COLORADO

Air Pollution Control Division

Department of Public Health & Environment

Technical Services Program

2025 Ambient Air Monitoring Network Plan

COLORADO
AMBIENT AIR MONITORING NETWORK PLAN

2025

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Glossary of Terms

APCD	Air Pollution Control Division
AQS	Air Quality System (EPA database)
CAMP	Continuous Air Monitoring Program
CBSA	Core-Based Statistical Area
CDPHE	Colorado Department of Public Health and Environment
CFR	Code of Federal Regulations
CMZ	Community Monitoring Zone
CO	Carbon monoxide
CSN	Carbon Speciation Network
EPA	U.S. Environmental Protection Agency
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NATTS	National Air Toxics Trends Stations
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_x	Reactive nitrogen oxides
NO_y	Total reactive nitrogen
NPS	National Park Service
O_3	Ozone
Pb	Lead
$PM_{2.5}$	Particulate matter with an equivalent diameter less than or equal to 2.5 mm
PM_{10}	Particulate matter with an equivalent diameter less than or equal to 10 mm
ppb	Parts per billion (one part in 109)
ppm	Parts per million (one part in 106)
PMSA	Primary Metropolitan Statistical Area
PSD	Prevention of Significant Deterioration
PWEI	Population Weighted Emissions Index
QA/QC	Quality Assurance/Quality Control
SIP	State Implementation Plan
SLAMS	State or Local Air Monitoring Stations
SO_2	Sulfur dioxide
SPM	Special Purpose Monitor
TSP	Total Suspended Particulates
µg	Microgram (10-6 grams)
VOC	Volatile Organic Compound

1. Introduction

The Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Division's (APCD) 2025 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) and provides the general reasoning for the APCD's ambient air monitoring strategy, the location of each monitor, the highest pollutant concentrations, and the type and frequency of measurements taken at each location. The Network Plan is also a simple accounting of monitoring site changes that have taken place over the past year and changes that are expected for the year ahead. It is due on or before July 1st of each year to the U.S. Environmental Protection Agency (EPA) after a 30-day public comment period.

This plan was made available for public comment from 2025-05-23 to 2025-06-23.

1.1. Overview of the Colorado Air Monitoring Network

The APCD currently conducts air quality and meteorological monitoring operations at 45 locations statewide. Ozone (O_3) and particulate matter (PM) monitors, including those for particulate matter less than 10 µm in diameter (PM_{10}) and particulate matter less than 2.5 µm in diameter ($PM_{2.5}$), are the most abundant and widespread monitors in the network. Currently, there are PM_{10} monitors at 15 separate locations, $PM_{2.5}$ monitors at 25 locations, O_3 monitors at 24 locations, carbon monoxide (CO) monitors at five locations, nitrogen dioxide (NO_2) monitors at nine locations, and sulfur dioxide (SO_2) monitors at three locations. The APCD also operates 17 meteorological sites statewide for the continuous measurement of wind speed, wind direction, resultant speed, resultant direction, standard deviation of horizontal wind direction, and temperature.

A majority of the gaseous monitoring conducted by the APCD occurs in the Front Range region, with a particular focus on the Denver Metro area. Two of the 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 and Cortez monitoring sites. ARS keeps the sites in proper working order and performs calibrations, data retrieval, and data validation, while the APCD uploads data to the EPA's Air Quality System (AQS) database and conducts independent audits of the sites for Quality Assurance (QA) purposes.

Within the particulate sampling network, the APCD operates both continuous and filter-based sampling methods for PM_{10} and $PM_{2.5}$. Continuous monitors sample without the need for subsequent filter retrieval and laboratory analysis, which is required for filter-based equipment. Thus, these monitors can continuously record concentrations and send the results

back to APCD headquarters on a nearly instantaneous basis. Currently, 12 sites are equipped to measure continuous PM_{10} and three sites have filter-based PM_{10} samplers. Of the 25 $PM_{2.5}$ monitoring sites, all 25 sites measure $PM_{2.5}$ on a continuous basis, four of these sites also having filter-based samplers. All real-time continuous PM_{10} and $PM_{2.5}$ data is reported on the CDPHE website.[1]

1.1.1. 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 state of the art for defining the magnitude and extent of the very visible air pollution problem. Monitoring for gaseous pollutants (CO, SO_2, NO_2, and O_3) began in 1965 when the federal government established the CAMP monitoring station in downtown Denver at the intersection of 21st Street and Broadway, which was the area that was thought at the time to represent the best site for detecting maximum levels of most of the pollutants of concern. Instruments were primitive by comparison with those of today and were frequently out of service.

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

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

Historically, 32 of the 45 current APCD monitoring locations have been in operation for 10 or more years, 23 of these sites have been in operation for 20 or more years, and 12 of the monitoring locations have been in operation for more than 30 years. Conversely, 16 of the 45 current monitoring locations have been in operation for less than 10 years.

[1] https://www.colorado.gov/airquality/report.aspx

1.1.2. 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 APCD'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 perceived risk. Building roof remodeling and demolition projects can also lead to a loss of sampling time and access to locations. When modifications to the State and Local Air Monitoring Station (SLAMS) network are required, the APCD will provide the appropriate modification forms prior to any implementation to EPA Region 8 for their approval. All currently operating SLAMS monitors have been approved by EPA.With the exception of some vegetation issues or tall trees, of which APCD has received waivers from EPA, all sites currently meet the requirements set forth in 40 CFR 58, Appendices A, C, D, and E.

1.1.3. 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. Other monitors have been established as a result of special studies, such as the O_3 monitoring in Aurora, Rifle, Cortez, Palisade, and Black Hawk.

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. A current example of this is the Platteville Atmospheric Observatory (PAO) site, which was relocated to the La Salle location nearby due to the APCD's loss of access to the PAO 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 or if access to the site becomes too restrictive. For example, the Welch site was closed in 2020 and relocated to Evergreen because this monitor was redundant with other ozone monitoring sites in the Denver Metro/North Front Range Region.

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 Aspen Park monitoring site, which was shut down on September 16, 2019 and relocated to the Black Hawk monitoring station. A detailed scientific evaluation of the present monitoring

network configuration can be found in the APCD's 2025 Ambient Air Monitoring Network Assessment.

1.1.4. Description of Monitoring Regions 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 1.1 shows the approximate boundaries of these regions.

A map of APCD air quality monitoring stations is shown in Figure 1.3 and the parameters monitored at each location are given in Table 1.2. Detailed site descriptions can be found in Appendix A.

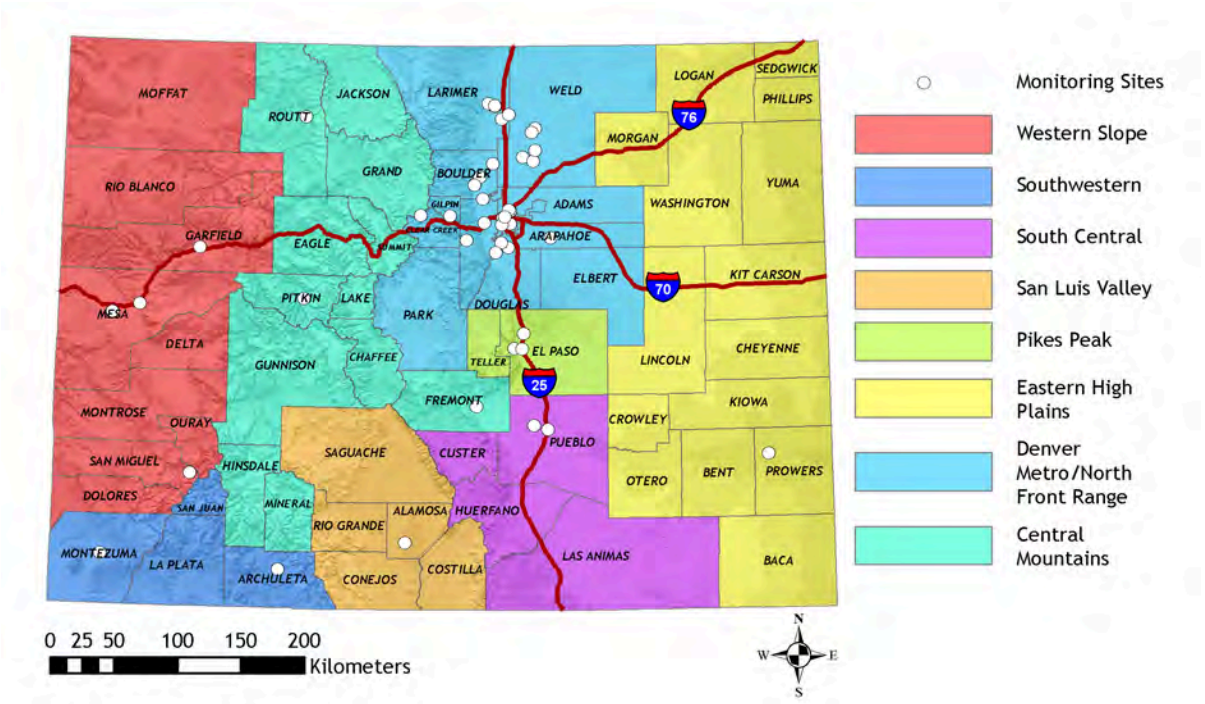

Figure 1.1: Counties and multi-county monitoring regions discussed in this report.

1.1.4.1. 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 features. Leadville, Steamboat Springs, Cañon City, Salida, Buena Vista, and Aspen represent the larger communities. The population of this region is approximately 242,137, according to the 2020 U.S. Census. Skiing, tourism, ranching, mining, and correctional facilities are the primary industries. The 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 in this region is centered around particulate pollution from wood burning and road dust. There are currently three PM_{10} monitoring sites operated by the APCD in the Central Mountains region (Aspen, Steamboat Springs, and Cañon City).

1.1.4.2. Denver Metro / North Front Range Region

The Denver Metro/North Front Range region includes Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, Elbert, Gilpin, Jefferson, Larimer, Park, and Weld counties. This 13 county region comprises the largest population base in the state of Colorado with approximately 4,016,921 people living in the area, according to the 2020 U.S. Census. This region includes Rocky Mountain National Park and several other wilderness areas.

Since 2002, the region has complied with all NAAQS, except for ozone. The area has been exceeding the EPA's current 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 after a more stringent ozone standard was adopted in 2008. The Denver Metro / North Front Range region failed to attain the 2008 ozone standard and was moved up to the next level of classification, a "moderate" area in May of 2016. The EPA released a more stringent eight-hour ozone standard on October 1, 2015. Colorado submitted area designation recommendations for the eight-hour 2015 ozone standard in 2016, based on the data from the 2013-2015 monitoring period. The EPA finalized area designations for the 2015 eight-hour ozone standard of 0.070 ppm (70 ppb) nationwide in April of 2018, designating the Denver Metro/Northern Front Range region as nonattainment with a marginal area classification. In January 2020, EPA designated the Denver Metro/Northern Front Range area as a "serious" nonattainment area under the 2008 ozone standard. In November 2022, the EPA designated the area as a "severe" nonattainment area under the 2008 ozone standard.

In the past, the Denver-metropolitan area has violated health-based air quality standards for carbon monoxide and fine particles. In response, RAQC, CAQCC, and the APCD developed, adopted, and implemented air quality improvement plans to reduce each of these 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.

There are currently 68 air quality and meteorological monitors at 28 individual sites in the Northern Front Range Region. There are four CO monitors, 18 O_3 monitors, nine NO_2 monitors, three SO_2 monitors, as well as five PM_{10} monitors, 15 $PM_{2.5}$ monitors, and 14 meteorological towers. There are also three air toxics monitoring sites, one located at the Birch Street site

(previously located at CAMP and moved during 2023), one at the Grand Junction Pitkin site, and one in Platteville (La Salle). The Birch Street site monitors urban air toxics, while the La Salle site monitors air toxics and ozone precursors in a region of oil and gas development. In addition, there is one site (DESCI) that measures visual range by use of a nephelometer and a transmissometer.

