



Wyoming Ambient Air Monitoring Annual Network Plan 2008



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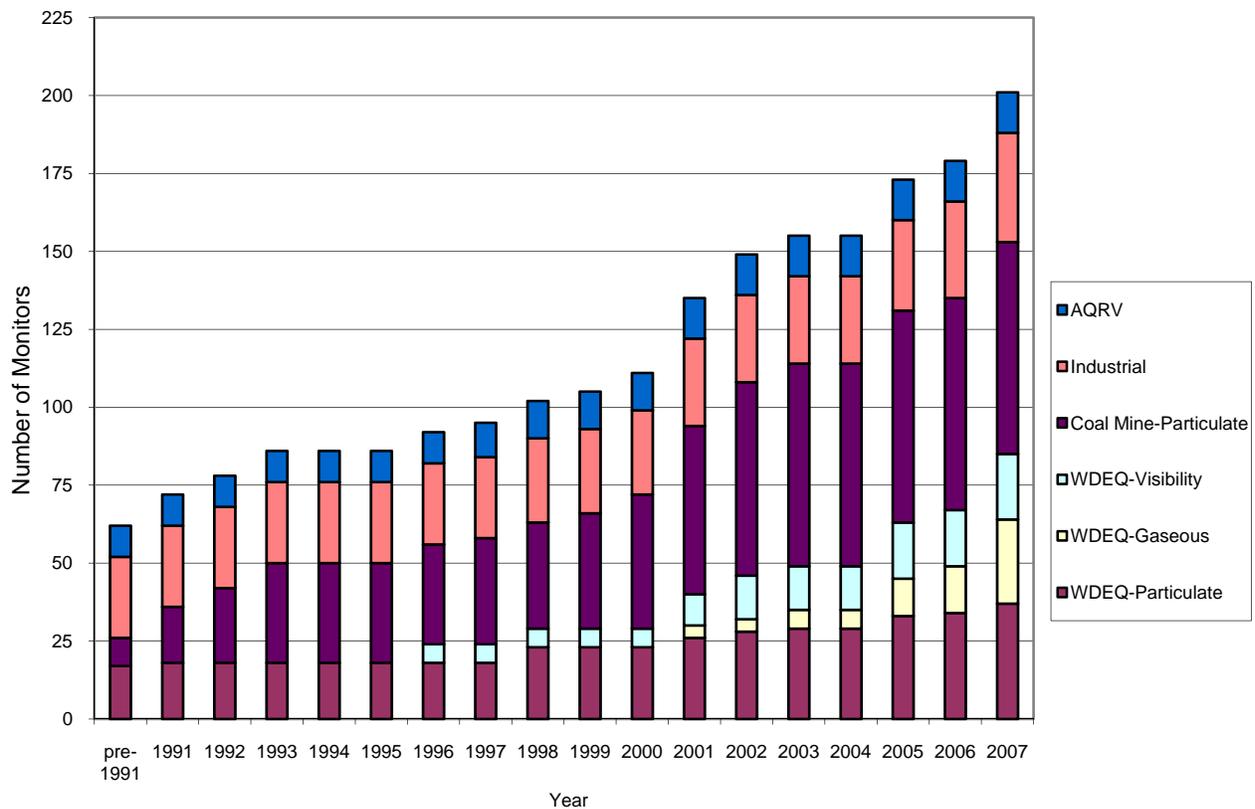
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1.0 Introduction

The United States Environmental Protection Agency (EPA) through the Code of Federal Regulations (CFR) and the Performance Partnership Agreement requires the State of Wyoming Department of Environmental Quality, Air Quality Division (AQD) to complete the Wyoming Ambient Air Monitoring Annual Network Plan for the state's ambient air monitoring sites. The Wyoming Department of Environmental Quality (WDEQ) strives to protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

1.1 AQD Monitoring History

Since the 1970's the AQD Monitoring Program has been working actively to evaluate monitoring requirements and use resources effectively in the state of Wyoming. The Air Quality Resource Management Program benefits the Division by looking at monitored data in conjunction with emission inventory trends and planned development to shape AQD's air quality management policies in the future. Not only does AQD run the State and Local Air Monitoring Sites (SLAMS) to monitor public health, but also runs or oversees several special purpose monitors to track impacts from the many industrial sources that reside in Wyoming. AQD also helps fund and evaluate data from Air Quality Related Value (AQRV) monitoring within Wyoming, such as visibility and acid deposition. The following graph shows the number of monitors AQD runs or oversees by year since 1991.



1.2 General Monitoring Goals and Objectives

The Wyoming AQD has the responsibility to protect, conserve, and enhance the quality of Wyoming's air resource. AQD helps ensure the ambient air quality in the State of Wyoming is maintained in accordance with the National Ambient Air Quality Standards (NAAQS). To carry out this goal, AQD operates and maintains a network of ambient air quality monitors and requires industrial pollution sources to conduct source specific ambient air monitoring.

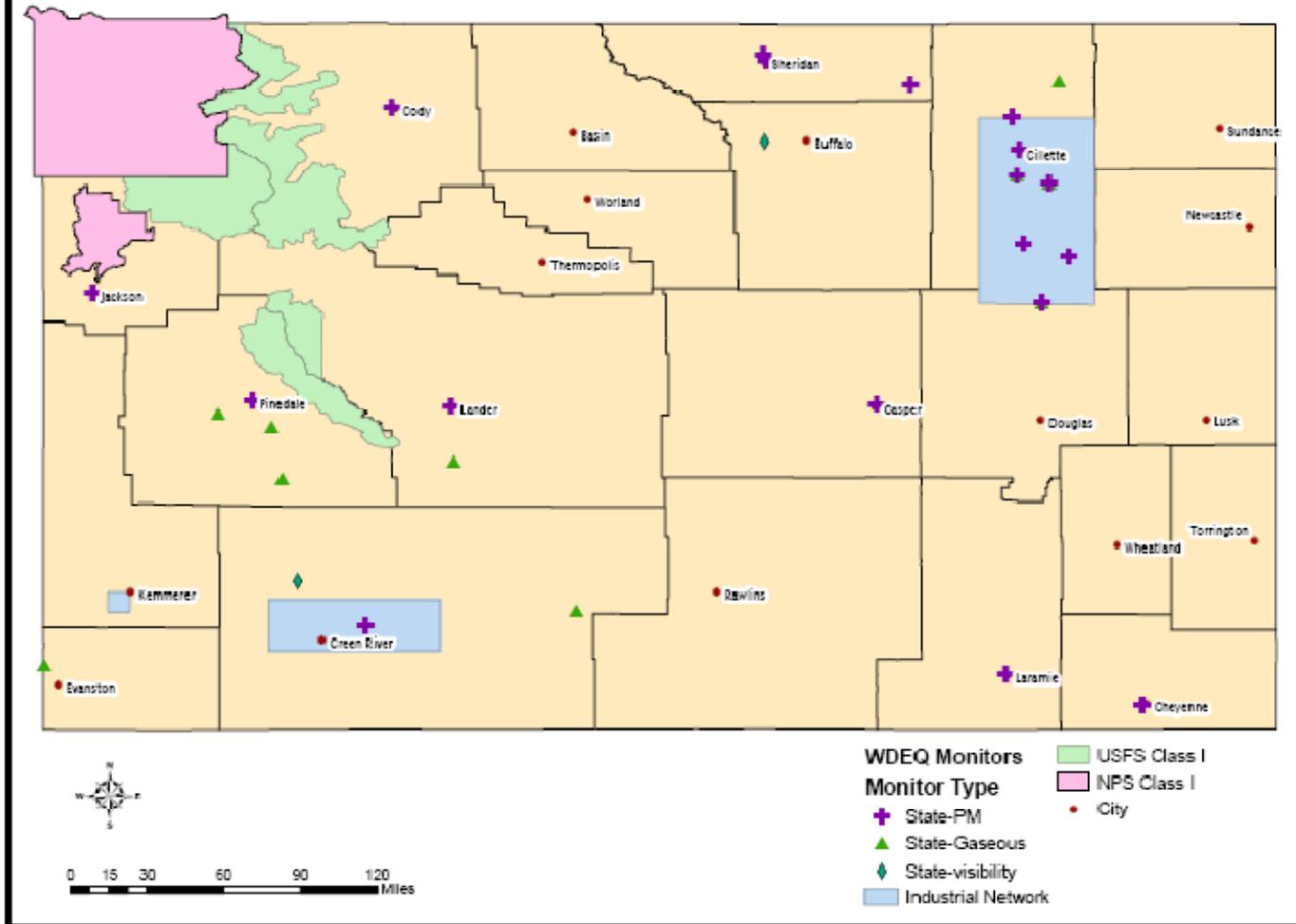
The Wyoming monitoring network is designed to meet the following six basic ambient air monitoring objectives:

1. to determine the highest concentrations expected to occur in the area covered by the network;
2. to determine representative concentrations in areas of high population density;
3. to determine the impact on ambient pollution levels of significant sources or source categories;
4. to determine general background concentration levels;
5. to determine the extent of regional pollutant transport among populated areas, and in support of secondary standards; and
6. to determine the welfare-related impacts in more rural and remote areas (such as visibility impairment and effects on vegetation).

