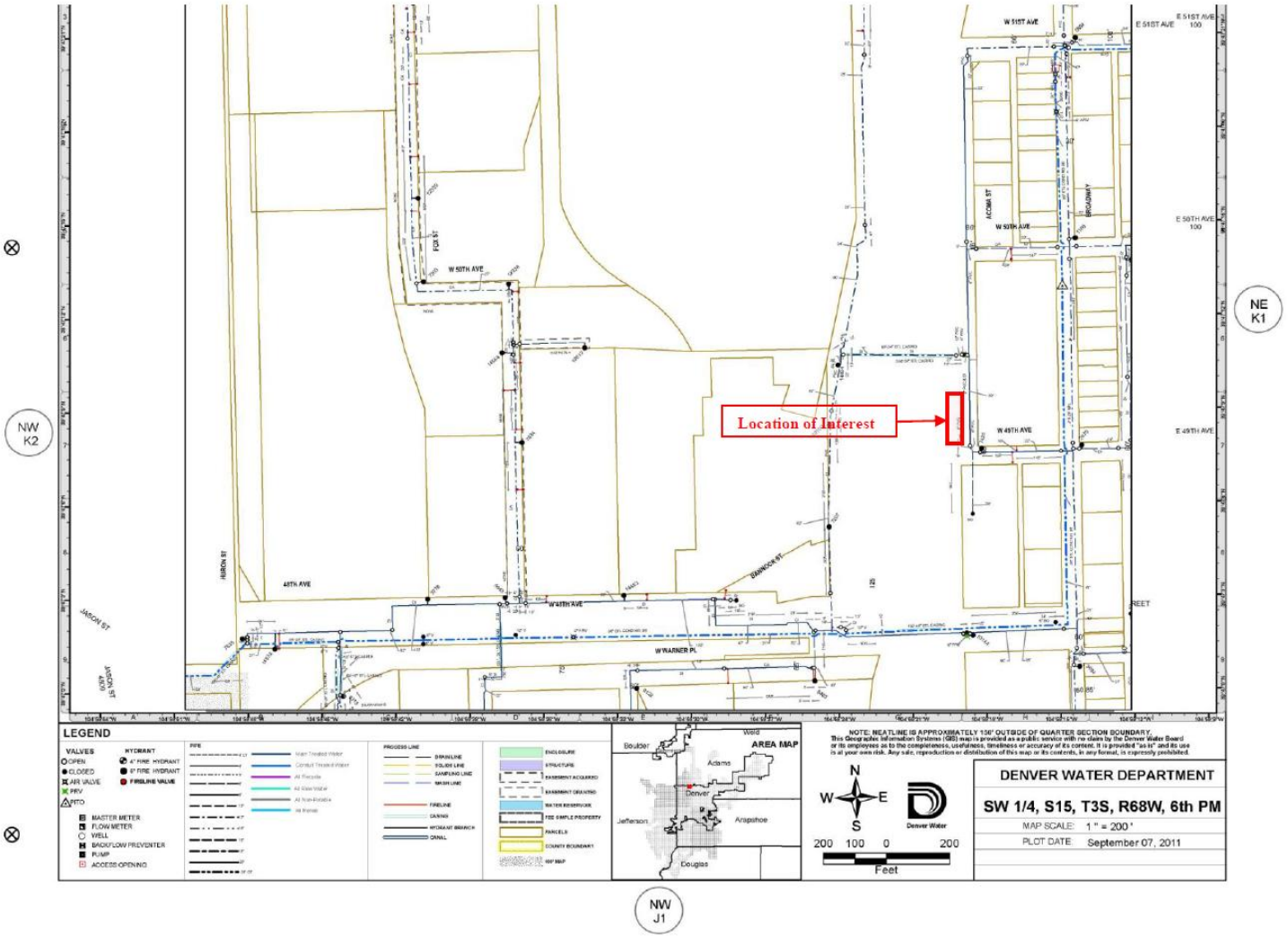
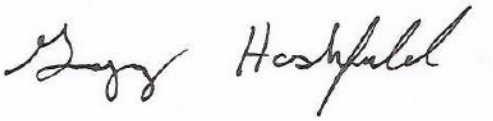