1.1.4.3. Eastern High Plains Region

The Eastern High Plains region encompasses the fifteen counties on the plains of eastern Colorado. The area is semiarid and often windy. The area's population is approximately 133,477, according to the 2020 U.S. Census. Its major population 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. With concurrences by EPA on Exceptional Event Reports for high wind dust events submitted by the APCD, all of the Eastern High Plains region complies with federal air quality standards.

Historically, there have been a number of communities in the Eastern High Plains Region 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 through early 1990s after a review showed that the concentrations were well below the standards and trending downward.

There is currently one particulate sampler (a T640x FEM monitor for real-time PM_{10} and $PM_{2.5}$ monitoring) in this region. The site is located in the city of Lamar.

1.1.4.4. Pikes Peak Region

The Pikes Peak region includes El Paso and Teller counties. The area has a population of approximately 756,489, according to the 2020 U.S. Census. Eastern El Paso County is rural prairie, while the western part of the region is mountainous. 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, which are both military installations. Aerospace and technology are also large employers in the area. The Manitou Springs monitoring site is currently exceeding the NAAQS for O_3, having a 3-year design value of 73 ppb.

Currently, there is one CO monitor and two O_3 monitors in the Pikes Peak region, as well as one PM_{10} monitor and one $PM_{2.5}$ monitor. Most of these monitors are located at sites in the populous city of Colorado Springs.

1.1.4.5. San Luis Valley Region

Colorado's San Luis Valley region is located in the south central portion of Colorado and is comprised of 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 114 km wide and 196 km long, extending south into New Mexico. The average elevation is 2290 km. Principal towns include Alamosa, Monte Vista, and Del Norte. The population of this area is approximately 46,150, according to the 2020 U.S. Census. 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.

There is currently one particulate sampler (a T640x FEM monitor for real-time PM_{10} and $PM_{2.5}$ monitoring) in this region. The site is located at Adams State College in the city of Alamosa.

1.1.4.6. South Central Region

The South Central region is comprised of Pueblo, Huerfano, Las Animas, and Custer counties. Its population is approximately 194,758, according to the 2020 U.S. Census. Population 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.

There is currently one particulate sampler (a T640x FEM monitor for real-time PM_{10} and $PM_{2.5}$ monitoring) operated in the South Central Region. This sampler is located at a site in the city of Pueblo. There is also one ozone and meteorological monitoring site at the Pueblo West site.

1.1.4.7. Southwestern 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 98,122, according to the 2020 U.S. Census. 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 the dominant industries, although the oil and gas industry is becoming increasingly important. All of the area complies with federal air quality standards.

There are currently two monitoring stations in the Southwestern region, one O_3 site in Cortez and one $PM_{10}/PM_{2.5}$ site located in Pagosa Springs.

1.1.4.8. Western Slope Region

The Western Slope region includes nine counties on the far western border of Colorado. A mix of mountains on the east, and mesas, plateaus, valleys, and canyons to the west form the landscape of this region. Grand Junction is the largest urban area, and other cities include Telluride, Montrose, Delta, Rifle, Glenwood Springs, Meeker, Rangely, and Craig. The population of this region is approximately 325,155, according to the 2020 U.S. Census. 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 complied with federal air quality standards during 2023.

Currently, there are two ozone monitoring sites (Rifle and Palisade) and two particulate monitoring sites (Telluride and Grand Junction) in the Western Slope region operated by the APCD. There are also two meteorological towers in this area (Palisade and Grand Junction). The APCD also works with the EPA to monitor air toxics at the Grand Junction Pitkin site as part of the EPA's National Air Toxics Trends Stations (NATTS) monitoring network.

1.1.5. Statewide Population Statistics

Table 1.1 is a listing of the projected population statistics by county based on the 2020 U.S. Census. Counties have been grouped by Metropolitan Statistical Area (MSA) and by the multi-county monitoring regions described above.

Population growth in Colorado over time is plotted in Figure 1.2, which shows actual population values in each multi-county monitoring region for the period 1970-2020 and U.S. Census Bureau projections for the period 2021-2030.

Table 1.1: Population estimates and projections by county and Metropolitan Statistical Area (MSA).

Region/MSA/County	Actual Population	Projected Population		Avg. Annual Change (%)	
	2020	*2025*	*2030*	*2020-25*	*2020-30*
COLORADO	***5,813,209***	***6,120,735***	***6,544,591***	***1.1***	***1.3***
CENTRAL MOUNTAINS	**242,137**	**249,943**	**263,801**	**0.6**	**0.9**
Chaffee	20,397	21,099	22,295	0.7	0.9
Eagle	55,390	57,953	61,862	0.9	1.2
Fremont	47,413	47,369	48,246	-0.0	0.2
Grand	15,719	16,545	17,675	1.1	1.2
Gunnison	17,522	17,988	18,703	0.5	0.7
Hinsdale	827	868	914	1.0	1.1
Jackson	1,367	1,307	1,272	-0.9	-0.7
Lake	8,095	8,358	8,799	0.6	0.9
Mineral	764	805	828	1.1	0.8
Pitkin	17,591	17,614	17,909	0.0	0.2
Routt	25,929	27,845	30,882	1.5	1.9
Summit	31,123	32,192	34,416	0.7	1.1
DENVER METRO/NORTH FRONT RANGE	**4,016,921**	**4,242,183**	**4,543,600**	**1.1**	**1.3**
BOULDER	*328,006*	*334,735*	*351,743*	*0.4*	*0.7*
Boulder	328,006	334,735	351,743	0.4	0.7
DENVER-AURORA-LAKEWOOD	*2,996,432*	*3,153,963*	*3,351,783*	*1.1*	*1.2*
Adams	523,709	558,063	612,890	1.3	1.7
Arapahoe	661,363	695,723	733,504	1.0	1.1
Broomfield	71,803	81,029	91,058	2.6	2.7
Clear Creek	9,750	9,971	10,518	0.5	0.8
Denver	735,822	773,264	818,733	1.0	1.1
Douglas	356,811	381,544	408,671	1.4	1.5
Elbert	27,286	31,130	35,970	2.8	3.2
Gilpin	6,185	6,141	6,091	-0.1	-0.2
Jefferson	584,725	597,384	613,270	0.4	0.5
Park	18,978	19,714	21,078	0.8	1.1
FORT COLLINS	*360,937*	*384,222*	*415,248*	*1.3*	*1.5*
Larimer	360,937	384,222	415,248	1.3	1.5
GREELEY	*331,546*	*369,263*	*424,826*	*2.3*	*2.8*
Weld	331,546	369,263	424,826	2.3	2.8
EASTERN HIGH PLAINS	**133,477**	**136,040**	**138,920**	**0.4**	**0.4**
Baca	3,517	3,374	3,235	-0.8	-0.8
Bent	5,368	5,204	5,079	-0.6	-0.5

Region/MSA/County	Actual Population	Projected Population		Avg. Annual Change (%)	
	2020	*2025*	*2030*	*2020-25*	*2020-30*
Cheyenne	1,819	1,813	1,801	-0.1	-0.1
Crowley	6,049	6,131	6,262	0.3	0.4
Kiowa	1,390	1,356	1,304	-0.5	-0.6
Kit Carson	7,131	7,337	7,623	0.6	0.7
Lincoln	5,717	6,093	6,457	1.3	1.3
Logan	22,061	23,249	24,327	1.1	1.0
Morgan	28,900	30,256	31,994	0.9	1.1
Otero	18,151	17,801	17,290	-0.4	-0.5
Phillips	4,248	4,176	4,120	-0.3	-0.3
Prowers	12,084	11,881	11,764	-0.3	-0.3
Sedgwick	2,217	2,234	2,208	0.2	-0.0
Washington	4,721	4,851	4,916	0.6	0.4
Yuma	10,104	10,284	10,540	0.4	0.4
PIKES PEAK	**756,489**	**803,270**	**863,281**	**1.2**	**1.4**
COLORADO SPRINGS	*756,489*	*803,270*	*863,281*	*1.2*	*1.4*
El Paso	731,032	776,678	835,835	1.2	1.4
Teller	25,457	26,592	27,446	0.9	0.8
SAN LOUIS VALLEY	**46,150**	**46,912**	**47,832**	**0.3**	**0.4**
Alamosa	16,223	17,139	18,044	1.1	1.1
Conejos	8,136	8,059	8,113	-0.2	-0.0
Costilla	3,847	3,790	3,744	-0.3	-0.3
Rio Grande	11,138	11,106	11,099	-0.1	-0.0
Saguache	6,806	6,818	6,832	0.0	0.0
SOUTH CENTRAL	**194,758**	**198,081**	**206,613**	**0.3**	**0.6**
Custer	5,053	4,946	5,028	-0.4	-0.0
Huerfano	6,776	6,642	6,538	-0.4	-0.4
Las Animas	14,386	14,110	13,869	-0.4	-0.4
PUEBLO	*168,543*	*172,383*	*181,178*	*0.5*	*0.7*
Pueblo	168,543	172,383	181,178	0.5	0.7
SOUTHWESTERN	**98,122**	**104,556**	**113,027**	**1.3**	**1.5**
Archuleta	14,137	14,856	16,242	1.0	1.5
La Plata	56,970	61,520	66,972	1.6	1.8
Montezuma	26,294	27,461	29,097	0.9	1.1
San Juan	721	719	716	-0.1	-0.1
WESTERN SLOPE	**325,155**	**339,750**	**367,517**	**0.9**	**1.3**
Delta	31,108	31,497	32,952	0.3	0.6
Dolores	2,017	1,934	1,880	-0.8	-0.7
Garfield	60,795	64,517	70,422	1.2	1.6
GRAND JUNCTION	*155,574*	*163,040*	*177,574*	*1.0*	*1.4*
Mesa	155,574	163,040	177,574	1.0	1.4
Moffat	13,181	13,039	13,032	-0.2	-0.1
Montrose	42,999	45,558	50,355	1.2	1.7
Ouray	4,931	5,028	5,204	0.4	0.6
Rio Blanco	6,260	6,176	6,120	-0.3	-0.2
San Miguel	8,290	8,961	9,978	1.6	2.0

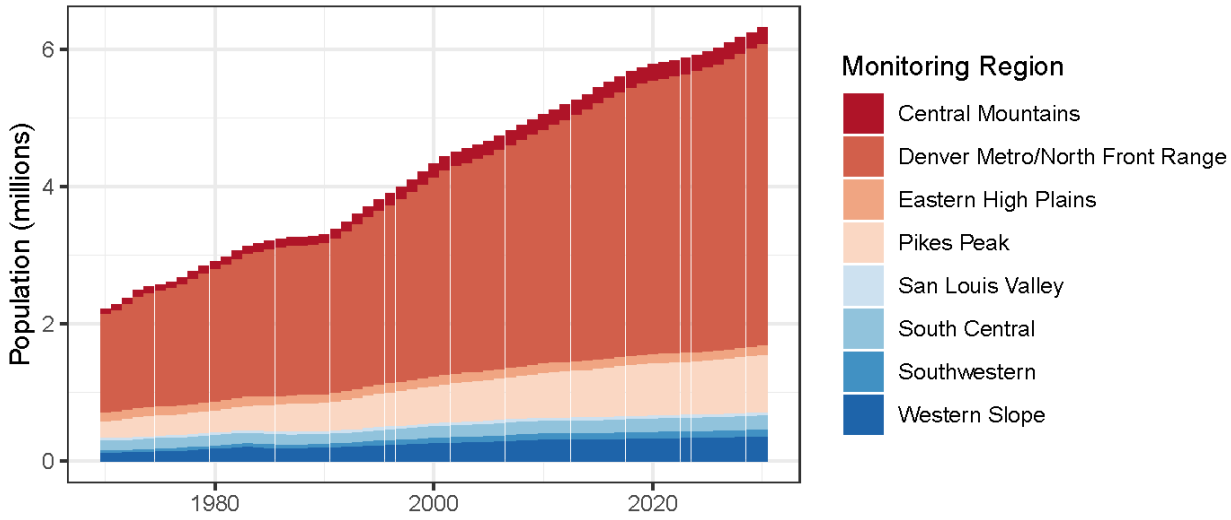

Figure 1.2: Population in Colorado from 1970 to 2030.