The following map shows the Wyoming monitor locations separated into Particulate Matter, Gaseous and Visibility sites. The shaded areas on the map denote large industrial networks in Campbell, Sweetwater, and Lincoln Counties.

This table provides a brief overview of the Wyoming Monitoring Network.

WDEQ Air Quality Monitors



Overview of Wyoming Monitors

Name	County	PARAMETER									
		PM10 (manual)	PM10 TEOM	PM2.5	NOx	O3	SO2	CO	Camera	Met	Other
Laramie	Albany Co	X									
Thunder Basin	Campbell Co				X	X			X	X	VISIBILITY
Campbell County	Campbell Co	X			X	X				X	
Belle Ayr Mine	Campbell Co			X	X					X	
Wright	Campbell Co	X									
Gillette	Campbell Co	X									
Black Thunder Mine	Campbell Co			X							
Buckskin Mine	Campbell Co			X							
Antelope Mine	Converse Co			X	X					X	
Lander	Fremont Co	X		X							
South Pass	Fremont Co		X		X	X	X		X	X	AEROSOL
Cloud Peak	Johnson Co								X	X	VISIBILITY
Cheyenne	Laramie Co	X		X							
Casper	Natrona Co	X									
Cody	Park Co	X									
Sheridan - Highland Park	Sheridan Co	X		X							
Sheridan - Police Station	Sheridan Co		X	X							
Arvada	Sheridan Co	X									
Jonah	Sublette Co		X		X	X			X	X	
Boulder	Sublette Co		X		X	X			X	X	VISIBILITY
Daniel South	Sublette Co		X		X	X			X	X	
Pinedale	Sublette Co			X							
Wamsutter	Sweetwater Co		X		X	X	X			X	
Rock Springs	Sweetwater Co	X									
Jackson	Teton Co	X		X							
Murphy Ridge	Uinta Co		X		X	X	X	X	X	X	

2.0 Air Monitoring Plan in 2008

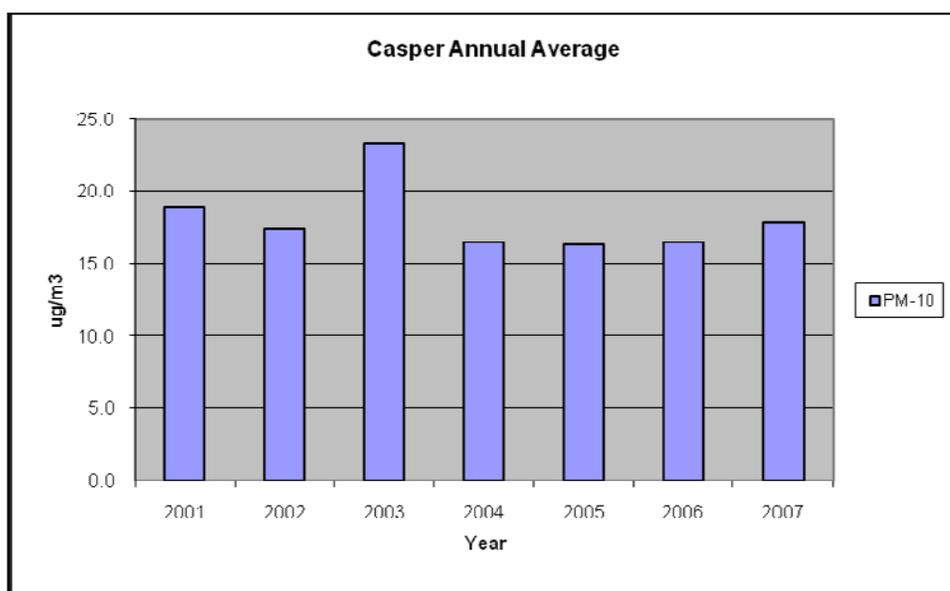
2.1 State and Local Air Monitoring Sites (SLAMS)

SLAMS are used for supplying general monitoring data for criteria pollutants and determining compliance with the NAAQS. SLAMS are relatively stable sites that must meet and follow specific quality assurance, monitoring methodology, sampling objective and siting requirements. AQD SLAMS sites have been placed in Wyoming's most populous towns with the purpose of determining compliance with NAAQS for the protection of public health. The ten sites specified as Wyoming SLAMS locations are described below:

2.1.1 Casper

Casper Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Casper	City, County Bldg; Center & C Streets (Casper MSA)	56-025-0001	PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes
			PM ₁₀ @LTP	Gravimetric	Neighborhood	1/3	No planned changes
Casper collocated			PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes

This site is located in downtown Casper, a city of approximately 52,000 people. Casper is the second largest city in Wyoming, located in Natrona County near the center of the state. PM₁₀ sampling began at this site in 1991. A collocated PM₁₀ sampler was added in 2001. The Casper monitoring site is one of the PM₁₀ collocated sites in the Wyoming monitoring network. AQD plans to add PM_{2.5} sampling at the Casper site sometime in the 2009/2010 fiscal year. We are interested in monitoring PM_{2.5} concentrations in Casper because it is one of Wyoming's most heavily populated areas.



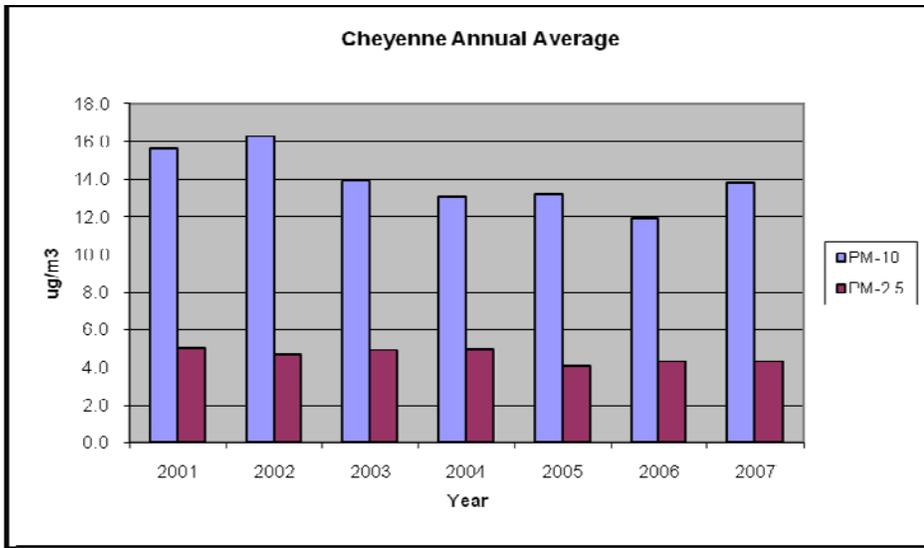
PM₁₀ NAAQS is 50 µg/m³

2.1.2 Cheyenne



Cheyenne Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Cheyenne	State Office Building 23 rd & Central Ave. (Cheyenne MSA)	56-021-0001	PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes
			PM ₁₀ @LTP	Gravimetric	Neighborhood	1/3	No planned changes
Cheyenne collocated			PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes
			PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes
			PM _{2.5}	Gravimetric	Neighborhood	1/6	No planned changes

The Cheyenne monitoring site is located in downtown Cheyenne on a State of Wyoming building. Cheyenne's population is approximately 55,000 people; it is the capital and largest city in Wyoming. The PM₁₀ sampling began at this site in 1991. A collocated PM₁₀ sampler was added in 2002. The PM_{2.5} monitors were installed in 1998. As part of a network-wide upgrade effort, the Hi-Vol PM₁₀ monitors at this site were exchanged for Partisol PM₁₀ monitors in late 2007.