Figure 7. Denver Water Department Utilities Map

The APCD has been working with the Denver Department of Environmental Health's Environmental Quality Division to identify and install this air quality monitoring site. The State of Colorado and the City and County of Denver have a mutual interest in enhancing air quality monitoring in the greater Denver Metro area in an effort to monitor and protect public health. Attached to this document is a concurrence letter from the Denver Department of Environmental Health supporting the installation of a near-roadway air quality monitoring site at the proposed location. The APCD requests the City and County of Denver's assistance in determining the feasibility and permitting of this site location. We welcome your consideration of our request and look forward to talking with you in the future. I thank you for your time and I am available to answer questions you may have.

Regards,



Gregory Harshfield
Colorado Department of Public Health and Environment
Air Pollution Control Division
Gaseous and Meteorological Monitoring Supervisor
APCD-TS-B1
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

303-692-3232
gregory.harshfield@state.co.us

DENVER
THE MILE HIGH CITY

Denver Environmental Health Department
Division of Environmental Quality

200 W. 14th Avenue, Suite 310
Denver, CO 80204-2732
PHONE: 720-865-5452
FAX: 720-865-5534
www.denvergov.org/DEQ

Memorandum

DATE: October 24, 2014

TO: Greg Harshfield, Technical Services Program

FROM: Gregg Thomas, Acting Director, Environmental Quality Division
Denver Department of Environmental Health

RE: I-25 near-road monitoring location

I wanted to provide the Department of Environmental Health's concurrence on the proposed location for the second NO2 near-road monitor.

We understand the location to be about 60 feet north of 49th Ave just west of Acoma St. DEH believes this location will serve its intended purpose, benefit the Globeville community, and minimize construction costs so as to allow for as robust a monitoring suite as possible.

We appreciate the Division's willingness to be inclusive throughout the entire process and look forward to the project's completion.

Thank you.

Gregg W. Thomas, Acting Division Director

311 for City Services
Denver gets it done!

Attachment 1. Denver Environmental Health Department Concurrence Letter

Appendix D – Cortez $PM_{2.5}$ Site Modification

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: 4/15/2015	CITY: Cortez	STATE: CO
AQS SITE ID: 08-083-0006	SITE NAME: Cortez - Montezuma County Health Dept.	

PROPOSED MODIFICATION/REASON WHY: Original purpose was to determine if PM2.5 concentrations may be increasing due to increases in oil and gas exploration in the area has been met. PM2.5 concentrations have remained very low in Cortez.

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
	88101 PM2.5	MAX CONC	SOURCE IMPACT	POPULATION EXPOSURE	BACKGROUND	
	SLAMS			X		R&P 2000 FRM

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: On / Propose to remove PM2.5 monitor after 6/30/2015

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM'S): UTM = Zone 12, 713714E, 4136427 N

SITE ELEVATION (M. MSL): 1890 m				PROBE HEIGHT (M. AGL): 5 m	
DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS
11.4 m	NNW	n/a			

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

DISTANCE TO FLUES/INCINERATORS (M): n/a

DISTANCE TO INTERSECTIONS (M):			DISTANCE FROM SUPPORTING STRUCTURES (M):			
DISTANCE TO EDGE OF NEAREST ROADWAY	NAME OF ROADWAY	DIRECTION	DAILY TRAFFIC ESTIMATES	YEAR OF TRAFFIC ESTIMATES	TYPE OF ROADWAY	COMMENTS
27 m	North Street	South	< 2,000	estimate 2014	6 local	estimate only
45 m	N. Chestnut Avenue	East	< 2,000	estimate 2014	6 local	estimate only

DISTANCE TO NEAREST POINT SOURCES (MILES)	DIRECTION TO POINT SOURCES	DISTANCE TO NEAREST AREA SOURCES (MILES)	DIRECTION TO AREA SOURCES	COMMENTS
North	1.7 km			0.75 TPY