1.1.6. Monitoring Site Locations and Parameters Monitored

Table 1.2: Summary of parameters monitored at APCD monitoring sites discussed in this report.

AQS Site Number	Site Name	County	O_3	CO	NO_2	SO_2	PM_{10}	$PM_{2.5}$	Met
08-001-0010	Birch Street	Adams					X	X	
08-001-3001	Welby	Adams	X		X	X	X	X	X
08-003-0001	Alamosa - Adams State (ASC)	Alamosa					X	X	
08-005-0002	Highlands	Arapahoe	X						X
08-005-0005	Arapahoe Community College	Arapahoe						X	
08-005-0006	Aurora East	Arapahoe	X						X
08-007-0001	Pagosa Springs School	Archuleta					X	X	
08-013-0003	Longmont - Municipal Bldg.	Boulder					X	X	
08-013-0014	Boulder Reservoir	Boulder	X						X
08-013-1001	Boulder - CU - Athens	Boulder					X	X	
08-019-0006	Mines Peak	Clear Creek	X						
08-031-0002	CAMP	Denver	X		X	X		X	
08-031-0013	National Jewish Health (NJH)	Denver						X	
08-031-0026	La Casa	Denver	X	X	X	X	X	X	X
08-031-0027	I-25: Denver	Denver		X	X			X	X
08-031-0028	I-25: Globeville	Denver			X			X	X
08-035-0004	Chatfield State Park	Douglas	X					X	X
08-041-0013	U.S. Air Force Academy (USAFA)	El Paso	X						
08-041-0016	Manitou Springs	El Paso	X						
08-041-0017	Colorado College	El Paso		X			X	X	
08-043-0003	Cañon City - City Hall	Fremont					X	X	
08-045-0012	Rifle - Health Dept	Garfield	X						
08-047-0003	Black Hawk	Gilpin	X						
08-059-0006	Rocky Flats - N	Jefferson	X		X				X
08-059-0011	NREL	Jefferson	X						
08-059-0014	Evergreen	Jefferson	X						X
08-069-0009	Fort Collins - CSU - Edison	Larimer						X	
08-069-0011	Fort Collins - West	Larimer	X						X
08-069-0015	Fossil Creek	Larimer	X		X				X
08-069-0016	Bethke	Larimer	X		X			X	
08-069-1004	Fort Collins - CSU - Mason	Larimer	X	X					X
08-077-0017	Grand Junction - Powell Bldg.	Mesa					X	X	
08-077-0018	Grand Junction - Pitkin	Mesa							X
08-077-0020	Palisade - Water Treatment	Mesa	X						X
08-083-0006	Cortez - Health Dept.	Montezuma	X						
08-097-0008	Aspen	Pitkin					X	X	
08-099-0002	Lamar Municipal Bldg.	Prowers					X	X	
08-101-0015	Pueblo - Fountain School	Pueblo					X	X	
08-101-0016	Pueblo West	Pueblo	X						X
08-107-0003	Steamboat Springs	Routt					X	X	
08-113-0004	Telluride	San Miguel					X	X	
08-123-0006	Greeley - Hospital	Weld						X	
08-123-0008	Platteville - Middle School	Weld						X	
08-123-0009	Greeley - Weld County Tower	Weld	X	X					X
08-123-0015	La Salle	Weld	X		X				

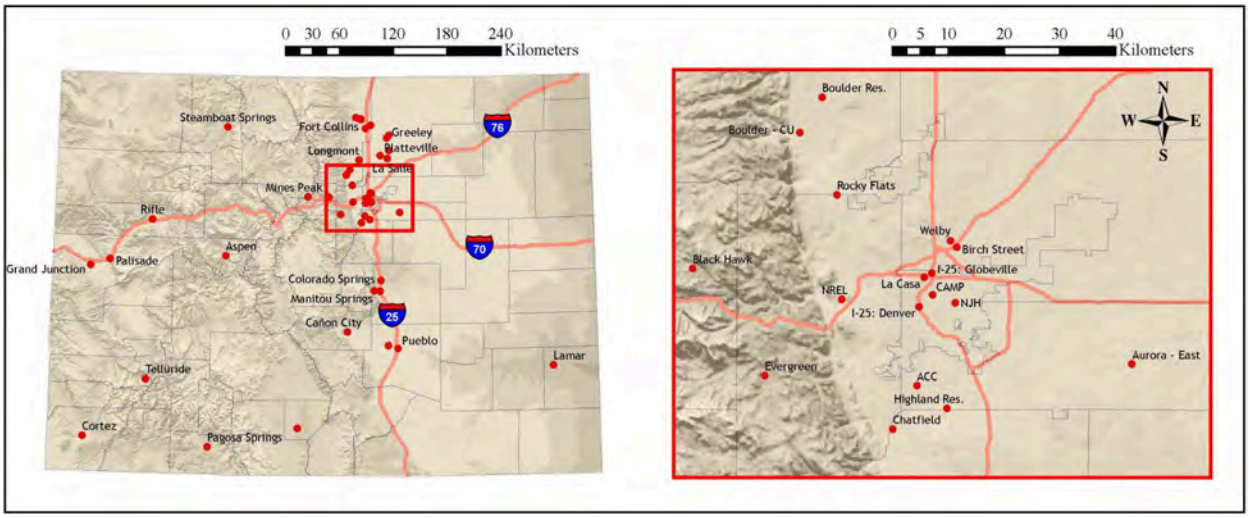

Figure 1.3: Map of Colorado with an inset map of the Denver metropolitan area showing the location of all monitoring sites operated by the APCD and listed in Table 1.2. For the purpose of improving the readability of the map, labels for monitoring sites in Fort Collins, Grand Junction, Pueblo and Colorado Springs have been combined under a single label. Detailed site information, including AQS identification numbers, site descriptions and histories, addresses and coordinates, monitoring start dates, site elevations, site orientation/scale designations, etc., can be found in Appendix A of this document.

2. Carbon Monoxide (CO)

In 2025, the APCD will operate five CO monitors. Currently, the NAAQS for CO are primary standards, with a concentration level not to exceed 9 parts per million (ppm) in an eight-hour time period or 35 ppm in a one-hour period. There is no secondary standard for CO. CO levels have declined from a statewide maximum eight-hour value of 48.1 ppm in 1973 to a value of 2.7 ppm in 2024. 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 EPA requirements under the Code of Federal Regulations (CFR). 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 located at one near-roadway NO_2 monitoring site. EPA is also specifying that monitors required in metropolitan areas of 2.5 million or more persons are to be operational by January 1, 2015, and that monitors required in Core-Based Statistical Areas (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 Denver near roadway NO_2 site to satisfy these requirements.

2.1. Denver Metro/North Front Range Region

The three major urban centers in the North Front Range Region include the greater Denver Metro area, and the Fort Collins and Greeley areas located in Larimer and Weld counties, respectively. Mobile sources are the main contributor to elevated CO in the Front Range region. However, controlled burns, wildfires, and biogenic influences, including oil and gas development, may also contribute to elevated CO levels. Weld County is also located in an area of significant oil and gas development. Table 2.1 lists the first and second maximum one-hour and eight-hour CO concentrations recorded in 2024 for the Denver Metro/North Front Range region.

Table 2.1: Summary of CO values recorded at monitoring stations in the Denver Metro / Northern Front Range region during 2024.

			CO 1-Hour Avg. (ppm)		CO 8-Hour Avg. (ppm)	
Site Name	County	POC	1st Max Value	2nd Max Value	1st Max Value	2nd Max Value
La Casa	Denver	1	2.1	2.0	1.9	1.8
I-25	Denver	1	3.7	2.9	2.7	2.7
Fort Collins - CSU - Mason	Larimer	1	2.0	1.8	1.2	1.2
Greeley - Weld County Tower	Weld	1	1.5	1.2	1.1	1.1

2.2. Pikes Peak Region

The Pikes Peak Region is a very popular tourist area with rapid urban growth. The first and second maximum one-hour and eight-hour CO concentrations recorded in 2024 at the Colorado College site are shown in Table 2.2.

Table 2.2: Summary of CO values recorded at the Colorado College monitoring station during 2024.

			CO 1-Hour Avg. (ppm)		CO 8-Hour Avg. (ppm)	
Site Name	County	POC	1st Max Value	2nd Max Value	1st Max Value	2nd Max Value
Colorado College	El Paso	1	1.2	1.1	0.7	0.7

2.3. Recent and Planned Changes in CO Monitoring

In 2024, the Air Quality Control Commission agreed to an amendment to the State Implementation Plan to end the maintenance period for CO across Colorado. The APCD and AQCC are awaiting concurrence from the EPA before considering changes to the CO network. Currently there are no planned changes to the CO network for 2025.

3. Ozone (O_3)

O_3 is an atmospheric oxidant composed of three oxygen atoms. It is not usually emitted directly into the air, but at ground-level is formed via photochemical reactions among NO_x and volatile organic compounds (VOCs) in the presence of sunlight. Emissions from oil and gas production, motor vehicle exhaust, industrial facilities and electric utilities are some of the major sources of NO_x and VOCs in Colorado, with on-road motor vehicles being the most significant source of NO_x and oil and gas production being the most significant source of VOCs.

In March 2008, the U.S. EPA promulgated a new level of the NAAQS for O_3 of 0.075 ppm (75 ppb) 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 violated the standard at the time. In October 2015, the EPA again strengthened the NAAQS for ground level ozone to 70 ppb (effective December 28th, 2015). The APCD currently operates 15 sites that have three-year design values (2022-2024) in excess of the current eight-hour O_3 NAAQS standard of 70 ppb (five sites listed in the tables below show design values in excess of 70 ppb, but do not possess the necessary three years of valid regulatory monitoring data). Fourteen of these sites are located in the Denver Metro / North Front Range region and are: Welby (76 ppb), Highlands (73 ppb), Aurora East (74 ppb), Boulder Reservoir (75 ppb), CAMP (73 ppb), La Casa (75 ppb), Chatfield (80 ppb), Blackhawk (74 ppb), Rocky Flats North (81 ppb), NREL (79 ppb), Evergreen (77 ppb), Fort Collins West (75 ppb), Fort Collins Mason (73 ppb), and Greeley (73 ppb). One of these sites is located in the Pike's Peak Region: Manitou Springs (73 ppb).

EPA's monitoring requirements for O_3 include placing a certain number 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 3.1 below lists EPA's O_3 monitoring requirements. Each MSA is discussed further in the following subsections.

Table 3.1: EPA's minimum ozone monitoring requirements.

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

3.1. Denver Metro/North Front Range Region

Table 3.2 lists the first and fourth maximum eight-hour O_3 concentrations recorded in 2024 for the Denver Metro/North Front Range region. Also listed are the current three-year design values for each site with enough data available to calculate them.

Table 3.2: Summary of O_3 values recorded at monitoring stations in the Denver Metro / Northern Front Range region during 2024. The Fossil Creek, Bethke, and La Salle sites are less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design values listed for these sites are not directly comparable to the 3-year NAAQS standard for ozone. The Mines Peak monitoring site is exempt from NAAQS monitoring due to its unique site characteristics, and therefore does not have a reported design value.