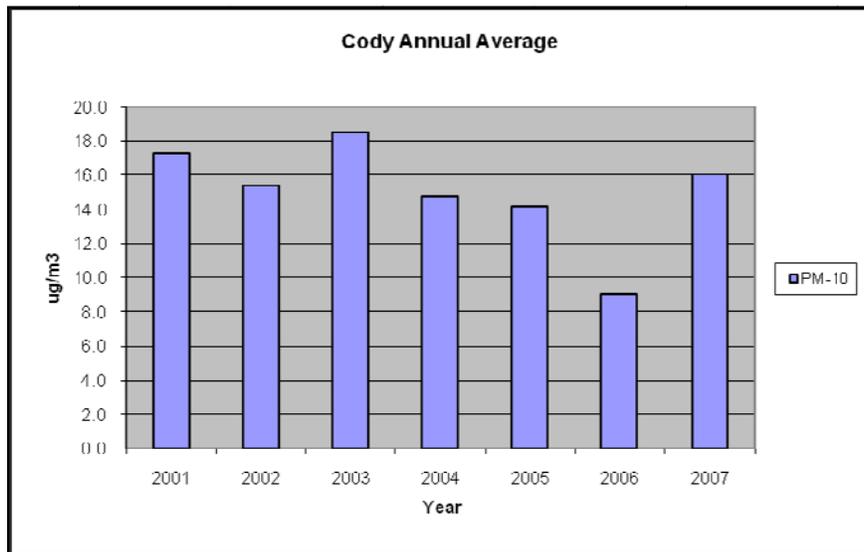


PM₁₀ NAAQS is 50 µg/m³
 PM_{2.5} NAAQS is 15.0 µg/m³

2.1.3 Cody

Cody Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Cody	Cody Jr. High School	56-029-0001	PM ₁₀	Gravimetric	Neighborhood	1/6	No planned changes

Cody is located in the northwest portion of the state situated in Park County; its population is approximately 9,200. PM₁₀ sampling began at this site in 1988. As part of a network wide effort, the Hi-Vol PM₁₀ monitors at this site will be exchanged for Partisol PM₁₀ monitors in late 2008. Additionally, AQD will add PM_{2.5} monitoring in Cody in early 2008. AQD is interested in monitoring PM_{2.5} concentrations in Cody to oversee impacts from wintertime sanding, wood smoke, summertime forest fires, and the nearby lake bed that can be exposed when available water is low.



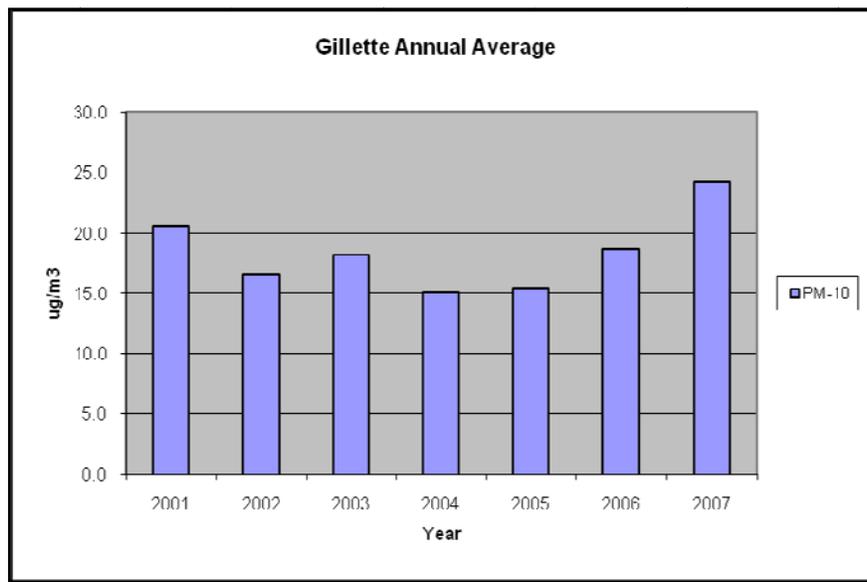
PM₁₀ NAAQS is 50 µg/m³

2.1.4 Gillette



Gillette Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Gillette	1000 West 8 th Street	56-005-1002	PM ₁₀	Gravimetric	Neighborhood	1/6	No planned changes

Gillette is located in Campbell County Wyoming; its population is approximately 24,000 and is considered a micropolitan area. PM₁₀ sampling began at this site in 1991.

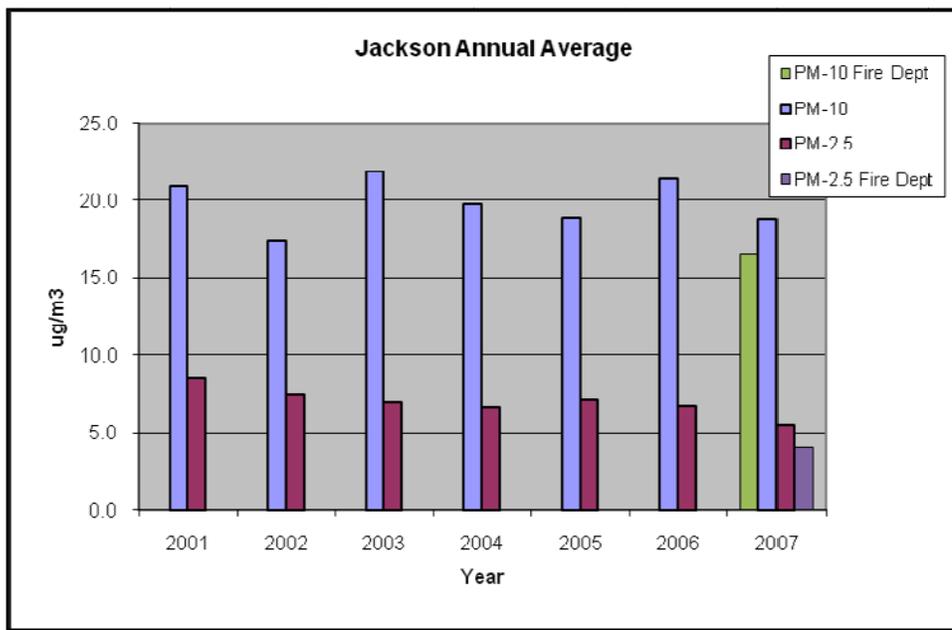


PM₁₀ NAAQS is 50 µg/m³

2.1.5 Jackson

Jackson Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Jackson	40 E Pearl Ave.	56-039-1006	PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes
			PM ₁₀ @LTP	Gravimetric	Neighborhood	1/3	No planned changes
			PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes
			PM _{2.5}	Gravimetric	Neighborhood	1/6	No planned changes

Jackson is located in Teton County in northwest Wyoming. Jackson is considered a micropolitan area with a population of approximately 9,200. Jackson PM₁₀ sampling began at this site in 2001. The PM_{2.5} monitors were also installed in 2001. In June 2007, the monitors were moved from the County Building, on South Willow, to the Fire Station (40 E. Pearl Ave) due to obstructions from trees and complaints from local residents about noise. As part of a network wide effort, the Hi-Vol PM₁₀ monitors at this site were exchanged for Partisol PM₁₀ monitors in September 2007.

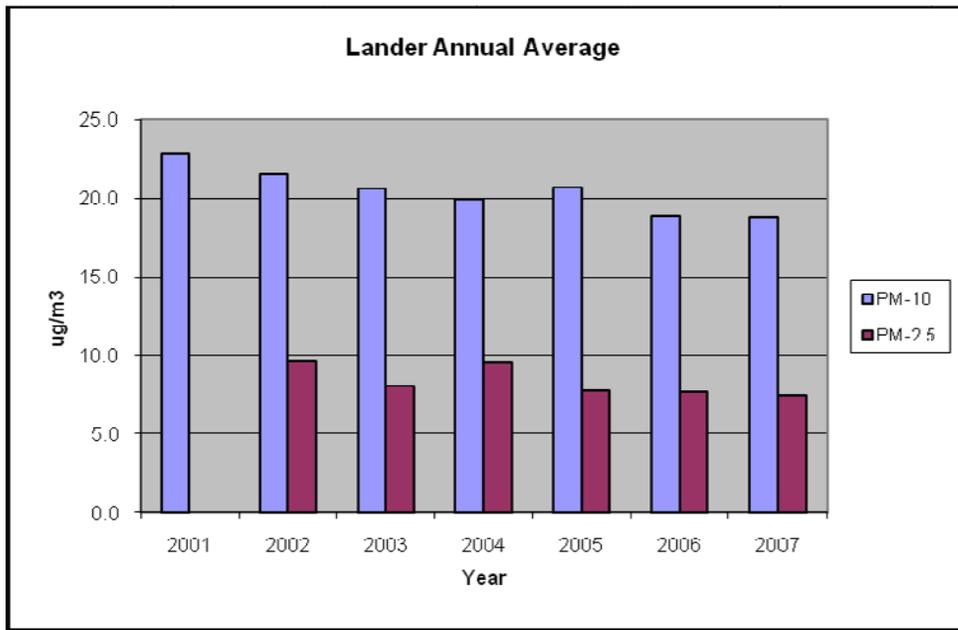


PM₁₀ NAAQS is 50 $\mu\text{g}/\text{m}^3$
 PM_{2.5} NAAQS is 15.0 $\mu\text{g}/\text{m}^3$