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

Printed Name: Patrick R. McGraw Signature: Patrick R. McGraw

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

Appendix E – Lay Peak / Elk Springs Network Modification

COLORADO
Department of Public Health & Environment

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

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

June 30, 2015

Dear Mr. Payton,

As requested, the Colorado Department of Public Health and Environment's (CDPHE) Air Pollution Control Division (APCD) is submitting two network site modification request forms for the decommissioning of the Lay Peak site, and the commissioning of Elk Springs site. Sites common name, AQS ID and proposed actions are as follows:

Lay Peak (Moffat County)
AQS ID: 08-081-0002
Address: 17820 CR 17, Craig, CO
Removal - Ozone Special Purpose Monitor
Removal - Meteorological Special Purpose Monitors

Elk Springs (Moffat County)
AQS ID: 08-081-0003
Address: 33902 US Hwy 40, Craig, CO
Addition - Ozone Special Purpose Monitor
Addition - Meteorological Special Purpose Monitors

The APCD is including two network modification forms for the relocation of the special purpose Lay Peak site 35 miles west to a newly proposed site called "Elk Springs". The new Elk Springs site will be located at lat: 40.329252, lon: -108.494266. The Lay Peak site was originally installed, in 2011, in support of the state and federal agencies' Three-State Air Quality Study (3SAQS) Pilot Project. Upon completion of the pilot study in 2013, agencies involved in the 3SAQS performed a network assessment to optimize monitoring resources for the 2014 - 2017 main study period. From this network assessment study it was determined that the Lay Peak site had achieved its monitoring objectives and that it could be relocated to a more underserved area. In response to this finding, the Elk Springs site was identified as a suitable relocation option for the Lay Peak site. The APCD is actively pursuing development of the Elk Springs site.

This letter is being included as an attachment to the 2015 Network Plan which has been made available for a 30 day public comment period prior to submittal to the Environmental Protection Agency (EPA). 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,

Gregg Hochfeld

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Gregory Harshfield
Continuous Monitoring and Data Systems Support Supervisor

cc: Gordon Pierce
Enclosures:
Attachment 1: Lay Peak (closure) - Ambient Air Monitoring Network Modification Form
Attachment 2: Elk Springs (open) - Ambient Air Monitoring Network Modification Form

Attachment 1

Lay Peak (closure) - Ambient Air Monitoring Network Modification Form

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: June 30, 2015	CITY: None / Rural Area 10 Miles East of Maybell	STATE: CO
AQS SITE ID: 080810002	SITE NAME: Lay Peak	

PROPOSED MODIFICATION/REASON WHY: The APCD is closing the Lay Peak air monitoring site and relocating it 34 miles WSW of its current location. This special purpose monitoring site is being relocated based upon recommendation from the Three State Study Network Monitoring Committee. This recommendation was made based upon findings from the Three States Study's 2013 Network Assessment. The new location will be located approximately 3miles west of Elk Springs along highway US40 (lat 40.329253, long -108.494240). This new location is within the Uinta Basin and will be called Elk Springs.

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: Site Closed on 12/31/14

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		DIRECTION TO	DISTANCE TO NEAREST AREA		DIRECTION TO	COMMENTS

POINT 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: Gregory Harshfield Signature: Gregory Harshfield

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	PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
BACKUP None	WIND SPEED/DIRECTION	Yes	10
EQUIPMENT MANUFACTURER/MODEL:	SOLAR RADIATION	Yes	2
	RELATIVE HUMIDITY	Yes	2
WILL THE DATA BE USED FOR MODELING? YES NO	PRESSURE	Yes	
IS SITE REQUIRED FOR SIP? YES NO	SIGMA THETA	Yes	10
UNRESTRICTED AIRFLOW? YES NO	PRECIPITATION	No	
DISTANCE TO TREE DRIPLINE (M): No trees in area.	TEMPERATURE	Yes	2 and 10
NEARBY TERRAIN: SMOOTH ROLLING ROUGH	OTHER (DESCRIBE)	Delta Temperature	

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

Rolling terrain with hills.