			Ozone 8-Hour Avg. (ppm)		
Site Name	County	POC	1st Max Value	4th Max Value	3-Year Avg. of 4th Max (8-Hr)
Welby	Adams	2	0.090	0.083	0.076
Highlands	Arapahoe	1	0.083	0.073	0.073
Aurora East	Arapahoe	1	0.090	0.081	0.074
Boulder Reservoir	Boulder	1	0.087	0.084	0.075
Mines Peak	Clear Creek	1	0.081	0.077	NA
CAMP	Denver	6	0.088	0.079	0.073
La Casa	Denver	1	0.094	0.084	0.075
Chatfield State Park	Douglas	1	0.092	0.088	0.080
Black Hawk	Gilpin	1	0.085	0.079	0.074
Rocky Flats - N.	Jefferson	1	0.095	0.088	0.081
NREL	Jefferson	1	0.093	0.086	0.079
Evergreen	Jefferson	1	0.092	0.085	0.077
Fort Collins - West	Larimer	1	0.090	0.083	0.075
Fossil Creek	Larimer	1	0.089	0.084	0.084
Bethke	Larimer	1	0.086	0.078	0.078
Fort Collins - CSU - Mason	Larimer	1	0.088	0.082	0.073
Greeley - Weld County Tower	Weld	1	0.090	0.081	0.073
La Salle Tower	Weld	1	0.091	0.079	0.079

In the Denver Metro area, Adams, Arapahoe, Boulder, Denver, Douglas, and Jefferson counties have O_3 monitors. There are 10 monitors currently in operation in this area. There are two MSAs located in the Metropolitan Denver area. These are the Boulder MSA and the Denver-Aurora-Lakewood MSA, with populations of 328,006 and 2,996,432 respectively,

according to the 2020 U.S. Census. Per EPA monitoring requirements, the Boulder MSA falls in the 50,000 to 350,000 population range and the Denver-Aurora-Lakewood MSA falls in the 350,000 to 4,000,000 range. The Boulder MSA therefore requires at least one monitor, and this requirement is satisfied by the monitor at Boulder Reservoir, which became operational in August of 2016. By EPA rules, the Denver-Aurora-Lakewood MSA requires at least two monitors. This requirement is satisfied by the other nine monitors that are placed throughout the Denver-Aurora-Lakewood MSA. The monitors located at Chatfield State Park, Rocky Flats - N., and NREL are generally the highest concentration monitors in the state.

There are two MSAs located in Larimer and Weld counties. These are the Fort Collins MSA and the Greeley MSA, with populations of 360,937 and 331,546 respectively, according to the 2020 U.S. Census. Per EPA monitoring requirements, the Greeley MSA falls in the 50,000 to 350,000 population range and the Fort Collins MSA falls in the 350,000 to 4,000,000 range. The Greeley MSA therefore requires at least one monitor and the Fort Collins MSA requires at least two monitors. These requirements are satisfied by the monitors listed in Table 3.2. The monitor located at the Fort Collins West site is a highest concentration monitor for the Fort Collins MSA, while the Greeley - Weld County Tower monitor serves the same purpose for the Greeley MSA.

3.2. Pikes Peak Region

The first and fourth maximum eight-hour concentrations recorded in 2024 for each O_3 monitoring site in the Pikes Peak region are listed in Table 3.3 below. Also listed are the three year design values for each site.

The Colorado Springs MSA is the only MSA located in the Pikes Peak region. According to the 2020 U.S. Census, this MSA has a population of 756,489. 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 requirement is satisfied by the monitors at the U.S. Air Force Academy and at Manitou Springs. The Manitou Springs O_3 monitoring site is currently exceeding the NAAQS for O_3, having a 3-year design value in excess of 70 ppb.

Table 3.3: Summary of O_3 values recorded at monitoring stations in the Pikes Peak region during 2024.

			Ozone 8-Hour Avg. (ppm)		
Site Name	County	POC	1st Max Value	4th Max Value	3-Year Avg. of 4th Max (8-Hr)
U.S. Air Force Academy	El Paso	1	0.085	0.078	0.070
Manitou Springs	El Paso	1	0.092	0.082	0.073

3.3. Western Slope Region

The first and fourth maximum eight-hour O_3 concentrations recorded in 2024 in the Western Slope region are listed in Table 3.4 below.

Table 3.4: Summary of O_3 values recorded at monitoring stations in the Western Slope region during 2024.

			Ozone 8-Hour Avg. (ppm)		
Site Name	County	POC	1st Max Value	4th Max Value	3-Year Avg. of 4th Max (8-Hr)
Rifle-Health Dept	Garfield	1	0.072	0.063	0.059
Palisade-Water Treatment	Mesa	1	0.078	0.067	0.063

The Grand Junction MSA is the only MSA located on the Western Slope. The Grand Junction MSA includes all of Mesa County and has a population of 155,574 according to the 2020 U.S. Census. Per EPA monitoring requirements, this MSA falls in the 50,000 to 350,000 population range, and thus requires one O_3 monitor. The monitor at the Palisade site satisfies this requirement.

3.4. Southwestern Region

The first and fourth maximum eight-hour concentrations, recorded in 2024 at the Cortez - Health Dept. The O_3 monitoring site is listed in Table 3.5 below. This is the only O_3 monitor located in the Southwestern Region.

Table 3.5: Summary of O_3 values recorded at the monitoring station in the Southwest region during 2024.

			Ozone 8-Hour Avg. (ppm)		
Site Name	County	POC	1st Max Value	4th Max Value	3-Year Avg. of 4th Max (8-Hr)
Cortez - Health Dept	Montezuma	1	0.069	0.065	0.062

3.5. South Central Region

The first and fourth maximum eight-hour concentrations, recorded in 2024 at the Pueblo West O_3 monitoring site, are listed in Table 3.6 below. This is the only O_3 monitor located in the South Central Region.

Table 3.6: Summary of O_3 values recorded at the monitoring station in the South Central region during 2024. The Pueblo West site is less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design value listed for this site is not directly comparable to the 3-year NAAQS standard for ozone.

			Ozone 8-Hour Avg. (ppm)		
Site Name	County	POC	1st Max Value	4th Max Value	3-Year Avg. of 4th Max (8-Hr)
Pueblo West	Pueblo	1	0.083	0.076	0.071

3.6. Recent and Planned Changes in O_3 Monitoring

O_3 monitoring was discontinued at the Platteville Atmospheric Observatory (PAO) site on 2/6/2024 and moved to the new La Salle site (08-123-0015) on 2/7/24. O_3 monitoring commenced at two new sites in Larimer County (Bethke and Fossil Creek) in the summer of 2024. O_3 monitoring will commence at a new site in West Loveland (Mehaffey Park) in 2025.

4. Nitrogen Dioxide/Reactive Oxides of Nitrogen (NO_2/NO_y)

Currently, there are nine $NO_2/NO_x/NO_y$ monitoring locations in operation in the Denver Metro/North Front Range Region, three of which are new sites. The Denver CAMP monitor exceeded the annual average NO_2 standard (53 ppb) in 1977 and the Welby monitor has never exceeded the standard. 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 one-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. NCore sites are part of a national EPA network that monitors multiple pollutants at certain "core" sites around the country. NO_y monitoring is a requirement for an NCore station, but there are no standards for NO_y. The EPA has also 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 these 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. Near roadway sites were installed at the I-25 Denver and I-25 Globeville sites to satisfy these requirements. These sites began operation in June 2013 and October 2015, respectively. In addition to the near roadway monitoring, there must be one monitoring station in each CBSA with a population of one million or more persons to monitor a location of expected highest NO_2 concentrations representing the neighborhood or larger spatial scales. The CAMP site satisfies the requirement for the neighborhood highest representative concentration site.

4.1. Denver Metro/North Front Range Region

The annual mean and 98th percentile one-hour concentrations recorded in 2024 for each NO_2 monitoring site in the Denver Metro/North Front Range region are listed in Table 4.1 below. Also listed are the three year design values for each site. The APCD currently monitors NO_2

only in this region. All of these monitors show values that are well below both the annual average NAAQS of 53 ppb and the one-hour NAAQS of 100 ppb.

Table 4.1: Summary of NO_2 values recorded at monitoring stations in the Denver Metro / Northern Front Range region during 2024. The Fossil Creek, Bethke, and La Salle sites are less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design values listed for these sites are not directly comparable to the 3-year NAAQS standard for NO_2. The CAMP monitoring site was closed from October 14, 2023 to January 1, 2024 due to access issues, so the three-year design value shown here is not currently valid for this site.

			NO_2 (ppb)		
Site Name	County	POC	Annual Mean	98th Percentile	3-Year Avg. of 98th percentile
Welby	Adams	1	14.4	51.4	55
CAMP	Denver	1	13.6	57.0	60
La Casa	Denver	1	14.6	50.0	53
I-25	Denver	1	20.3	56.3	59
Globeville	Denver	1	23.3	59.6	63
Rocky Flats - N.	Jefferson	1	2.5	17.6	25
Fossil Creek	Larimer	1	5.4	32.3	32
Bethke	Larimer	1	6.6	31.7	32
La Salle Tower	Weld	1	6.3	36.0	36

4.2. Recent and Planned Changes in NO_2/NO_y Monitoring

NO_2 monitoring was discontinued at the Platteville Atmospheric Observatory (PAO) site on 2/6/2024 and moved to the new La Salle site (08-123-0015) on 2/7/24. NO_2 monitoring commenced at two new sites in Larimer County (Bethke and Fossil Creek) in the summer of 2024. NO_X and/or NO_y monitoring will commence at West Loveland (Mehaffey Park), Chatfield State Park, and Fort Collins West sites in 2025.

5. Sulfur Dioxide (SO2)

Currently, there are three SO_2 monitoring locations within the APCD's network. A new one-hour primary standard was finalized in June 2010. To attain that standard, the three-year average of the 99th percentile of daily maximum one-hour averages at each monitor within an area must not exceed 75 ppb. The secondary NAAQS is a three-hour average not to exceed 500 ppb more than once per year.

SO_2 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. For any MSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO_2 monitors are required within that MSA. For any MSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO_2 monitors are required within that MSA. For any MSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO_2 monitor is required within that MSA. A sum of the most recent emissions data by county (2020) gives a total for SO_2 emissions of 1,183 tons per year for the Denver PMSA. The calculated PWEI for this region is 3,547 million persons-tons per year. This indicates no minimum monitoring requirements for SO_2 in the Denver-Aurora-Lakewood MSA.

Using the same calculation for the Colorado Springs MSA, the calculated PWEI is 582 million persons-tons per year. This indicates no minimum monitoring requirements for SO_2 in the Colorado Springs MSA. While there are no longer PWEI-based minimum monitoring requirements, the APCD will continue to conduct SO_2 monitoring at three locations in the Denver Metro/North Front Range Region during 2025.

5.1. Denver Metro/North Front Range Region

The annual mean and 99th percentile one-hour daily maximum concentrations recorded in 2024 for each SO_2 monitoring site in the Denver Metro/North Front Range region are listed in Table 5.1 below. Also listed are the three year design values for each site.

Table 5.1: Summary of SO_2 values recorded at monitoring stations in the Denver Metro/Northern Front Range region during 2024. The CAMP monitoring site was closed from October 14, 2023 to January 1, 2024 due to access issues, so the three-year design value shown here is not currently valid for this site.

			SO_2 (ppb)		
Site Name	County	POC	Annual Mean	99^{th} Percentile	3-Year Avg. of 99^{th} percentile
Welby	Adams	2	1.6	4.1	5
CAMP	Denver	1	1.3	4.9	5
La Casa	Denver	1	1.5	5.2	5

5.2. Recent and Planned Changes in SO_2 Monitoring

SO_2 monitoring will commence at the Birch Street monitoring site in 2025.

6. Particulate Matter (PM)

Sources of suspended particulate matter in 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. There are also a variety of agricultural sources of PM including feed lots, grazing, tilling, etc. Suspended particulates in the atmosphere vary widely in their chemical and physical composition. Particulate matter can be directly emitted or can be formed in the atmosphere when gaseous pollutants react to form particles.

Particle size is the factor most directly linked to the health impacts of atmospheric PM. Particles of less than 10 micrometers (μm) in aerodynamic diameter (PM_{10}) are inhalable and thus pose a health threat. Particles less than 2.5 μm in aerodynamic diameter ($PM_{2.5}$) can penetrate deeply into the alveoli, while the smallest particles, such as those less than 0.1 μm in aerodynamic diameter (ultrafine particles), can penetrate all the way into the bloodstream. Exposure to such particles can affect the lungs, the heart, and the cardiovascular system. Particles with diameters between 2.5 μm and 10 μm ($PM_{10-2.5}$) represent less of a health concern, although they can irritate the eyes, nose, and throat, and cause serious harm due to inflammation in the airways of people with respiratory diseases such as asthma, chronic obstructive pulmonary disease, and pneumonia. Note that PM_{10} encompasses all particles smaller than 10 μm, including the $PM_{2.5}$ and ultrafine fractions.