2.1.6 Lander

Lander Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Lander	600 Washington	56-013-1003	PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes
			PM ₁₀ @LTP	Gravimetric	Neighborhood	1/3	No planned changes
Lander collocated			PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes
			PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes
			PM _{2.5}	Gravimetric	Neighborhood	1/6	No planned changes

The Lander monitoring site is located at 600 Washington. Lander is located in Fremont County and has a population of approximately 7,000. PM₁₀ sampling began at this site in 1989. The PM_{2.5} monitors were installed in 2001. As part of a network wide effort, the Hi-Vol PM₁₀ monitors at this site were exchanged for Partisol PM₁₀ monitors in late 2007.



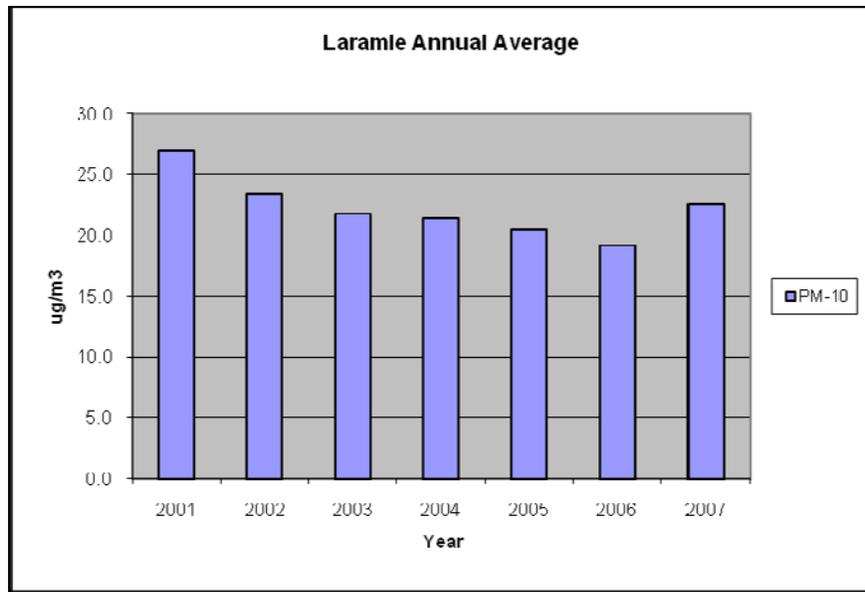
PM₁₀ NAAQS is 50 µg/m³
 PM_{2.5} NAAQS is 15.0 µg/m³

2.1.7 Laramie



Laramie Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Laramie	406 Iverson	56-001-0006	PM ₁₀	Gravimetric	Neighborhood	1/6	No planned changes

Laramie is located in the southeast portion of Wyoming in Albany County. Laramie has a population of approximately 25,000 and is considered a micropolitan area. PM₁₀ sampling began at this site in 1989. AQD plans to add PM_{2.5} sampling to Laramie in order to oversee impacts from wintertime sanding, wood smoke, and summertime forest fires. AQD expects to begin PM_{2.5} sampling in Laramie in early 2009.

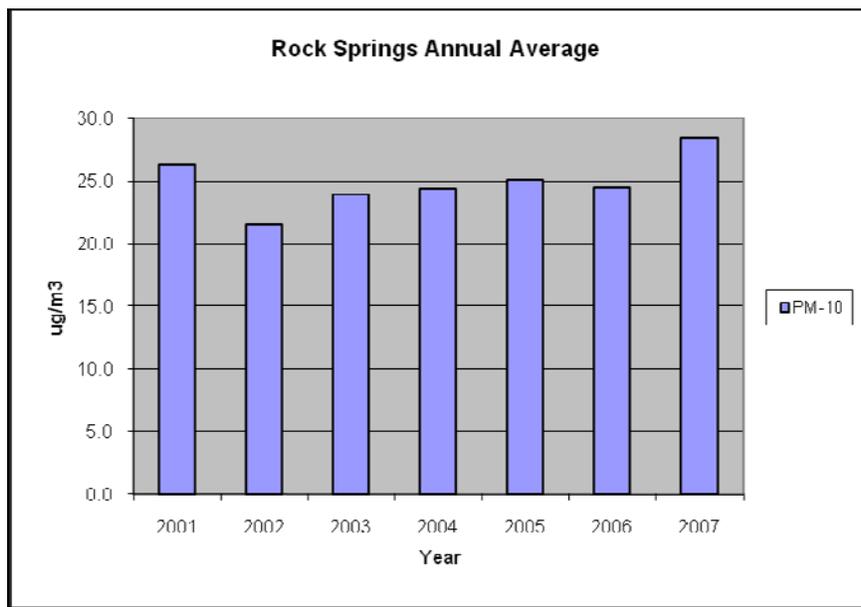


PM₁₀ NAAQS is 50 µg/m³

2.1.8 Rock Springs

Rock Springs Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Rock Springs	625 Ahsay Ave.	56-037-0007	PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes
			PM ₁₀ @LTP	Gravimetric	Neighborhood	1/3	No planned changes

Rock Springs is located in Sweetwater County in southwest Wyoming. Rock Springs is a micropolitan area and has a population of approximately 19,000. PM₁₀ sampling began at this site in 1989. As part of a network wide effort, the Hi-Vol PM₁₀ monitors at this site were exchanged for Partisol PM₁₀ monitors in late 2007. Additionally, AQD will add PM_{2.5} monitoring in Rock Springs in early 2008. AQD is interested in monitoring PM_{2.5} concentrations in Rock Springs due to the substantial population growth and energy development occurring in the area.



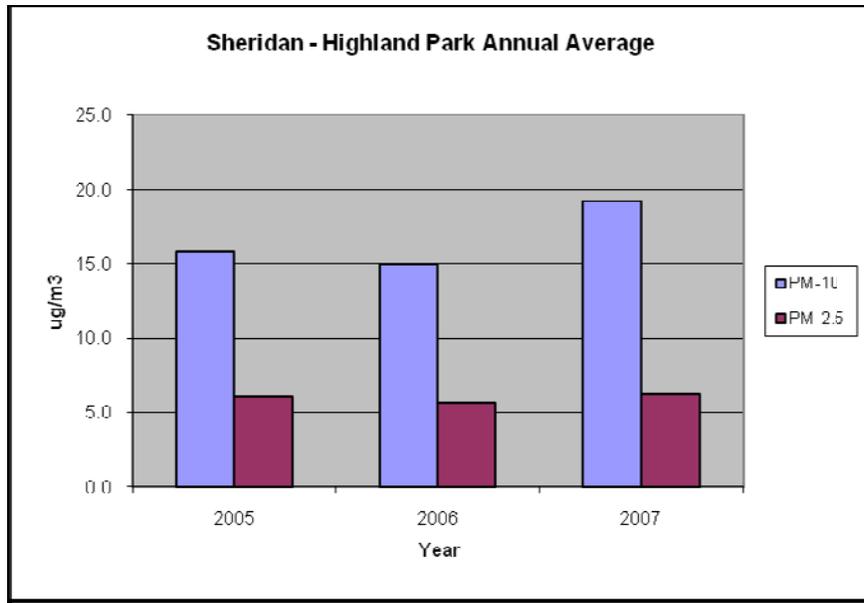
PM₁₀ NAAQS is 50 µg/m³

2.1.9 Sheridan – Highland Park



Sheridan – Highland Park Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Sheridan – Highland Park	1301 Avon	56-033-0003	PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes
			PM ₁₀ @LTP	Gravimetric	Neighborhood	1/3	No planned changes
Sheridan Collocated			PM ₁₀	Gravimetric	Neighborhood	1/3	No planned changes
			PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes
			PM _{2.5}	Gravimetric	Neighborhood	1/6	No planned changes

Sheridan – Highland Park is one of two monitoring stations in the city of Sheridan, a micropolitan area. Sheridan is located in Sheridan County and has a population of approximately 16,000. In June of 2005, the PM₁₀ and PM_{2.5} sampling was moved from the Sheridan Middle School to the Highland Park School, when the Middle School was torn down. Prior to 2005 PM₁₀ had been monitored at the Middle School since 1998. As part of a network-wide effort, the Hi-Vol PM₁₀ monitors at this site were exchanged for Partisol PM₁₀ monitors in late 2007. A collocated PM₁₀ monitor was placed at the Highland Park Station, in 2007, to fulfill collocation requirements for the SLAMS network.