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

Attachment 2

Elk Springs (open) - Ambient Air Monitoring Network Modification Form

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: June 30, 2015	CITY: None / Rural Area	STATE: CO
AQS SITE ID: 08-081-TBD (0003?)	SITE NAME: Elk Springs	

PROPOSED MODIFICATION/REASON WHY: The APCD is proposing to relocate the Lay Peak air monitoring site 34 miles WSW of its current location. This special purpose monitoring site is being relocated based upon recommendation from the Three State Study Network Monitoring Committee. This recommendation was made based upon findings from the Three States Study's 2013-2014 Network Assessment. It was found that the Lay Peak monitoring site has achieved it monitoring objectives and that it could be relocated to a more underserved area. The new location will be located approximately 3miles west of Elk Springs along highway US Hwy 40 (lat 40.329253, long -108.494240). This new location is within the Uinta Basin and will be called Elk Springs.

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: Anticipated Start Date 8/1/15

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM 'S): Lat 40.329253 Long -108.494240 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
~ 60 Meters	US Highway 40	NORTH	~1100	2013	MAJOR ST OR HY	
		EAST				
		SOUTH				
		WEST				

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

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: Gregory Harshfield Signature: Greg Harshfield

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: Anticipated Start Date 8/1/15

DATA ACQUISITION SYSTEM:			
PRIMARY Run by Air Resource Specialists under state contract	PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
BACKUP None	WIND SPEED/DIRECTION	Yes	10
EQUIPMENT MANUFACTURER/MODEL:	SOLAR RADIATION	Yes	2
	RELATIVE HUMIDITY	Yes	2
WILL THE DATA BE USED FOR MODELING? YES NO	PRESSURE	Yes	
IS SITE REQUIRED FOR SIP? YES NO	SIGMA THETA	Yes	10
UNRESTRICTED AIRFLOW? YES NO	PRECIPITATION	No	
DISTANCE TO TREE DRIPLINE (M): No trees in area.	TEMPERATURE	Yes	2 and 10
NEARBY TERRAIN: SMOOTH ROLLING ROUGH	OTHER (DESCRIBE)	Delta Temperature	

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

Rolling terrain with hills.

COMMENTS: Site will be run by a contractor for the National Park Service. 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

Appendix F – Greely Annex / Weld County Tower Network Modifications

COLORADO
Department of Public Health & Environment

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

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

Date: 6/30/15

Dear Mr. Payton:

As requested, the Colorado Department of Public Health and Environment's (CDPHE) Air Pollution Control Division (APCD) is submitting two network site modification request forms for the proposed relocation of the carbon monoxide monitor from the Greeley Annex site (AQS ID: 08-123-0010) to the Weld County Tower site (AQS ID: 08-123-0009), effective 6/30/2015. This letter and its associated network modification forms were made available for a 30 day public comment period on the Air Pollution Control Division website in conjunction with APCD's 2015 Network Plan.