Table 6.1: EPA's minimum PM_{10} monitoring requirements.

MSA Population	High Concentration[1]	Medium Concentration[2]	Low Concentration[3,4]
>1,000,000	6-10	4-8	2-4
500,000-1,000,000	4-8	2-4	1-2
250,000-500,000	3-4	1-2	0-1
100,000-250,000	1-2	0-1	0

Table 6.2: EPA's minimum $PM_{2.5}$ monitoring requirements.

MSA Population	Most recent 3-year design value ≥ 85% of any $PM_{2.5}$ NAAQS	Most recent 3-year design value < 85% of any $PM_{2.5}$ NAAQS
>1,000,000	3	2
500,000-1,000,000	2	1
50,000-500,000	1	0

Table 6.1 and Table 6.2 list EPA's PM_{10} and $PM_{2.5}$ monitoring requirements, respectively. Currently the APCD operates PM_{10} monitors at 15 different locations. Three of these sites use low-volume filter-based instruments. The PM_{10} NAAQS is a 24-hour average of 150 μg 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.

Currently the APCD operates $PM_{2.5}$ monitors at 25 different locations. All of these sites are equipped with continuous monitors and four sites also use low-volume filter-based instruments. There are collocated low-volume $PM_{2.5}$ samplers at the CAMP monitoring site.

The annual $PM_{2.5}$ primary standard of 9 µg m^{-3} is compared to the three-year average annual mean $PM_{2.5}$ concentration. The 24-hour $PM_{2.5}$ standard of 35 µg m^{-3} is compared to the three-year average of the annual 98th percentile value.

6.1. Continuous PM Monitoring

All Federal Reference Method (FRM) monitors in the Colorado $PM_{2.5}$ network were in the past compared to the NAAQS. The FRM monitors are all filter-based 24-hour composite samplers. Due to advances in continuous particulate monitoring technology, the APCD now uses continuous PM monitors to compare to the $PM_{2.5}$ NAAQS. The GRIMM EDM 180 and the Teledyne T640 (and T640x) have received Federal Equivalent Method (FEM) designation for $PM_{2.5}$ from the EPA. The APCD replaced the first TEOM at CAMP in April of 2013 with a GRIMM EDM 180. The APCD has determined the GRIMM EDM 180 and the T640/T640x to be a very reliable and cost effective way to monitor ambient continuous particulate concentrations. The APCD currently operates 25 sites that use these instruments to compare to the PM_{10} and $PM_{2.5}$ NAAQS.

6.2. Denver Metro/North Front Range Region

There were no violations of the PM_{10} NAAQS in the Denver Metro/North Front Range region during 2024. Three sites recorded 24-hour value $PM_{2.5}$ values in excess of the 24-hour $PM_{2.5}$ standard of 35 µg m^{-3}: Welby (35.8 µg m^{-3}), Longmont (44.5 µg m^{-3}), and Platteville (36.8 µg m^{-3}); however, there were no violations of the $PM_{2.5}$ NAAQS in the Denver Metro/North Front Range region during 2024. Table 6.3 and Table 6.4 below list the PM_{10} and $PM_{2.5}$ annual averages and design values recorded at each site in this region in 2024.

Table 6.3: Summary of PM_{10} values recorded at monitoring stations in the Denver Metro/Northern Front Range region during 2024. The Boulder CU PM_{10} monitor is new, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design value listed for this site is not directly comparable to the 3-year NAAQS standard for PM_{10}.

			PM_{10} (µg m^{-3})		
Site Name	County	POC	Annual Mean	24-Hr Max	3-Year Exceedances
Birch Street	Adams	3	35.7	142	0
Welby	Adams	3	33.6	139	0
Longmont Municipal Bldg	Boulder	4	23.9	92	0
Boulder - CU - Athens	Boulder	3	17.5	72	0
La Casa	Denver	1	21.7	65	0

Table 6.4: Summary of $PM_{2.5}$ values recorded at monitoring stations in the Denver Metro/Northern Front Range region during 2024. The Welby and Boulder CU $PM_{2.5}$ monitors are less than three years old, and did not have three years of regulatory monitoring data at the time of this report. The Bethke monitoring site is also less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design values listed for these sites are not directly comparable to the 3-year NAAQS standard for $PM_{2.5}$.

			$PM_{2.5}$ ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	98th Percentile	3-Year Avg. of 98th percentile
Birch Street	Adams	3	7.1	21.5	21
Welby	Adams	3	7.0	21.6	22
Arapahoe Community College	Arapahoe	3	5.3	17.5	15
Longmont Municipal Bldg	Boulder	4	7.0	23.5	19
Boulder - CU - Athens	Boulder	3	4.8	17.2	15
CAMP	Denver	1	6.1	17.3	18
National Jewish Health	Denver	3	6.0	18.5	16
La Casa	Denver	3	5.6	18.3	17
I-25	Denver	3	7.8	21.2	18
Globeville	Denver	3	7.6	19.2	20
Chatfield State Park	Douglas	3	4.5	16.8	14
Fort Collins - CSU - Edison	Larimer	3	6.4	20.5	19
Bethke	Larimer	3	4.9	13.4	13
Greeley - Hospital	Weld	3	6.8	20.6	22
Platteville - Middle School	Weld	3	7.7	24.8	22

6.3. Eastern High Plains

There were no violations of the PM_{10} or $PM_{2.5}$ NAAQS in the Eastern High Plains region during 2024. Table 6.5 and Table 6.6 below list the PM_{10} and $PM_{2.5}$ annual averages and design values recorded at each site in this region in 2024.

Table 6.5: Summary of PM_{10} values recorded at monitoring stations in the Eastern High Plains region during 2024. The Lamar Municipal Building PM_{10} monitor is less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design value listed for this site is not directly comparable to the 3-year NAAQS standard for PM_{10}.

			PM_{10} ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	24-Hr Max	3-Year Exceedances
Lamar Municipal Bldg	Prowers	3	24.1	100	0

Table 6.6: Summary of $PM_{2.5}$ values recorded at monitoring stations in the Eastern High Plains region during 2024. The Lamar Municipal Building $PM_{2.5}$ monitor is less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design value listed for this site is not directly comparable to the 3-year NAAQS standard for $PM_{2.5}$.

			$PM_{2.5}$ ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	98th Percentile	3-Year Avg. of 98th percentile
Lamar Municipal Bldg	Prowers	3	5.5	18.6	14

6.4. Pikes Peak Region

There were no violations of the PM_{10} or $PM_{2.5}$ NAAQS in the Pikes Peak region during 2024. Table 6.7 and Table 6.8 below list the PM_{10} and $PM_{2.5}$ annual averages and design values recorded at the Colorado College monitoring site in 2024.

Table 6.7: Summary of PM_{10} values recorded at the Colorado College station during 2024.

			PM_{10} ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	24-Hr Max	3-Year Exceedances
Colorado College	El Paso	1	15.5	42	0

Table 6.8: Summary of $PM_{2.5}$ values recorded at the Colorado College station during 2024.

			$PM_{2.5}$ ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	98th Percentile	3-Year Avg. of 98th percentile
Colorado College	El Paso	3	5.7	16.5	14

6.5. South Central Region

There were no violations of the PM_{10} or $PM_{2.5}$ NAAQS in the South Central region during 2024. Table 6.9 and Table 6.10 below list the PM_{10} and $PM_{2.5}$ annual averages and design values recorded at the Pueblo site in 2024.

Table 6.9: Summary of PM_{10} values recorded at the Pueblo monitoring station during 2024. The Pueblo Fountain School PM_{10} monitor is less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design value listed for this site is not directly comparable to the 3-year NAAQS standard for PM_{10}.

			PM_{10} ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	24-Hr Max	3-Year Exceedances
Pueblo - Fountain School	Pueblo	3	18.0	78	0

Table 6.10: Summary of $PM_{2.5}$ values recorded at the Pueblo monitoring station during 2024.

			$PM_{2.5}$ ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	98th Percentile	3-Year Avg. of 98th percentile
Pueblo - Fountain School	Pueblo	3	4.7	12.5	13

6.6. Central Mountain Region

There were no violations of the PM_{10} NAAQS in the Central Mountain region during 2024. Table 6.11 and Table 6.12 below list the PM_{10} and $PM_{2.5}$ annual average and design values recorded at each site in this region in 2024.

Table 6.11: Summary of PM_{10} values recorded at monitoring stations in the Central Mountains region during 2024.

			PM_{10} ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	24-Hr Max	3-Year Exceedances
Cañon City	Fremont	3	17.1	72	0
Aspen	Pitkin	3	17.4	81	0
Steamboat Springs	Routt	4	15.6	59	0

Table 6.12: Summary of $PM_{2.5}$ values recorded at monitoring stations in the Central Mountains region during 2024. The Aspen $PM_{2.5}$ monitor is less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design value listed for this site is not directly comparable to the 3-year NAAQS standard for $PM_{2.5}$.

			$PM_{2.5}$ ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	98th Percentile	3-Year Avg. of 98th percentile
Aspen	Pitkin	3	4.2	13	13

6.7. Western Slope Region

There were no violations of the PM_{10} or $PM_{2.5}$ NAAQS in the Western Slope region during 2024. Table 6.13 and Table 6.14 below list the PM_{10} and $PM_{2.5}$ annual averages and design values recorded at each site in this region in 2024.

Table 6.13: Summary of PM_{10} values recorded at monitoring sites in the Western Slope region during 2024.

			PM_{10} ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	24-Hr Max	3-Year Exceedances
Grand Junction - Powell Bldg.	Mesa	1	15.2	50	0
Telluride	San Miguel	3	16.0	72	0

Table 6.14: Summary of $PM_{2.5}$ values recorded at the Grand Junction - Powell Bldg. monitoring site during 2024.

			$PM_{2.5}$ ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	98th Percentile	3-Year Avg. of 98th percentile
Grand Junction - Powell Bldg.	Mesa	3	4.9	14.1	13

6.8. Southwestern Region

There were no violations of the PM_{10} NAAQS in the Southwestern region during 2024. Table 6.15 below lists the PM_{10} annual averages and design values recorded at each site in this region in 2024.

Table 6.15: Summary of PM_{10} values recorded at monitoring sites in the Southwest region during 2024.

			PM_{10} ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	24-Hr Max	3-Year Exceedances
Pagosa Springs School	Archuleta	4	20.7	76	0

6.9. San Luis Valley Region

There were no violations of the PM_{10} or $PM_{2.5}$ NAAQS in the San Luis Valley region during 2024. Table 6.16 and Table 6.17 below list the PM_{10} and $PM_{2.5}$ annual averages and design values recorded at each site in this region in 2024.

Table 6.16: Summary of PM_{10} values recorded at monitoring sites in the San Luis Valley region during 2024. The Adams State PM_{10} monitor is less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design value listed for this site is not directly comparable to the 3-year NAAQS standard for PM_{10}.

			PM_{10} ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	24-Hr Max	3-Year Exceedances
Alamosa - Adams State	Alamosa	3	20.5	150	0

Table 6.17: Summary of $PM_{2.5}$ values recorded at monitoring sites in the San Luis Valley region during 2024. The Adams State $PM_{2.5}$ monitor is less than three years old, and did not have three years of regulatory monitoring data at the time of this report. Therefore the design value listed for this site is not directly comparable to the 3-year NAAQS standard for $PM_{2.5}$.

			$PM_{2.5}$ ($\mu g\ m^{-3}$)		
Site Name	County	POC	Annual Mean	98th Percentile	3-Year Avg. of 98th percentile
Alamosa - Adams State	Alamosa	3	5.1	12.8	15

6.10. Recent and Planned Changes in PM Monitoring

Over the previous year, several significant changes were made to the PM monitoring network at various locations, emphasizing a shift toward more modern and efficient particulate matter monitoring equipment and methods. These changes span from equipment upgrades to method adjustments and are detailed below for each site:

Bethke Site (08-069-0016)

- A Teledyne T640 $PM_{2.5}$ monitor was installed at the Bethke site in Larimer County.