PM₁₀ NAAQS is 50 µg/m³
 PM_{2.5} NAAQS is 15.0 µg/m³

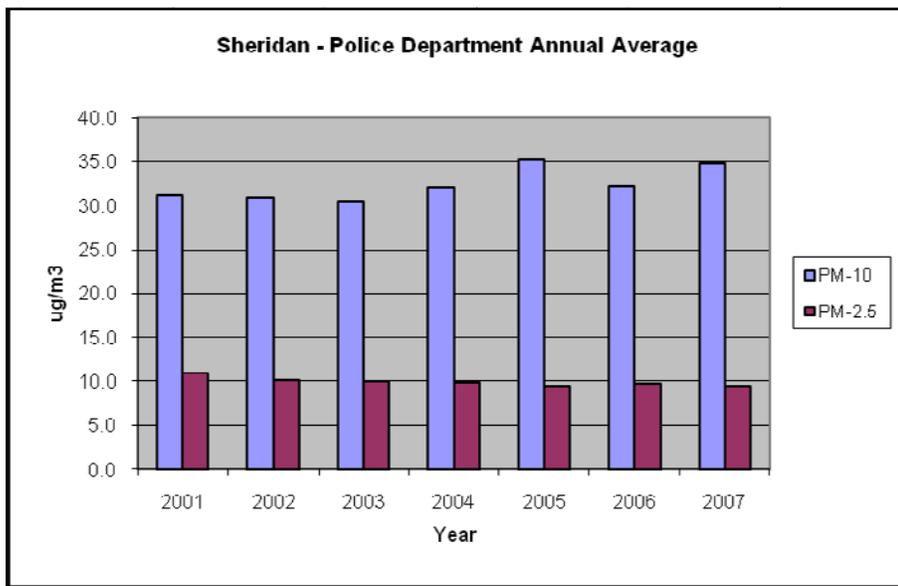
2.1.10 Sheridan – Police Station



Sheridan – Police Station Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Sheridan – Police Station	45 West 12 th Street	56-033-0002	PM ₁₀	Gravimetric	Neighborhood	1/1	No planned changes
			PM ₁₀ @LTP	Gravimetric	Neighborhood	1/1	No planned changes
			PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes

Sheridan – Police Station Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
			PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes
Sheridan – Police Station collocated			PM _{2.5}	Gravimetric	Neighborhood	1/6	No planned changes

The Sheridan – Police Station site is one of the oldest monitoring sites in Wyoming. Sheridan has a population of approximately 16,000 and is considered a micropolitan area. PM₁₀ sampling began at this site in 1985. A collocated PM₁₀ sampler was added in 1989. The collocated samplers were moved from the Police Station to Sheridan Highland Park in 2007. PM_{2.5} sampling started in 1998 at this site. Sheridan is a non-attainment area for 24-hour PM₁₀. Because of this, AQD changed out the PM₁₀ Hi-Vol samplers with a TEOM on October 1, 2007. This allows AQD to run year-round everyday sampling in Sheridan in an efficient and cost effective manner. Additionally, meteorology instrumentation will be added in 2008 to monitor weather conditions, giving us better information to work with the community to prevent PM₁₀ exceedances.



PM₁₀ NAAQS is 50 µg/m³
 PM_{2.5} NAAQS is 15.0 µg/m³

2.2 Special Purpose Monitoring (SPM)

SPMs are used to support the SLAMS sites and provide special studies and information needed by the State and local agencies to support air program activities. The SPMs can be adjusted to accommodate changing circumstances, needs and priorities. The twelve SPM locations in Wyoming include:

2.2.1 Arvada

Arvada Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Arvada	Adjacent to Arvada Elementary School	56-033-0099	PM ₁₀	Gravimetric	Neighborhood	1/6	Currently not operating
			PM ₁₀ @LTP	Gravimetric	Neighborhood	1/6	Currently not operating

Arvada is located in Sheridan County in northern Wyoming. This monitoring location was chosen for an SPM because it is the largest community in an area of extensive coal bed methane development. Unfortunately, the site has not been running since May of 2007 because AQD cannot find an operator for the site. AQD continues to advertise for an operator in the area to continue the operation of this site.

2.2.2 Boulder



Boulder Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Boulder	5 mi. SW of Boulder, WY	56-035-0099	Ozone	Real Time	Urban	Hourly	No planned changes
			Nitric Oxide	Real Time	Urban	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Urban	Hourly	No planned changes

Boulder Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
			Oxides of Nitrogen	Real Time	Urban	Hourly	No planned changes
			PM ₁₀	Gravimetric	Urban	1/1	No planned changes
			PM ₁₀ @LTP	Gravimetric	Urban	1/1	No planned changes

The Boulder Site is located approximately 5 miles southwest of Boulder, Wyoming and is used to track air quality in an area of natural gas development. The Boulder Station includes gaseous (NO_x and ozone), continuous particulate (PM₁₀ TEOM), nephelometer, camera system and meteorological monitoring. The Boulder Monitoring Station was also a hub for AQD's 2007 & 2008 Upper Green Winter Ozone Study. During this study, the site also housed an aethelometer and UV radiometers. Shell Exploration and Production assisted with funding for this site and uses the site, since December 2006, to monitor for ammonia.

2.2.3 Cloud Peak



The Cloud Peak Site is located approximately 15 miles west of Buffalo, WY and is used to track visibility and meteorology in the area. The Cloud Peak Station includes a nephelometer, transmissometer, camera system and meteorological monitoring.

2.2.4 Jonah

Jonah Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Jonah	Jonah Field – Encana field office	56-035-0098	Ozone	Real Time	Urban	Hourly	No planned changes
			Nitric Oxide	Real Time	Urban	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Urban	Hourly	No planned changes
			Oxides of Nitrogen	Real Time	Urban	Hourly	No planned changes
			PM ₁₀	Gravimetric	Urban	1/1	No planned changes
			PM ₁₀ @LTP	Gravimetric	Urban	1/1	No planned changes

The Jonah monitor is located in the Jonah Field, at the EnCana field office, an area of heavy oil and gas development. The Jonah Station includes gaseous (NO_x and ozone), continuous particulate (PM₁₀ TEOM), camera system and meteorological monitoring. As development has continued in the Jonah Field, AQD has determined that monitoring for ozone at this site has decreased value due to heavy NO titration. AQD is contracting a network review in 2008 for Southwest Wyoming; the appropriateness of Jonah Field monitoring will be addressed in this network review. As a result, components of the station or the entire station may need to be moved in 2008/09.

2.2.5 Murphy Ridge



Murphy Ridge Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Murphy Ridge	Bear River, WY	56-041-0101	Ozone	Real Time	Urban	Hourly	No planned changes
			Carbon Monoxide	Real Time	Urban	Hourly	No planned changes
			Sulfur Dioxide	Real Time	Urban	Hourly	No planned changes
			Nitric Oxide	Real Time	Urban	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Urban	Hourly	No planned changes
			Oxides of Nitrogen	Real Time	Urban	Hourly	No planned changes
			PM ₁₀	Gravimetric	Urban	1/1	No planned changes
			PM ₁₀ @LTP	Gravimetric	Urban	1/1	No planned changes

The Murphy Ridge Air Quality Monitoring Station began operating during 2007. The station is located in the Town of Bear River, approximately ten miles north of Evanston on the border of Utah. The Murphy Ridge site is located approximately 1 mile from the Murphy Ridge NADP wet deposition site. The purpose of this station is to monitor the air masses coming from Utah and to provide insight on these air masses in conjunction with the data collected from the Murphy Ridge NADP monitor. This site monitors NO_x, ozone, PM₁₀ (continuous), SO₂, CO and meteorology. The site is also equipped with a camera.