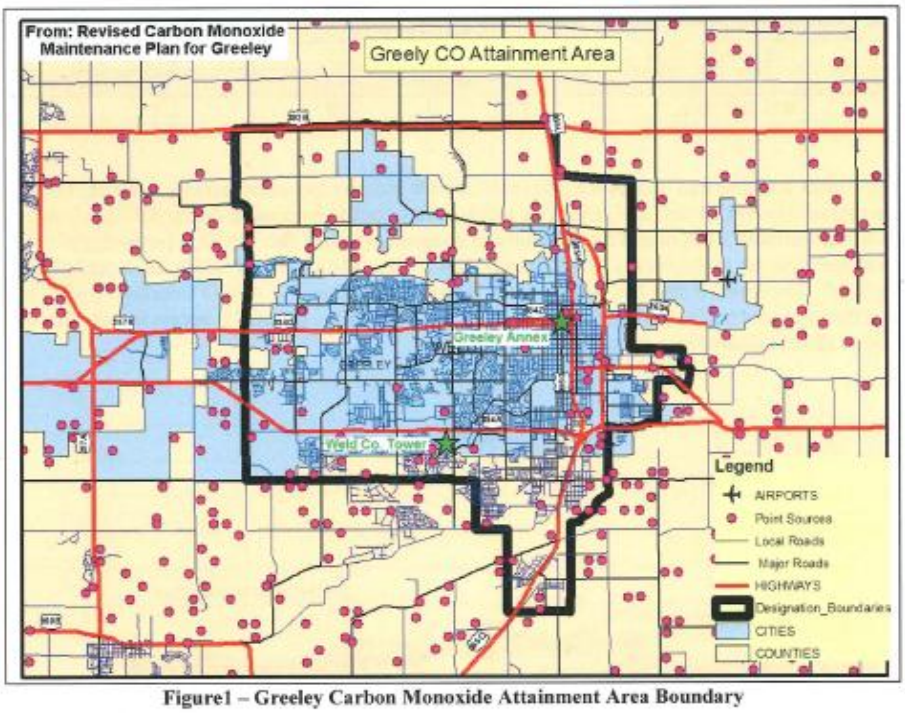


Figure1 – Greeley Carbon Monoxide Attainment Area Boundary

In 1977, the Greeley area was originally designated as nonattainment for carbon monoxide (CO) under provisions of the 1977 Clean Air Act (CAA). This designation was reaffirmed by the 1990 CAA, and Greeley was designated as a "not classified" CO area. "Not classified" areas are those areas that have historically been designated as nonattainment, but did not have violations of the CO NAAQS during the two years preceding the 1990 amendments to the CAA. The EPA first approved a CO redesignation request and maintenance plan for the Greeley area on March 10, 1999 (Federal Register Notice: 64 FR 11775). Figure 1 shows the Greeley carbon monoxide attainment area boundary and the location of the Greeley Annex and Weld County Tower sites. The Greeley Annex site is located at 905 10th Ave. and the Weld County Tower site is located at 3101 35th Ave., in Greeley; which are both within the Greeley Maintenance Plan attainment area and within the city boundary. In 2009, the Greeley Carbon Monoxide State Maintenance Plan was updated to show continued attainment of the National Ambient Air Quality Standards (NAAQS) for the second 10-year term, through 2019, as required by the CAA. In support of the 2009 Greeley Carbon Monoxide State Maintenance Plan update, the APCD committed to "operate an appropriate air quality monitoring network in accordance with 40 CFR Part 58 to verify the continued attainment of the CO NAAQS."

Table 1 - 2013 Northern Front Range Carbon Monoxide Values

Site Name	Location	CO 1-hour Avg. (ppm)		CO 8-hour Avg. (ppm)	
		1st Maximum	2nd Maximum	1st Maximum	2nd Maximum
Adams					
Welby	3174 E. 78th Ave.	2.9	2.4	2.1	2.1
Denver					
Denver-CAMP	2105 Broadway	5.8	5.7	4.4	2.5
LaCasa	4545 Navajo St.	3.9	3.3	2.6	2.2
Near Rd. I25*	971 W. Yuma St.	3.1	3.0	2.5	2.1
Larimer					
Fort Collins	708 S. Mason St	2.9	2.5	1.7	1.4
Weld					
Greeley	905 10th Ave.	3.3	3.0	1.7	1.7

The Greeley Annex building that houses the carbon monoxide monitor has been recently vacated. This has resulted in site access issues for APCD staff and requires a local agency staff to be present during all site visits. Given the uncertainty of the building's future and the difficulty in accessing the site, the APCD is proposing to relocate the carbon monoxide analyzer to the nearby Weld County Tower site. The proposed relocation is tentatively planned on June 30, 2015. The June 30 date has been selected because it is the end of APCD's contract period with the local agency that provides basic maintenance of the Greeley Annex site. Given the access issues with the site, this is an opportune time to discontinue monitoring.