Birch Street (08-001-0010)

- Low-volume PM_{10} sampling discontinued on 7/1/2024.

Boulder (08-013-0012 and 08-013-1001)

- Shut down Boulder Chamber of Commerce site on 1/2/2024, ending filter-based PM_{10} and $PM_{2.5}$ sampling.

CAMP (08-031-0002)

- High-volume PM_{10} sampling discontinued in 2024.

Platteville - Middle School (08-123-0008)

- $PM_{2.5}$ Partisol FRM removed and replaced by a T640x FEM for real-time PM_{10} and $PM_{2.5}$ monitoring.

Aspen (08-097-0008)

- Discontinued high-volume PM_{10} sampling and introduced a T640x FEM for real-time PM_{10} monitoring.

Grand Junction - Powell Bldg. (08-077-0017)

- Discontinued collocated low-volume PM_{10} sampling.

Planned Changes

$PM_{2.5}$ and PM_{10} monitoring will commence in Edwards and Delta in 2025. The current BAM unit at the Rifle monitoring site will be replaced by a continuous Teledyne T640 monitor.

7. Lead

Lead sampling at the La Casa NCore site was discontinued on December 31 of 2015 due to low concentrations. The maximum quarterly lead concentration has generally been less than a tenth of the current 2008 standard. Additionally, Colorado has not recorded an exceedance of the previous lead standard (1.5 μg m^{-3} averaged over a calendar quarter) since the first quarter of 1980. The 2008 lead standard, which is 0.15 μg m^{-3} averaged over any three rolling consecutive three-month periods, has not been exceeded using data from 2013 - 2015.

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 the EPA, Centennial Airport had the second highest lead emissions of any airport in the country at 1.18 tons per year (tpy) using data from the 2005 National Emissions Inventory (NEI). Since this emissions estimate exceeded the threshold for lead, the APCD 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. The Centennial Airport TSP sampler was decommissioned in December of 2014 due to the site meeting its sampling requirements and it regularly showing concentrations well below that of the standard.

Lead monitoring is required by EPA at one source-oriented SLAMS site located to measure the maximum lead concentration in ambient air resulting from each non-airport lead source which emits 0.50 or more tpy based on either the most recent National Emission Inventory (NEI) 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. Based on the 2020 NEI, there are no sources in Colorado that are over the 0.50 tpy threshold.

7.1. Planned Changes in Lead Monitoring

No changes in lead monitoring are planned for 2025. Ambient lead concentrations will still be measured at the $PM_{2.5}$ speciation and IMPROVE sites throughout the state, as well as on the PM_{10} sampler at Grand Junction Powell (08-077-0017) as part of the NATTS project.

8. Meteorological Measurements

Meteorological measurements taken by the APCD consist of wind speed, wind direction, and temperature; nine sites are also equipped to measure relative humidity. Four sites also record temperature differential and total solar radiation, and the APCD is presently enhancing the meteorological network with barometric pressure and precipitation measurements at select sites. Sites equipped with meteorological monitoring equipment are indicated in Table 1.2.

8.1. Recent and Planned Changes in Meteorological Monitoring

Meteorological monitoring was discontinued at PAO when this site was closed on 2/6/2024. Meteorological monitoring was also discontinued at CAMP and at Highway 24 in Colorado Springs when this site was permanently closed on 1/1/2024. Meteorological monitoring was added at the Fossil Creek site in Larimer County in January 2024.

9. PAMS (Photochemical Assessment Monitoring Station) Monitoring

In accordance with the EPA's 2015 revised ozone monitoring rule (80 CFR 65292), the state of Colorado is required to install and operate one Photochemical Assessment Monitoring Station (PAMS) site. The rule states that PAMS monitoring is to occur at all NCore sites from June 1 through August 31 in CBSAs with populations of 1,000,000 or more. Colorado's Rocky Flats PAMS site measures, at a minimum, volatile organic compounds (VOCs), carbonyls, ozone, total reactive nitrogen (NO_y), nitrogen dioxide (NO_2), mixing layer height, wind speed, wind direction, relative humidity, temperature, atmospheric pressure, precipitation, total solar radiation, and ultraviolet radiation. The APCD has opted to run the GC year-round to better understand ozone precursor contributions; this system has been operating continuously since August 14, 2023, with carbonyl sampling to resume each PAMS season.

9.1. Recent and Planned Changes in PAMS Monitoring

In 2024, three new VOC monitoring sites (Ft. Logan, Platteville, and Adams) were established and began data collection between January and April. These sites, operated by Montrose through September 2025, will undergo Level 3 data validation. VOC monitoring at the Rocky Flats site, initially managed by ORSAT LLC and the CDPHE TSP team, transitioned fully to TSP in October 2024, with EPA calibration standards replacing ORSAT's. In 2025, VOC monitoring will remain stable apart from a sampling line upgrade, while carbonyl procedures will continue unchanged. However, severe winter weather rendered the auto-GC at RFN mostly inoperative during February 2025.

10. Quality Assurance

10.1. Continuous Monitors

The Technical Services Program (TSP) staff performs three types of gaseous analyzer performance checks: quality control checks, accuracy audits, and calibrations. The audits and 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 EPA's National Performance Audit Program (NPAP) also conducts independent audits on randomly selected sites within the network. The APCD Criteria Monitoring Unit (CMU) staff conducts quality control checks nominally once every week 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). The APCD always makes an effort to go above and beyond the minimum requirements. 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.

10.2. Particulate Monitors

The audit checks performed on 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 monthly temperature, pressure, leak rate, and flow rate verification checks. EPA requires a minimum of 15% of the FRM network to be collocated. By the end of 2024, Colorado maintained six filter-based particulate monitoring sites (PM_{10} and $PM_{2.5}$), two of which had collocated instruments (CAMP and La Casa). 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 filter-based low-volume FRM sampler next to the APCD's $PM_{2.5}$ sampler. All of the samples are then compared to ensure that the data are within federal limits and meet pre-established data quality objectives.

10.3. Meteorological Monitors

Annual calibrations and audits are performed on all APCD meteorological equipment. 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.

11. Summary of Network Changes

Over the past year, several network changes occurred, and during the next year several more changes are planned. The section below summarizes these changes to the monitoring network.

11.1. Completed and Planned Changes

- **CO Monitoring:**
  - The CO monitor at the Highway 24 site was moved to the preexisting Colorado College site (08-041-0017) on 1/1/2024.

- **O_3 Monitoring:**
  - O_3 monitoring was discontinued at the Platteville Atmospheric Observatory (PAO) site on 2/6/2024 and moved to the new La Salle site (08-123-0015) on 2/7/24.
  - O_3 monitoring commenced at two new sites in Larimer County (Bethke and Fossil Creek) in summer of 2024.
  - O_3 monitoring is planned to commence at a new site in West Loveland (Mehaffey Park) in 2025.

- **NO_2 Monitoring:**
  - NO_2 monitoring was discontinued at the Platteville Atmospheric Observatory (PAO) site on 2/6/2024 and moved to the new La Salle site (08-123-0015) on 2/7/24.
  - NO_2 monitoring commenced at two new sites in Larimer County (Bethke and Fossil Creek) in summer of 2024.
  - NO_X and/or NO_y monitoring is planned to commence at West Loveland (Mehaffey Park), Chatfield State Park, and Fort Collins West sites in 2025.

- **SO_2 Monitoring:**
  - Discontinued SO_2 monitoring at Highway 24 when the site was closed on 1/1/2024.
  - SO_2 monitoring at Welby will be moved to the Adams County Birch Street monitoring site in 2025.

- **PM Monitoring:**
  - A new monitoring site opened at Bethke in Larimer County with a Teledyne T640 $PM_{2.5}$ monitor.
  - Low-volume PM_{10} sampling discontinued at Birch street site on 7/1/2024.
  - Shut down Boulder Chamber of Commerce site on 1/2/2024, ending filter-based PM_{10} and $PM_{2.5}$ sampling.
  - High-volume PM_{10} sampling discontinued at CAMP in 2024.

– $PM_{2.5}$ Partisol FRM removed from Platteville Middle School and replaced by a T640x FEM for real-time PM_{10} and $PM_{2.5}$ monitoring.
– Discontinued high-volume PM_{10} sampling at Aspen site and introduced a T640x FEM for real-time PM_{10} monitoring.
– Discontinued collocated low-volume PM_{10} sampling at Grand Junction site in 2024
– Commencement of $PM_{2.5}$ and PM_{10} planned for Edwards and Delta in 2025.
– The current BAM unit at the Rifle monitoring site will be replaced by a Teledyne T640 monitor.

- **Meteorological Monitoring:**
  – Meteorological monitoring commenced at the new Fossil Creek site in January 2024.
  – Discontinued meteorological monitoring at CAMP and Highway 24 (HWY 24 decommissioned altogether)
  – Relocation from the Platteville Atmospheric Observatory to the La Salle site in February 2024

- **PAMS Monitoring:**
  – Three new VOC monitoring sites (Ft. Logan, Platteville, and Adams) were established in 2024
  - Sites will undergo Level 3 data validation in 2025 to ensure accuracy
  - No other changes planned for 2025

12. CFR Requirements 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, SPM, 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 gaseous analyzers are audited twice annually. 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. These results are kept "in-house" at the CDPHE and are available on request. Manual quality control checks are performed on all gaseous instruments weekly and the results of these quality control tests are uploaded to EPA's national AQS database.

AppendixCof 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. Monitor types, sampling frequencies, and station descriptions are listed in Appendix A.

Appendix D of 40 CFR 58 specifies the network design criteria for ambient air quality monitoring. It covers monitoring objectives and spatial scales, general monitoring requirements, design criteria for NCore sites, pollutant specific design criteria for SLAMS sites, and 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 every two years. These evaluations include measurements of the probe heights and locations, as well as residence time determinations for each gaseous analytical instrument. The results are tracked in a database at the CDPHE and are available upon request.