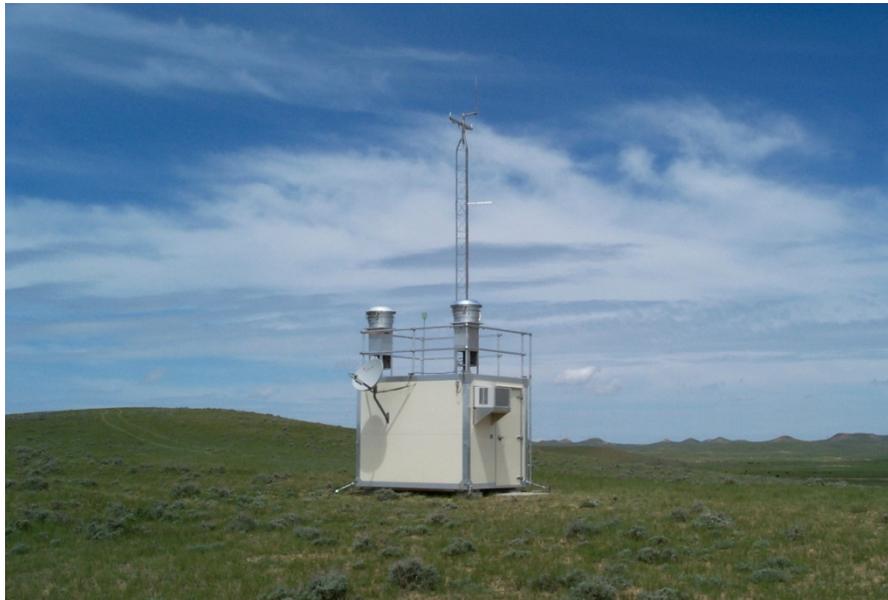
2.2.6 Pinedale



Pinedale Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Pinedale	101 East Hennick	56-035-0705	PM _{2.5}	Gravimetric	Regional	1/3	No planned changes

Pinedale is located in Sublette County with a population of approximately 1,800 people. PM_{2.5} sampling started in 2005 at this site. In October 2007, one monitor malfunctioned and was not fully repaired until April of 2008. Therefore, the data from October 25 to December 31, 2007 operated on the 1/6 schedule instead of the 1/3 schedule. In 2008, AQD is planning on adding ozone, NO_x and meteorology within the town of Pinedale to monitor concentrations in this increasingly populated area.

2.2.7 South Campbell County



South Campbell County Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
South Campbell County	15 mi. SSW of Gillette	56-005-0456	Ozone	Real Time	Regional	Hourly	No planned changes
			Nitric Oxide	Real Time	Regional	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Regional	Hourly	No planned changes
			Oxides of Nitrogen	Real Time	Regional	Hourly	No planned changes
			PM ₁₀	Gravimetric	Regional	1/3	No planned changes
			PM ₁₀ @LTP	Gravimetric	Regional	1/3	No planned changes

The South Campbell County site is located approximately 15 miles southwest of Gillette and is used to track air quality in an area of heavy coal-bed methane development. This station includes PM₁₀, gaseous (NO_x and ozone), and meteorological monitoring.

2.2.8 South Daniel

South Daniel Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
South Daniel	5 mi. south of Daniel	56-035-0100	Ozone	Real Time	Regional	Hourly	No planned changes
			Nitric Oxide	Real Time	Regional	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Regional	Hourly	No planned changes
			Oxides of Nitrogen	Real Time	Regional	Hourly	No planned changes
			PM ₁₀	Gravimetric	Regional	1/1	No planned changes
			PM ₁₀ @LTP	Gravimetric	Regional	1/1	No planned changes

The South Daniel monitor is located in Sublette County and is used to track air quality upwind of an area of extensive natural gas development. The South Daniel Station includes gaseous (NO_x and ozone), continuous particulate (PM₁₀ TEOM), camera system and meteorological monitoring.

2.2.9 South Pass

South Pass Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
South Pass	South Pass, WY	56-013-0099	Ozone	Real Time	Urban	Hourly	No planned changes
			Sulfur Dioxide	Real Time	Urban	Hourly	No planned changes
			Nitric Oxide	Real Time	Urban	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Urban	Hourly	No planned changes
			Oxides of Nitrogen	Real Time	Urban	Hourly	No planned changes
			PM ₁₀	Gravimetric	Urban	1/1	No planned changes
			PM ₁₀ @LTP	Gravimetric	Urban	1/1	No planned changes

The South Pass Air Quality Monitoring Station also began operation in 2007. The station is located on South Pass at the southern end of the Wind River Range. The purpose of this station is to monitor air quality on the southern end of the range which sees air masses from both the

Upper Green River Basin to the northwest and from the southwestern corner of the State. The station has NO_x, ozone, SO₂, PM₁₀ (continuous), meteorology, a camera, and the B and C modules of an IMPROVE-type aerosol monitor. The gaseous and aerosol measurements are used in conjunction with NADP data from the South Pass NADP site to examine nitrogen and sulfur in various phases. Additionally the aerosol concentrations of nitrates, sulfates, and carbon can be used to compare with aerosol concentrations collected at the north end of the range and at all IMPROVE-type aerosol samples collected throughout Wyoming.

2.2.10 Thunder Basin

Thunder Basin Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Thunder Basin	30 mi. NE of Gillette	56-005-0123	Ozone	Real Time	Regional	Hourly	No planned changes
			Nitric Oxide	Real Time	Regional	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Regional	Hourly	No planned changes
			Oxides of Nitrogen	Real Time	Regional	Hourly	No planned changes

The Thunder Basin Site is located approximately 30 miles northeast of Gillette, Wyoming and is used to track visibility, meteorology, and air quality in the area. The Thunder Basin Station includes gaseous (NO_x and ozone), nephelometer, transmissometer, camera system and meteorological monitoring.

2.2.11 Wamsutter



Wamsutter Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Wamsutter	2 mi. west of Wamsutter	56-037-0200	Ozone	Real Time	Regional	Hourly	No planned changes
			Sulfur Dioxide	Real Time	Regional	Hourly	No planned changes
			Nitric Oxide	Real Time	Regional	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Regional	Hourly	No planned changes
			Oxides of Nitrogen	Real Time	Regional	Hourly	No planned changes
			PM ₁₀	Gravimetric	Regional	1/1	No planned changes
			PM ₁₀ @LTP	Gravimetric	Regional	1/1	No planned changes

The Wamsutter Site is near the town of Wamsutter in Sweetwater County and is used to track meteorology and air quality downwind of an area of extensive natural gas development. The Wamsutter Station includes gaseous (NO_x, SO₂, and ozone), continuous particulate (PM₁₀ TEOM), and meteorological monitoring. This station began operations on March 13, 2006.

2.2.12 Wright



Wright Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Wright	Adjacent to Wright Junior -Senior High School	56-005-0099	PM ₁₀	Gravimetric	Neighborhood	1/6	No planned changes
			PM ₁₀ @LTP	Gravimetric	Neighborhood	1/6	No planned changes

The Wright monitoring site is located in Campbell County in northern Wyoming. Wright is a community located west of the southern group of the Power River Basin coal mines. The purpose of this monitor is to track population exposure to PM₁₀ in a community that is downwind of the coal mines.

2.2.13 Powder River Basin (PRB) NO_x

The Powder River Basin NO_x network began operation in January 2001 through a cooperative agreement between AQD and the Wyoming Mining Association. The purpose of the network is to monitor regional NO₂ concentrations in the Powder River Basin. The Belle Ayr Monitor is located near the rail road and represents a “maximum concentration” in and around the coal mines. The Antelope monitor is located away from mining activities and is considered to be background. AQD also collects and uploads data from the Thunder Basin Coal Company’s monitor at the Tracy Ranch; this monitoring site is considered downwind of mining activity. AQD did not list the Tracy Ranch monitor below because the monitor is funded solely by the Thunder Basin Coal Company. Upgrades to the monitor facilities, including new trailers and telemetry, are being proposed for 2008.

PRB NO _x Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Antelope Mine	Converse County	56-009-0819	Nitric Oxide	Real Time	Regional	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Regional	Hourly	No planned changes
			Oxides of Nitrogen	Real Time	Regional	Hourly	No planned changes
Belle Ayr Mine	Campbell County	56-005-0892	Nitric Oxide	Real Time	Micro Scale	Hourly	No planned changes
			Nitrogen Dioxide	Real Time	Micro Scale	Hourly	No planned changes
			Oxides of Nitrogen	Real Time	Micro Scale	Hourly	No planned changes

2.2.14 PRB PM_{2.5}

The Powder River Basin PM_{2.5} Network began official operation in 1999. The purpose of the network is to characterize ambient fine particulate at and around the PRB coal mines. One monitor is located at each “group” of mines (north, middle and south) and one monitor is located away from mining activities to represent background. AQD temporarily discontinued collection of data from these monitors in September 2007, due to cuts in federal funding for PM_{2.5}. Monitoring operations are expected to continue in 2008 pending a funding agreement with the Wyoming Mining Association. Also, the Black Thunder Mine monitoring location will be moved in 2008 due to changes in the mine plan. The monitor will be located approximately 1 mile away from the old location.