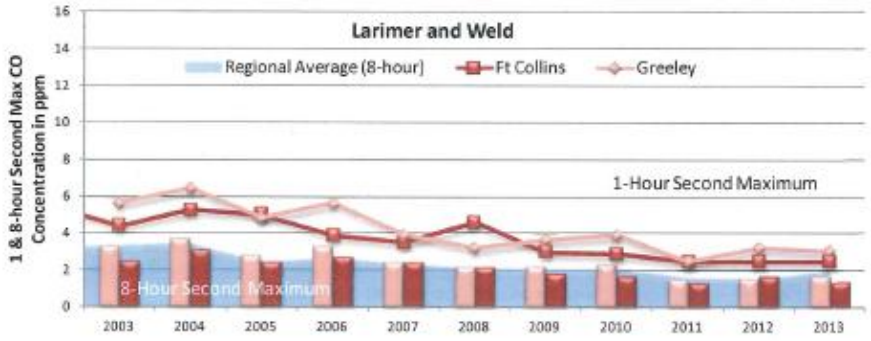


Figure2 - 1-hour and 8-hour 2nd Maximum Carbon Monoxide Averages for the Northern Front Range Counties

In the interim, beginning May 1, 2015, an additional CO analyzer has been installed at the Weld County Tower site to provide data for an inter-comparison study between the two sites. This inter-comparison study will continue until June 30, 2015, at which point the Greeley Annex site will be closed and the CO analyzer from the Greeley Annex site will be moved to the Weld County Tower site and the additional CO analyzer at the Weld County Tower site, which was installed for the inter-comparison study, will be removed. Data from this study will be made available to EPA upon their request. It is acknowledged that the new location is not expected to be a maximum concentration site. Considering that recent design values are less than 20% percent of the 8-hour NAAQS of 9 ppm and are trending lower each year, the APCD believes the monitoring values observed at the new site could be lower but insignificant when compared to the NAAQS. Table 1 shows the 1st and 2nd maximum 1-hour and 8-hour values for 2013 CO data collected in the Northern Front Range. Note that all urban areas show values well below the NAAQS. Figure 2 shows the declining CO trend for the Larimer and Weld County monitoring sites thru 2013.

Figure3 – Annual Average Daily Traffic Counts for Arterials near the Greeley Annex Site

The Greeley Annex site is located within the Greeley downtown business district and the Weld County Tower site is located in a transition area between a commercial shopping complex and a newly developed suburban neighborhood, approximately 600 meters south of state highway 34. Figures 3 and 4 show a map of each site with annual average daily traffic (AADT) counts listed for nearby roads. These figures show that traffic around the Greeley Annex site is more condensed and situated closer to the site and traffic around the Weld County Tower site is more dispersed but yields higher traffic counts on nearby arterials. It is believed that the Weld County Tower site may have slightly lower concentrations; however, the higher road density around the Greeley Annex Site may be offset by the higher traffic counts near the Weld County Tower site making these sites comparable.