13. Appendix A: Monitoring Site Descriptions

AQS #	Site Name / Parameter	Address / POC	Site Start / Start	Elevation (m) / Orient/Scale	Latitude / Monitor	Longitude / Type
			Adams			
	Birch Street	7275 Birch St	Jul 2023	1569	39.8281	-104.93647
	PM_{10}	3	Jul 2023	P.O. Neigh	Met One - E-Seq	SLAMS
	$PM_{2.5}$	3	Jul 2023	P.O. Neigh	URG - 3000-N	SLAMS
080010010	$PM_{2.5}$	2	Dec 2023	P.O. Neigh	Met One - E-Seq	SLAMS
	Welby	3174 E. 78TH AVE.	Jan 1975	1554	39.838119	-104.94984
	Temperature	1	Jan 1975		Met One - 062MP	OTHER
	Wind Speed	1	Jan 1992		RM Young - 05305V	OTHER
	Wind Direction	1	Jan 1992			OTHER
	SO_2	2	Jan 2006	P.O. Neigh	TAPI - T100	SLAMS
	O_3	2	Sep 2007	P.O. Neigh	TAPI - T400	SLAMS
	NO_2	1	Nov 2019	P.O. Urban	TAPI - T200	SLAMS
	PM_{10}	3	Jan 2023	P.O. Neigh	TAPI - 640X	SLAMS
	$PM_{2.5}$	3	Jan 2024	P.O. Neigh	TAPI - 640X	SLAMS
	PM_{10}	4	May 2024	P.O. Neigh	TAPI - 640X	SLAMS
080013001	$PM_{2.5}$	4	May 2024	P.O. Neigh	TAPI - 640X	SLAMS
			Alamosa			
	Alamosa - Adams State	208 EDGEMONT BLVD.	Oct 2023	2302	37.469391	-105.878691
	PM_{10}	3	Oct 2023	P.O. Neigh	TAPI - 640X	SLAMS
080030001	$PM_{2.5}$	3	Oct 2023	P.O. Neigh	TAPI - 640X	SLAMS
			Arapahoe			
	HIGHLAND RESERVOIR	8100 S. UNIVERSITY BLVD	Jun 1978	1747	39.567887	-104.957193
	O_3	1	Sep 2015	H.C. Neigh	TAPI - T400	SLAMS
	Wind Speed	1	Sep 2015		Met One - 010C	OTHER
	Wind Direction	1	Sep 2015		Met One - 020C	OTHER
080050002	Temperature	1	Sep 2015		Met One - 062	OTHER
	Arapahoe Community College	6190 S. SANTA FE DR.	Apr 2024	1636	39.604399	-105.019526
080050005	$PM_{2.5}$	3	Apr 2024	P.O. Neigh	Grimm - EDM 180	SLAMS
	Aurora East	36001 E. Quincy Ave.	Jun 2009	1799	39.638522	-104.569335
	O_3	1	Jun 2009	P.O. Urban	TAPI - T400	SLAMS
	Wind Speed	1	Jun 2009	P.O. Urban	Met One - 010C	OTHER
	Wind Direction	1	Jun 2009	P.O. Urban	Met One - 020C	OTHER
080050006	Temperature	1	Jun 2009	P.O. Urban	Met One - 060	OTHER
			Archuleta			
	PAGOSA SPRINGS SCHOOL	309 LEWIS ST.	Nov 2023	2165	37.26842	-107.009659
	PM_{10}	4	Nov 2023	P.O. Neigh	TAPI - 640X	SLAMS
080070001	$PM_{2.5}$	4	Jan 2025	P.O. Neigh	TAPI - 640X	SLAMS
			Boulder			
	LONGMONT - MUNICIPAL BLDG	350 KIMBARK ST.	Jan 2024	1520	40.164576	-105.100856
	PM_{10}	4	Jan 2024	P.O. Neigh	TAPI - 640X	SLAMS
080130003	$PM_{2.5}$	4	Jan 2024	P.O. Neigh	TAPI - 640X	SLAMS
	Boulder Reservoir	5545 Reservoir Road.	Sep 2016	1586	40.070016	-105.220238
	O_3	1	Sep 2016	P.O. Urban	TAPI - 400E	SLAMS
	Wind Speed	1	Sep 2016	P.O.	RM Young - 05305V	OTHER
	Wind Direction	1	Sep 2016	P.O.		OTHER
	Temperature	1	Sep 2016	P.O.	RM Young - 41372V	OTHER
080130014	Relative Humidity	1	Sep 2016	P.O.		OTHER
	BOULDER - CU-ATHENS	2102 ATHENS ST.	Aug 2023	1622	40.012969	-105.267212
	$PM_{2.5}$	3	Aug 2023	P.O. Neigh	TAPI - 640X	SLAMS
080131001	PM_{10}	3	Aug 2023	P.O. Neigh	TAPI - 640X	SLAMS
			Clear Creek			
	Mines Peak	Near summit of Berthoud Pass off US Highway 40	Jul 2014	3806	39.794391	-105.76398
080190006	O_3	1	Jul 2014	Back Region	TAPI - T400	SPM
			Delta			
	DELTA HEALTH DEPT	255 WEST 6th ST.	Jun 2025	1511	38.739213	-108.07307
	PM_{10}	3	Jun 2025	P.O. Neigh	TAPI - 640X	SLAMS
080290004	$PM_{2.5}$	3	Jun 2025	P.O. Neigh		SLAMS
			Denver			
	DENVER - CAMP	2105 BROADWAY	Jan 1985	1593	39.751184	-104.987625
	Temperature	1	Jan 1985			OTHER
	SO_2	1	Nov 2005	H.C. Neigh	TAPI - T100	SLAMS

AQS #	Site Name / Parameter	Address / POC	Site Start / Start	Elevation (m) / Orient/Scale	Latitude / Monitor	Longitude / Type
	O_3	6	Jan 2012	P.O. Neigh	TAPI - T400	SLAMS
	$PM_{2.5}$	3	Apr 2013	H.C. Micro	Grimm - EDM 180	SPM
	NO_2	1	Jan 2014	H.C. Neigh	TAPI - T200U	SLAMS
	$PM_{2.5}$	1	Feb 2024	P.O. Micro	Met One - E-Seq	SLAMS
080310002	$PM_{2.5}$	2	Feb 2024	P.O. Micro	Met One - E-Seq	SLAMS
	DENVER - NJH-E	14TH AVE. & ALBION ST.	Mar 2018	1620	39.738578	-104.939925
080310013	$PM_{2.5}$	3	Jul 2023	P.O. Neigh	TAPI - 640	SLAMS
	La Casa	4545 Navajo St.	Jan 2013	1602	39.77949	-105.00518
	CO	1	Jan 2013	P.O. Neigh	Thermo - 48i-TL	SLAMS
	NOy - NO	1	Jan 2013	P.O. Neigh	TAPI - T200U-NOY	SLAMS
	O_3	1	Jan 2013	P.O. Neigh	TAPI - T400	SLAMS
	Wind Speed	1	Jan 2013	P.O. Neigh	Met One - 010C	SLAMS
	Wind Direction	1	Jan 2013	P.O. Neigh	Met One - 020C	SLAMS
	Temperature	1	Jan 2013	P.O. Neigh	Met One - 010C	SLAMS
	Temperature	2	Jan 2013	P.O. Neigh	Met One - 010C	SLAMS
	SO_2	1	Apr 2013	P.O. Neigh	TAPI - T100U	SLAMS
	NO_2	1	Jul 2014	P.O. Neigh	TAPI - T500U	SLAMS
	Relative Humidity	1	Nov 2014	P.O. Neigh	Met One - 083E-1-35	SLAMS
	Solar radiation	1	Apr 2018	P.O. Neigh	KIPP&ZONEN - CMP11	SLAMS
	$PM_{2.5}$	3	Jul 2023	P.O. Neigh	TAPI - 640	SLAMS
	PM_{10}	1	Apr 2024	P.O. Neigh	Met One - E-Seq	SLAMS
	PM_{10}	2	Apr 2024	P.O. Neigh	Met One - E-Seq	SLAMS
080310026	$PM_{2.5}$	1	Apr 2024	P.O. Neigh	Met One - E-Seq	SLAMS
	I-25	971 Yuma Street	Jun 2013	1583	39.73217	-105.0153
	CO	1	Jun 2013	P.O. Micro	Thermo - 48i-TL	SLAMS
	Wind Speed	1	Jun 2013	P.O.	RM Young - 05305V	OTHER
	Wind Direction	1	Jun 2013	P.O.		OTHER
	Temperature	1	Jun 2013	P.O.	RM Young - 41372V	OTHER
	$PM_{2.5}$	3	Jan 2014	P.O. Micro	Grimm - EDM 180	SLAMS
	Relative Humidity	1	May 2020	P.O.	RM Young - 41372V	OTHER
	NO_2	1	May 2021	P.O. Micro	TAPI - T200	SLAMS
080310027	$PM_{2.5}$	1	Sep 2023	P.O. Micro	Met One - E-Seq	SLAMS
	Globeville	4903 Acoma St.	Oct 2015	1587	39.7861	-104.9886
	NO_2	1	Oct 2015	P.O. Micro	TAPI - T200	SLAMS
	Temperature	1	Oct 2015	P.O.	RM Young - 41372V	OTHER
	Relative Humidity	1	Oct 2015	P.O.	RM Young - 41372V	OTHER
	$PM_{2.5}$	3	Oct 2015	P.O. Micro	Grimm - EDM 180	SLAMS
	Wind Speed	1	Mar 2020	P.O.	RM Young - 05305V	OTHER
080310028	Wind Direction	1	Mar 2020	P.O.		OTHER
			Douglas			
	Chatfield State Park	11500 N. Roxborough Park Rd.	Apr 2004	1676	39.534488	-105.070358
	Wind Speed	1	Apr 2004		Met One - 010C	OTHER
	Wind Direction	1	Apr 2004		Met One - 020C	OTHER
	Temperature	1	Apr 2004			OTHER
	$PM_{2.5}$	3	Jul 2023	P.O. Neigh	TAPI - 640	SLAMS
080350004	O_3	1	Aug 2024	H.C. Urban	TAPI - T265	SLAMS
			El Paso			
	U.S. AIR FORCE ACADEMY	ROAD 640, USAF ACADEMY	Jun 1996	1971	38.958341	-104.817215
080410013	O_3	1	Aug 2010	H.C. Urban	TAPI - T400	SLAMS
	MANITOU SPRINGS	101 BANKS PL.	Apr 2004	1955	38.853097	-104.901289
080410016	O_3	1	Oct 2007	H.C. Neigh	TAPI - T400	SLAMS
	COLORADO SPRINGS - COLLEGE COLLEGE	130 W. CACHE LA POUDRE	Jun 2016	1832	38.848014	-104.828564
	$PM_{2.5}$	3	Jun 2016	P.O. Neigh	Grimm - EDM 180	SLAMS
	CO	1	Dec 2023	P.O. Neigh	Thermo - 48i-TL	SLAMS
080410017	PM_{10}	1	Sep 2024	P.O. Neigh	Met One - E-Seq	SLAMS
			Fremont			
	CANON CITY - CITY HALL	128 MAIN ST.	Oct 2023	1626	38.43829	-105.24504
	PM_{10}	3	Oct 2023	P.O. Neigh	TAPI - 640X	SLAMS
080430003	$PM_{2.5}$	3	Jan 2025	P.O. Neigh	TAPI - 640X	SLAMS
			Garfield			
	Rifle-Health Dept	195 W. 14th St.	Jun 2008	1640	39.54182	-107.784125