PRB PM _{2.5} Monitoring Site Specifications							
Site Name	Location	AQS ID	Parameter	Analysis Method	Scale	Operating Schedule	Operational Status
Antelope Mine	Converse County	56-009-0819	PM _{2.5}	Gravimetric	Regional	1/3	No planned changes
Belle Ayr Mine	Campbell County	56-005-0892	PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes
Black Thunder Mine	Campbell County	56-005-0877	PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes
Black Thunder Mine Collocated			PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes
Buckskin Mine	Campbell County	56-005-0899	PM _{2.5}	Gravimetric	Neighborhood	1/3	No planned changes

2.3 Industrial Monitoring Sites

Historically, AQD has required several industrial sources in the state to conduct ambient monitoring for criteria pollutants in and around specific facilities. AQD's largest industrial network is at the Power River Basin coal mines and consists of approximately 50 PM₁₀ monitoring locations. AQD also requires extensive networks of PM₁₀ monitoring at the Trona facilities outside of Green River and coal mines in southwest Wyoming. As facilities obtain construction or modification permits from AQD's New Source Review program, they are often required to monitor for compliance with the ambient air quality standards downwind of their facilities. The monitoring program receives these data on a quarterly basis, and checks for compliance with NAAQS as well as confirming that the facilities are following appropriate quality assurance measures.

2.4 IMPROVE Network

The purpose of the Interagency Monitoring of Protected Visual Environments (IMPROVE) network is to establish current visibility and aerosol conditions along with characterization of broad regional trends and visibility conditions using monitoring data collected in or near Class I Areas across the United States. Wyoming has five (5) IMPROVE locations which include: Yellowstone National Park, Est. 1988; Bridger Wilderness Area, Est. 1988; North Absaroka Wilderness Area, Est. 2000; Thunder Basin National Grasslands, Est. 2002; and Cloud Peak Wilderness Area, Est. 2002.

2.5 NCore Multi Pollutant Site

Each state's monitoring program will be required to have an NCore monitoring site established by January 1, 2011. The NCore site will collect data for trace level sulfur dioxide (SO₂), trace level nitrogen oxide (NO_x), carbon monoxide (CO), ozone (O₃), PM₁₀, and PM_{2.5}.

The proposed NCore site in Wyoming will be located in or near the city of Cheyenne. The proposed site location will meet the urban residential area criteria and will be located in the most populous city in the state. AQD has begun the process of equipment selection required at this site.

3.0 Compliance with NAAQS

The primary purpose of the AQD's SLAMS and SPM networks is to evaluate compliance with NAAQS. AQD's SLAMS and SPMs employ reference or equivalent method technologies and are run according to SLAMS or PSD quality assurance specifications and therefore may be compared with NAAQS. AQD's SLAMS and SPM networks currently operate under project specific quality assurance plans, which are available in the State Offices for viewing. AQD is currently working with Region 8 staff to develop a general monitoring quality assurance plan that references the specific project plans.

The following tables show 2005 through 2007 data and design values for each SLAMS and SPM monitor. All sites operated by AQD are in compliance with NAAQS from 2005-2007.

3.1 Particulate Matter (PM-10)

In the Wyoming Monitoring Network there are nineteen (19) sites with PM₁₀ monitors. Seven (7) of these sites have continuous PM₁₀ monitors. Compliance with the annual PM₁₀ NAAQS is determined by the three year average of the annual mean. The three year average of the means must be below 50 µg/m³. To comply with the 24-hour PM₁₀ NAAQS, a monitor must record one or less "exceedance" (24-hour concentration greater than 150 µg/m³) per year over a three year period. The design value is the average number of exceedances per year from 2005-2007.

In 2007, AQD recorded two exceedances at the Sheridan Police Station. The first exceedance in Sheridan occurred on March 12, 2007 with a concentration of 158 µg/m³. This exceedance was attributed to excess sand on the streets. The issue was remedied according to AQD's State Implementation Plan. Because of this exceedance, AQD increased the sampling frequency at this site to daily for the entire year. This was achieved by switching to a TEOM as the primary sampler at the Police Station. AQD will also install meteorological equipment at the Police Station in 2008, with a real-time data page for staff to have better information to prevent future exceedances. The second exceedance occurred on March 27, 2008 with a concentration of 168 µg/m³. AQD has flagged this value as a high wind event that is eligible under the Exceptional Events Rule. Several PM₁₀ monitors, operated by both AQD and industry across Wyoming, monitored PM₁₀ exceedances on this day. AQD is waiting for concurrence from Region 8 on this event.

Two exceedances also occurred at the Wamsutter Monitor in 2007. The first occurred on March 27 with a concentration of 227 µg/m³ and the second occurred on April 18, 2007 with a concentration of 199 µg/m³. During the spring of 2007, a pipeline was being constructed less than 1 mile south of the Wamsutter station. On both days, strong winds occurred blowing the dust from the pipeline construction northeast to the Wamsutter station. AQD has placed construction flags on these points and has requested Region 8 concur with the flags.

PM₁₀ Compliance with NAAQS of 50 µg/m³ Annual Arithmetic Mean (µg/m³)					
Site Name	2005	2006	2007	Average ('05-'07)	In Compliance
Casper	16*	20	18	18	Yes
Cheyenne	14*	13	14*	14	Yes
Cody	14	9	16*	13	Yes
Gillette	15	19	24*	19	Yes
Jackson- Willow	19	21*	19*	20	Yes
PM₁₀ Compliance with NAAQS of 50 µg/m³ Annual Arithmetic Mean (µg/m³)					
Site Name	2005	2006	2007	Average ('05-'07)	In Compliance
Jackson - Fire	N/A	N/A	17*	N/A	N/A
Lander	21	19*	19*	20	Yes
Laramie	20	19	23	21	Yes
Rock Springs	25	24	29	26	Yes
Sheridan – Highland Park	16*	16*	19*	17	Yes
Sheridan – Police Dept.	33	31	35	33	Yes
Arvada	16	16*	14*	15	Yes
Boulder	9	10	11*	10	Yes
Jonah	10	16*	15	14	Yes
Murphy Ridge	N/A	N/A	12	N/A	N/A
South Campbell County	13*	19*	13*	15	Yes
South Daniel	9*	8*	11*	9	Yes
South Pass	N/A	N/A	9*	N/A	N/A
Wamsutter	N/A	15	15	N/A	N/A
Wright	17	14	21	17	Yes

N/A – data not available

* - site has one or more quarterly reports that did not meet data completeness

PM₁₀ Compliance with NAAQS of 150 µg/m³ Highest 24- Hour Average (µg/m³)					
Site Name	2005	2006	2007	Design Value ('05-'07)	In Compliance
Casper	60	44	39	0	Yes
Cheyenne	35	42	31	0	Yes
Cody	44	24	55	0	Yes
Gillette	51	65	74	0	Yes
Jackson - Willow	66	80	26	0	Yes
Jackson – Fire	N/A	N/A	35	N/A	N/A
Lander	77	49	40	0	Yes
Laramie	52	57	67	0	Yes
Rock Springs	54	67	78	0	Yes

Sheridan – Highland Park	30	43	60	0	Yes
Sheridan – Police Dept.	110	140	168 ^P	0.67	Yes
Arvada	138	51	40	0	Yes
Boulder	40	32	35	0	Yes
Jonah	61	87	65	0	Yes
Murphy Ridge	N/A	N/A	64	N/A	N/A
South Campbell County	40	136	53	0	Yes
South Daniel	37	30	44	0	Yes
South Pass	N/A	N/A	51	N/A	N/A
Wamsutter	N/A	73	227 ^P	N/A	N/A
Wright	52	57	57	0	Yes

N/A – data not available

P – Exceeds the Primary Standard

3.2 Particulate Matter (PM-2.5)

There are six (6) state run monitoring sites that collect PM_{2.5} data along with the four monitors in the PRB PM_{2.5} network. All ten monitors can be compared to the Annual PM_{2.5} NAAQS as defined by 40 CFR 58.30. The annual PM_{2.5} standard is attained when the 3 year average is less than or equal to 15 µg/m³. Compliance with the 24-hour PM_{2.5} NAAQS is met when the 3-year average of the 98th percentile concentration is less than or equal to 35 µg/m³. In August 2007, AQD monitored elevated PM_{2.5} concentrations in Sheridan due to impacts from the Little Goose Wildfire. The fire was located less than 5 miles from Sheridan. AQD has flagged data from August 13 and 16 as natural events under the Exceptional Events Rule. AQD is waiting for concurrence from Region 8 at this time.