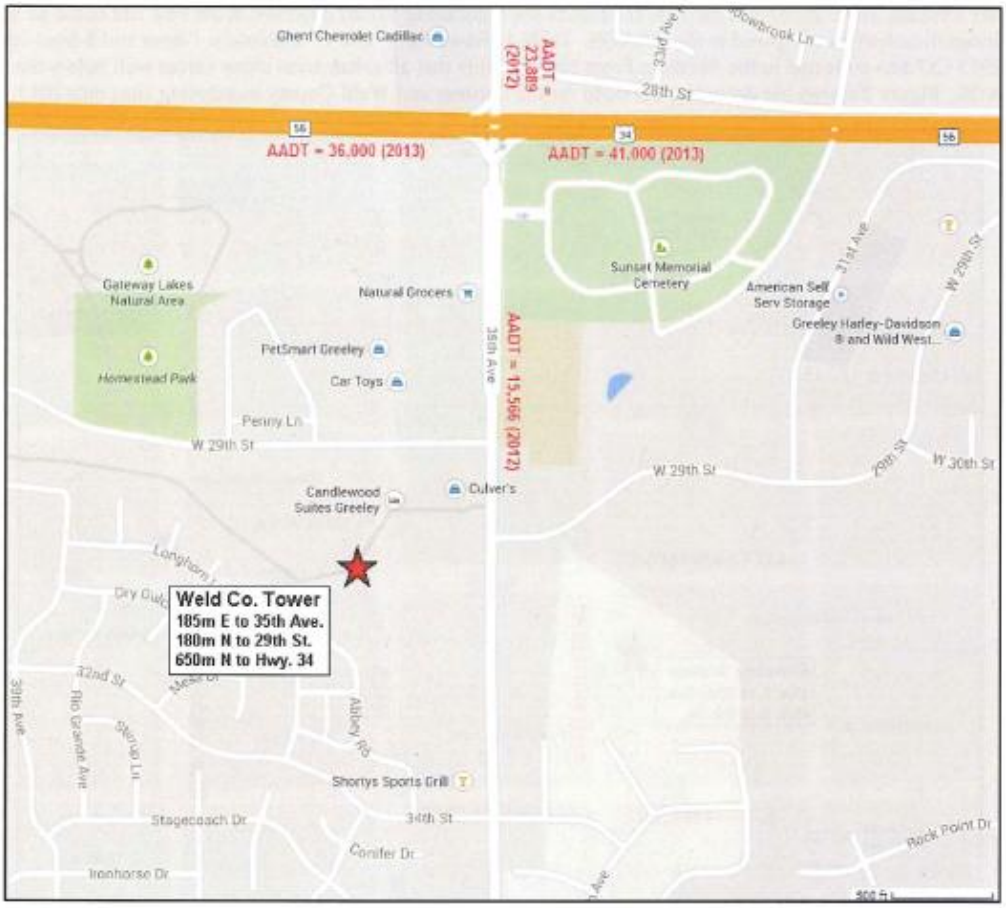


Figure4 - Annual Average Daily Traffic Counts for Arterials near the Weld County Tower Site

The need for ambient carbon monoxide monitoring has diminished due to declining carbon monoxide levels across the nation. Carbon monoxide levels at the Greeley Annex site are less than 20% of the 1-Hour and 8-Hour NAAQS, and have less than a 10 percent chance of exceeding 80 percent of the applicable NAAQS during the next three years, as listed in 40 CFR 58.14 (c). APCD's primary reason for continued monitoring in the Greeley area is the inclusion of a monitoring requirement in the Greeley Carbon Monoxide Maintenance Plan. EPA has set a

precedent allowing states to build contingency measures into their maintenance plans to give greater flexibility in network planning and design. One example would be allowing the relocation of a monitor to another comparable site within the same attainment area. Contingency measures could be further supported if the measures coincide with EPA's 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.

Enclosed are the associated Ambient Air Monitoring Network Modification Request Forms (see Attachments 1 and 2). If you have any questions or need further information, you can reach me at (303) 692-3232.

Sincerely,

Gregory Harshfield

Gregory Harshfield
Gaseous and Meteorological Monitoring Supervisor

cc: Gordon Pierce

Enclosures:
Attachment 1: Greeley Annex Network Modification Form
Attachment 2: Weld County Tower Network Modification Form

Attachment 1

Greeley Annex – Carbon Monoxide (closure)

Ambient Air Monitoring Network Modification Form

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: 6/30/15	CITY: Greeley	STATE: Colorado
AQS SITE ID: 08-123-0010	SITE NAME: Greeley Annex	

PROPOSED MODIFICATION/REASON WHY: Removal of CO Analyzer. The APCD is proposing to relocate the Greeley Annex CO monitor to the Weld County Tower site. The Greeley Annex building that houses the CO monitor has been recently vacated. This has resulted in site access issues for APCD staff. Given the uncertainty of the building's future and the difficulty in accessing the site, the APCD is proposing to relocate the CO monitor to the Weld County Tower 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	
CO	SLAMS	X				Thermo 48C

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: REMOVAL- 6/30/15

ESTIMATED MEASUREMENTS FOR AIR QUALITY PARAMETERS:

LOCATION (LAT./LONG. OR UTM'S): lat: 40.423469, lon: -104.694737

SITE ELEVATION (M. MSL): 4665 ft				PROBE HEIGHT (M. AGL): 1.8 meters	
DISTANCE TO TREE DRIPLINE (M)	DIRECTION TO TREE	DISTANCE TO OBSTACLE (M)	DIRECTION TO OBSTACLE	OBSTACLE HEIGHT ABOVE PROBE (M)	OBSTACLE COMMENTS
na	na	22m	South	10.1m	Building