AQS #	Site Name / Parameter	Address / POC	Site Start / Start	Elevation (m) / Orient/Scale	Latitude / Monitor	Longitude / Type
080450012	O_3	1	Jun 2008	P.O. Neigh	TAPI - T400	SLAMS
			Gilpin			
	Black Hawk	831 Miners Mesa Road, Black Hawk Colorado 80422	Jul 2019	2633	39.792519	-105.49127
080470003	O_3	1	Jul 2019	P.O. Urban	TAPI - 400E	SLAMS
			Jefferson			
	ROCKY FLATS-N	16600 W COLO #128	Jun 1992	1802	39.912799	-105.188587
	Wind Speed	1	Jun 1992		RM Young - 05305V	OTHER
	Wind Direction	1	Jun 1992			OTHER
	Temperature	1	Jun 1992		RM Young - 41372V	OTHER
	Temperature	2	May 2018		RM Young - 41372V	OTHER
	Relative Humidity	1	Jun 2018	Back Neigh	RM Young - 41372V	OTHER
	Barometric pressure	1	Jun 2018	Back Neigh	RM Young - 61402V	OTHER
	NOy	1	Feb 2019	H.C. Urban	TAPI - 501Y	SLAMS
	NO_2	1	Feb 2019	Urban	TAPI - T500U	SLAMS
	NOy - NO	1	Feb 2019	H.C. Urban	TAPI - T200U-NOY	SLAMS
	Solar radiation	1	Jun 2019	Urban	KIPP&ZONEN - CMP11	SLAMS
080590006	O_3	1	Jul 2024	H.C. Urban	TAPI - T265	SLAMS
	NATIONAL RENEWABLE ENERGY LABS - NREL	2054 QUAKER ST.	Jun 1994	1832	39.743724	-105.177989
080590011	O_3	1	Jul 2024	H.C. Urban	TAPI - T265	SLAMS
	Evergreen	5124 South Hatch Drive	Oct 2020	2225	39.620408	-105.33872
	O_3	1	Oct 2020	P.O. Urban	TAPI - T400	SLAMS
	Wind Speed	1	Oct 2020	P.O. Urban	RM Young - 05305V	OTHER
	Wind Direction	1	Oct 2020	P.O. Urban		OTHER
	Temperature	1	Oct 2020	P.O. Urban	RM Young - 41372V	OTHER
080590014	Relative Humidity	1	Oct 2020	P.O. Urban	RM Young - 41372V	OTHER
			Larimer			
	FORT COLLINS - CSU - Edison	251 EDISON DR.	Jun 2009	1524	40.571288	-105.079693
080690009	$PM_{2.5}$	3	Jun 2015	P.O. Neigh	Grimm - EDM 180	SLAMS
	FORT COLLINS - WEST	3416 LA PORTE AVE.	Aug 2023	1571	40.592543	-105.141122
	Wind Speed	1	Aug 2023	Urban	RM Young - 05305V	SPM
	Wind Direction	1	Aug 2023	Urban		SPM
	Temperature	1	Aug 2023	Urban	RM Young - 41372V	SPM
	Temperature	2	Aug 2023	Urban	RM Young - 41372V	SPM
	Relative Humidity	1	Aug 2023	Urban		SPM
	Solar radiation	1	Aug 2023	Urban	KIPP&ZONEN - CMP11	SPM
	Barometric pressure	1	Aug 2023	Urban	RM Young - 61402V	SPM
080690011	O_3	1	Jul 2024	H.C. Urban	TAPI - T265	SLAMS
	Fossil Creek	3340 CO 392	Jan 2024	1489	40.48346	-105.01618
	NO_2	1	Jan 2024	H.C. Urban	TAPI - T200	SLAMS
	O_3	1	Jan 2024	H.C. Urban	TAPI - T400	SLAMS
	Wind Speed	1	Jan 2024	Urban	RM Young - 05305V	SPM
	Wind Direction	1	Jan 2024	Urban		SPM
	Temperature	1	Jan 2024	Urban	RM Young - 41372V	SPM
	Temperature	2	Jan 2024	Urban	RM Young - 41372V	SPM
	Relative Humidity	1	Jan 2024	Urban	RM Young - 41372V	SPM
	Solar radiation	1	Jan 2024	Urban	Apogee - SP300	SPM
080690015	Barometric pressure	1	Jan 2024	Urban	RM Young - 61402V	SPM
	Bethke	5100 School House Dr	Jun 2024	1472	40.515109	-104.949932
	NO_2	1	Jun 2024	H.C. Urban	TAPI - T200	SLAMS
	O_3	1	Jun 2024	H.C. Urban	TAPI - T400	SLAMS
080690016	$PM_{2.5}$	3	Oct 2024	P.O. Urban	TAPI - 640X	SLAMS
	Mehaffey Park	2601 Rio Blanco Ave	Jun 2025	1573	40.41883	-105.12796
080690017	O_3	1	Jun 2025	P.O. Urban	TAPI - T400	SLAMS
	Fort Collins - CSU - S. Mason	708 S. Mason St.	Jan 1981	1524	40.57747	-105.07892
	Temperature	1	Jan 1981		Met One - 062	OTHER
	Wind Speed	1	Jan 1992		RM Young - 05305V	OTHER
	Wind Direction	1	Jan 1992			OTHER
	O_3	1	May 2004	P.O. Neigh	TAPI - T400	SLAMS
080691004	CO	1	May 2016	P.O. Neigh	Thermo - 48i-TL	SLAMS
			Mesa			
	GRAND JUNCTION - POWELL BLDG	650 SOUTH AVE.	Jan 2014	1398	39.063798	-108.561173

AQS #	Site Name / Parameter	Address / POC	Site Start / Start	Elevation (m) / Orient/Scale	Latitude / Monitor	Longitude / Type
	$PM_{2.5}$	3	Jan 2014	P.O. Neigh	Grimm - EDM 180	SLAMS
080770017	PM_{10}	1	Jul 2024	P.O. Neigh	R&P - Partisol 2025	SLAMS
	GRAND JUNCTION - PITKIN	645 1/4 PITKIN AVE.	Jan 2004	1398	39.064289	-108.56155
	Wind Speed	1	Jan 2004		RM Young - 05305V	OTHER
	Wind Direction	1	Jan 2004			OTHER
	Temperature	1	Jan 2004		RM Young - 41372V	OTHER
	Relative Humidity	1	Nov 2014			OTHER
080770018	Barometric pressure	1	Sep 2020		RM Young - 61402V	OTHER
	Palisade-Water Treatment	865 Rapid Creek Rd.	May 2008	1521	39.130575	-108.313835
	O_3	1	May 2008	P.O. Urban	TAPI - T400	SLAMS
	Wind Speed	1	May 2008	P.O. Urban	RM Young - 05305V	SPM
	Wind Direction	1	May 2008	P.O. Urban		SPM
080770020	Temperature	1	May 2008	P.O. Urban	RM Young - 41342VC	SPM
	Montezuma					
	Cortez - Health Dept	106 W. North Street	Jun 2008	1890	37.350054	-108.592334
080830006	O_3	1	Jun 2008	P.O. Neigh	TAPI - T400	SLAMS
	Pitkin					
	Aspen Yellow Brick Building	215 N. Garmisch	Jun 2024	2408	39.19296	-106.82323
	PM_{10}	3	Jun 2024	P.O. Neigh	TAPI - 640X	SLAMS
080970008	$PM_{2.5}$	3	Jun 2024	P.O. Neigh	TAPI - 640X	SLAMS
	Prowers					
	Lamar Municipal Bldg	104 E. PARMENTER ST.	Oct 2023	1107	38.084688	-102.618641
	PM_{10}	3	Oct 2023	P.O. Neigh	TAPI - 640X	SLAMS
080990002	$PM_{2.5}$	3	Oct 2023	P.O. Neigh	TAPI - 640X	SLAMS
	Pueblo					
	Pueblo - Fountain School	925 N. GLENDALE AVE.	Sep 2023	1433	38.276099	-104.597613
	PM_{10}	3	Sep 2023	P.O. Neigh	TAPI - 640X	SLAMS
081010015	$PM_{2.5}$	3	Sep 2023	P.O. Neigh	TAPI - 640X	SLAMS
	Pueblo West	803 South Cellini Circle	Feb 2023	1564	38.30333	-104.7225
	O_3	1	Feb 2023	H.C. Neigh	TAPI - T400	SLAMS
	Wind Speed	1	Mar 2023	H.C. Neigh	RM Young - 05305V	SLAMS
	Wind Direction	1	Mar 2023	H.C. Neigh		SLAMS
081010016	Temperature	1	Mar 2023	H.C. Neigh	RM Young - 41372V	SLAMS
	Routt					
	Steamboat Springs	136 6TH ST.	Sep 2023	2054	40.485201	-106.831625
	PM_{10}	4	Sep 2023	P.O. Neigh	TAPI - 640X	SLAMS
081070003	$PM_{2.5}$	4	Jan 2025	P.O. Neigh	TAPI - 640X	SLAMS
	San Miguel					
	Telluride	333 W. COLORADO AVE.	Nov 2023	2684	37.937872	-107.813061
	PM_{10}	3	Nov 2023	P.O. Neigh	TAPI - 640X	SLAMS
081130004	$PM_{2.5}$	3	Jan 2025	P.O. Neigh	TAPI - 640X	SLAMS
	Weld					
	Greeley - Hospital	1516 HOSPITAL RD.	Jun 2016	1441	40.414877	-104.70693
081230006	$PM_{2.5}$	3	Jun 2016	P.O.	Grimm - EDM 180	SLAMS
	Platteville - Middle School	1004 MAIN ST.	Jun 2024	1469	40.209387	-104.82405
081230008	$PM_{2.5}$	3	Jun 2024	P.O. Region	TAPI - 640	SLAMS
	Greeley - Weld County Tower	3101 35TH AVE.	Jun 2002	1484	40.386368	-104.73744
	O_3	1	Jan 2004	P.O. Neigh	TAPI - T400	SLAMS
	Wind Speed	1	Feb 2012	P.O.	Met One - 010C	OTHER
	Wind Direction	1	Feb 2012	P.O.	Met One - 020C	OTHER
	Temperature	1	Feb 2012	P.O.	Met One - 060A	OTHER
081230009	CO	1	Apr 2016	P.O. Neigh	Thermo - 48i-TL	SLAMS
	La Salle Tower	18490 County Road 38	Feb 2024	1719	40.2614	-104.70645
	NO_2	1	Feb 2024	S.O. Region	TAPI - T200U	SLAMS
081230015	O_3	1	Feb 2024	S.O. Region	TAPI - T400	SLAMS

13. Appendix B: Public Comments and Responses

Comment #1 (Charlie Post, Secretary, Citizens for Clean Air, Grand Junction)

To whom it may concern:

I reviewed your monitoring overview and think, in general, you are doing the right things.

My only commentary would be that the overall number of sites is too few. Looking at the vast areas monitored and then comparing that to the number of monitoring units and sites, it seems to be somewhat lacking. Perhaps APCD could identify and install more sites, especially outside of the Front Range areas. The measurements are only as good as the sites selected so the site locations would need to be carefully evaluated. Currently, Citizens for Clean Air, Grand Junction maintains a network of Purple Air brand PM 2.5 monitors throughout the Grand Valley area of Mesa County. Our small group has around 40 Purple Air sensors, both indoor and outdoor units, in operation in our locale. Even at that number of monitors, we feel that we are just barely able to develop an accurate interpretation of the air quality near us.

That having been said, please consider adding more monitoring sites. Colorado will only continue to grow and it would be better to be pro-active rather than reactive to any air quality issues. At least that's my opinion.

Thank you for sharing the data and plans for this project.

Thank you for taking the time to review our monitoring plan and share your perspective. We sincerely appreciate your engagement and interest in the state's air quality monitoring efforts.

We agree that more monitoring coverage across the state, particularly in areas outside the Front Range, would be valuable. As you rightly note, Colorado continues to grow, and staying ahead of emerging air quality issues is a priority we share.

That said, expanding the regulatory monitoring network is not a simple or inexpensive endeavor. The equipment we use must meet federal reference or equivalent method standards, which means each site comes with significant costs, not just for the instruments themselves, but for ongoing maintenance, quality assurance, and data validation. These systems are designed to support regulatory decisions with major public health and legal implications, and must therefore meet very high standards for accuracy, precision, and reliability.

Low-cost sensor networks like PurpleAir can be useful for community awareness and local insight, and we appreciate the effort that Citizens for Clean Air is making to fill in some of the gaps in areas like the Grand Valley. However, these sensors don't meet the same performance criteria as regulatory monitors, and their data often requires substantial post-processing and contextual interpretation to be meaningful.

We'll certainly keep your recommendation in mind as we continue to evaluate our network and explore opportunities for strategic expansion. Thanks again for your thoughtful comments and for your commitment to clean air in Colorado.

Comment #2 (Dr. Annareli Morales, PhD, Air Quality Policy Analyst, Weld County)

I have a few comments/questions on the 2025 monitoring network plan:

- page 18 - the first sentence of the 2nd paragraph describing Weld County seems unnecessary. It's not done for any of the other counties and removing it doesn't affect the purpose of this section, which seems to focus on describing the MSAs.
  We've removed the sentence in question.
- page 26 - in Section 6.2, shouldn't it be "PM2.5" in the latter part of the 2nd sentence?
  Corrected.
- page 34 - "at the PAMS Rocky Flats site" seems out of place or wrong since we're talking about the 3 new sites here. I think removing it makes the sentences clearer.
  Corrected.

We appreciate you taking the time to review our monitoring plan and provide your feedback. Your interest and involvement in Colorado's air quality monitoring efforts are truly valued.

Comment #3 (Jannette Whitcomb, REHS, Environmental Health Manager, Garfield County Public Health)

Good day,

I wanted to submit the following comments and questions for your consideration regarding the Annual Network Plan:

The meteorological station in Parachute, CO and Rifle, CO were not included in your plan. Why?
Currently, there are two ozone monitoring sites (Rifle and Palisade) and two particulate monitoring sites (Telluride and Grand Junction) in the Western Slope region operated by the APCD. There are also two meteorological towers in this area (Palisade and Grand Junction).

Thank you for having air quality monitoring in Garfield County.

Thank you for reviewing our monitoring plan and offering your perspective. We greatly value your interest and active participation in the state's air quality monitoring initiatives.

Those meteorological stations were not included because they are operated by Garfield County rather than the Colorado APCD. The purpose of the Network Plan is to describe and provide details for sites that are directly operated by the APCD.