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

DISTANCE TO FLUES/INCINERATORS (M):

DISTANCE TO INTERSECTIONS (M): 46m			DISTANCE FROM SUPPORTING STRUCTURES (M): VERT.__2m____ HORIZ.__0.25m__			
DISTANCE TO EDGE OF NEAREST ROADWAY	NAME OF ROADWAY	DIRECTION	DAILY TRAFFIC ESTIMATES	YEAR OF TRAFFIC ESTIMATES	TYPE OF ROADWAY	COMMENTS
45m	9th St	NORTH	5,800	2013	Street / Collector Road	
15m	10th Ave.	EAST	4,100	2013	Street / Collector Road	
92m	10th St	SOUTH	8,600	2013	Street / Collector Road	
121m	11th Ave.	WEST			Street	

DISTANCE TO NEAREST POINT SOURCES (MILES)	DIRECTION TO POINT SOURCES	DISTANCE TO NEAREST AREA SOURCES (MILES)	DIRECTION TO AREA SOURCES	COMMENTS
0.5 km	ENE			
0.6 km	NNE			
1.5 km	E			

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: Greg Harshfield

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

FOR METEOROLOGICAL PARAMETERS ONLY: **N/A**

MONITORING PURPOSE/OBJECTIVES:

PROPOSED MONITORING SCHEDULE/DURATION:

PROPOSED START / REMOVAL DATE
OR DATE STARTED / REMOVED:

DATA ACQUISITION SYSTEM:

PRIMARY

BACKUP

EQUIPMENT MANUFACTURER/MODEL:

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):

NEARBY TERRAIN: SMOOTH ROLLING ROUGH

PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
WIND SPEED/DIRECTION		
SOLAR RADIATION		
RELATIVE HUMIDITY		
PRESSURE		
SIGMA THETA		
PRECIPITATION		
TEMPERATURE		
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 2

Weld County Tower - Carbon Monoxide (open)

Ambient Air Monitoring Network Modification Form

EPA REGION 8 AMBIENT AIR MONITORING NETWORK MODIFICATION REQUEST FORM

(VERSION 2, 4/1/04)

DATE: June 30, 2015	CITY: Greeley	STATE: Colorado
AQS SITE ID: 08-123-0009	SITE NAME: Weld County Tower	

PROPOSED MODIFICATION/REASON WHY: The APCD is proposing to relocate the Greeley Annex CO monitor to the Weld County Tower site. The Greeley Annex building that houses the CO monitor has been recently vacated. This has resulted in site access issues for APCD staff and requires local agency staff to be present during all site visits. Given the uncertainty of the building's future and the difficulty in accessing the site, the APCD has elected to relocate the CO monitor to the Weld County Tower 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 (existing)	SLAMS	X		X		API 400 E/ 401 X
Carbon Monoxide	SLAMS			X		Thermo 48C

PROPOSED SAMPLING START / REMOVAL DATE OR DATE STARTED / REMOVED: Ongoing for ozone. Carbon Monoxide start date June 30, 2015.

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
650 m	US Hwy 34	NORTH	36,000 – 41,000	2013	State Highway	
185 m	35th Avenue	EAST	15,566	2012	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: Gregory Harshfield Signature: Greg Harshfield

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	PARAMETERS:	APPLICABLE √ those that apply	SENSOR HT (M)
BACKUP Data card / strip chart for ozone. No backup for mets.	WIND SPEED/DIRECTION	X	10 m
EQUIPMENT MANUFACTURER/MODEL:	SOLAR RADIATION		
Met One 010 / 020 Wind Sensors.	RELATIVE HUMIDITY		
WILL THE DATA BE USED FOR MODELING? **YES** NO	PRESSURE		
IS SITE REQUIRED FOR SIP? YES **NO**	SIGMA THETA	X	10 m
UNRESTRICTED AIRFLOW? **YES** NO	PRECIPITATION		
DISTANCE TO TREE DRIPLINE (M): 64	TEMPERATURE	X	8 m
NEARBY TERRAIN: **SMOOTH** ROLLING ROUGH	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.