PM _{2.5} Compliance with NAAQS of 15.0 µg/m ³ Annual Arithmetic Mean (µg/m ³)					
Site Name	2005	2006	2007	Average ('05-'07)	In Compliance
Cheyenne	4.1	4.3	4.3	4.2	Yes
Jackson - Willow	6.8	6.8	5.6*	6.4	Yes
Jackson – Fire	N/A	N/A	4.1*	N/A	N/A
Lander	7.7	7.7	7.5*	7.6	Yes
Pinedale	5.5*	7.1	5.9*	6.2	Yes
Sheridan – Highland Park	6.0*	5.7	6.3	6.0	Yes
Sheridan – Police Dept.	9.5	9.8	9.5	9.6	Yes
Antelope Mine	3.2	3.9	4.5	3.9	Yes
Belle Ayr Mine	4.7	5.5*	5.9*	5.4	Yes
Black Thunder Mine	6.4	6.3*	6.5*	6.4	Yes
Buckskin Mine	5.1	5.2	5.3*	5.2	Yes

N/A – data not available

* - site has one or more quarterly reports that did not meet data completeness

PM_{2.5} Compliance with NAAQS of 35 µg/m³ 98% 24- Hour Average (µg/m³)					
Site Name	2005	2006	2007	Average ('05-'07)	In Compliance
Cheyenne	9	13	9	10	Yes
Jackson - Willow	30	20	14	21	Yes
Jackson – Fire	N/A	N/A	8	N/A	N/A
Lander	30	23	26	26	Yes
Pinedale	N/A	17	13	N/A	N/A
Sheridan – Highland Park	N/A	13	24	N/A	N/A
Sheridan – Police Dept.	33	24	27	28	Yes
Antelope Mine	7	12	10	10	Yes
Belle Ayr Mine	10	16	15	14	Yes
Black Thunder Mine	19	22	18	20	Yes
Buckskin Mine	12	12	14	13	Yes

N/A – data not available

3.3 Nitrogen Dioxides (NO₂)

There are seven (7) state run sites that monitored for NO₂ in 2007. The PRB NO_x network consists of two monitors; these monitors were not running in 2007. AQD is currently working to reestablish these monitors. Compliance with the NO₂ NAAQS is determined by the annual average concentration less than or equal to 0.053 ppm. The South Pass Station also monitors for NO₂ but is not listed below because it did not collect one full year of data in 2007.

NO₂ Compliance with NAAQS of 0.053 ppm Annual Arithmetic Mean (ppm)				
Site Name	2005	2006	2007	In Compliance
Boulder	0.004	0.004	0.004*	Yes
Jonah	0.010	0.010	0.012	Yes
Murphy Ridge	N/A	N/A	0.003	N/A
South Campbell County	0.004	0.003	0.004	Yes
South Daniel	0.003	0.003	0.003	Yes
Thunder Basin	0.002	0.002	0.002	Yes
Wamsutter	N/A	0.007	0.007	N/A
Antelope Mine	0.005*	0.004*	N/A	N/A
Belle Ayr Mine	0.008	0.009	N/A	N/A

N/A – data not available

* - site has one or more quarterly reports that did not meet data completeness

3.4 Sulfur Oxides

The State of Wyoming operated two (2) special purpose monitoring sites that monitored SO₂ in 2007. There are no SO₂ SLAMS sites in Wyoming. For SO₂, AQD has the Wyoming Ambient Air Quality Standards (WAAQS) that are more stringent than the federal air quality standards. On an annual basis, the WAAQS SO₂ standard is exceeded if the annual mean monitored value is greater than 0.02 ppm. On a 24-hour basis the WAAQS standard is exceeded if a 24-hour concentration exceeds 0.10 ppm more than once per year. On a 3-hour basis, the WAAQS standard is exceeded if the 3-hour concentration is 0.50 ppm more than once in a year. AQD has not reported any exceedances of the WAAQS 3-hour, 24-hour, or annual SO₂ standards at the two sites that collected a full year of data in 2007. The table below compares the monitored values with the NAAQS rather than the more stringent WAAQS. The South Pass Station also monitors for SO₂, but did not collect a full year of data in 2007.

SO₂ Compliance with NAAQS of 0.030 ppm (annual average) 0.14 ppm (second highest 24-hour average) And 0.5 ppm (second highest 3-hour average)						
Site Name	2007 (annual average)	In Compliance	2007 (2 nd highest 24-hour average)	In Compliance	2007 (2 nd highest 3-hour average)	In Compliance
Murphy Ridge	0.001	Yes	0.002	Yes	0.005	Yes
Wamsutter	0.001	Yes	0.002	Yes	0.010	Yes

3.5 Carbon Monoxide

The State of Wyoming operates the Murphy Ridge site that monitors for CO. This monitor started in 2007. AQD has not reported any exceedances of the 8-hour and 1-hour CO standards at Murphy Ridge.

CO Compliance with NAAQS of 9 ppm (highest 8-hour average) And 35 ppm (highest 1-hour average)				
Site Name	2007 (8-hour average)	In Compliance	2007 (1-hour average)	In Compliance
Murphy Ridge	0.7	Yes	0.9	Yes

3.6 Ozone

AQD operated seven (7) O₃ monitoring sites in Wyoming in 2007, and all of the sites are SPMs. To comply with the 8-hour ozone NAAQS, the daily maximum 8-hour ozone averages are ranked over a year. The 3 year average of the 4th highest yearly value must be less than or equal to 0.08 ppm. On March 12, 2008 EPA promulgated a new NAAQS for ozone of 0.075ppm. The change in this standard will be reflected in AQD's 2009 monitoring plan.

O₃ Compliance with NAAQS of 0.08 ppm 4th Highest 8-Hour Average (ppm)					
Site Name	2005	2006	2007	DV ('05-'07)	In Compliance
Boulder	0.079	0.072	0.067	0.073	Yes
Jonah	0.076	0.069	0.068	0.071	Yes
Murphy Ridge	N/A	N/A	0.070	N/A	N/A
South Campbell County	0.063	0.065	0.072	0.067	Yes
South Daniel	0.066	0.074	0.066	0.069	Yes
South Pass	N/A	N/A	0.071	N/A	N/A
Thunder Basin	0.059	0.072	0.072	0.068	Yes
Wamsutter	N/A	0.067	0.064	N/A	N/A

N/A – data not available

4.0 Future Air Monitoring Modifications

At this time, AQD is not planning to add or remove any SLAMS monitors in 2008.

Modifications to the PM₁₀ SLAMS network will continue to be made in 2008. AQD is replacing the older Hi-vol monitors with Partisol low-vol monitors. AQD and Region 8 have agreed on the locations discussed in Section 2.1. AQD is planning to add PM_{2.5} to the PM₁₀ monitoring sites at Rock Springs and Cody in 2008, however these will be considered SPMs.

The State of Wyoming is experiencing rapid energy development, especially in the northeast and southwest quadrants of the State. AQD continues to add new special purpose monitoring sites to monitor for possible impacts from increased development. In 2006, AQD signed an agreement with six natural gas producers that operate in the Pinedale Anticline and Jonah Natural Gas Fields to share costs for six monitoring stations in southwest Wyoming (known as the “Southwest Wyoming Operators Agreement”). As of December 2007, five (Boulder, Jonah, Daniel South, South Pass and Murphy Ridge) of the six sites are operational. The remaining station (Wyoming Range) was set to be placed in 2008. Due to high ozone concentrations that were monitored at the Boulder and Jonah Stations in early 2008, AQD has committed to place the remaining station in the Town of Pinedale in 2008. AQD is still planning on placing a monitoring station in the Wyoming Range, but is awaiting approval for supplemental funds. AQD also received money in the FY09-10 budget to place monitors downwind of two other large natural gas development areas, the Moxa Arch and the Hiawatha. AQD plans to deploy these monitors in 2009.

4.1 Southwest Wyoming Network Assessment

In light of the rapid energy development slated to take place in the next several years in southwest Wyoming, AQD has committed to performing a network assessment for criteria pollutants and meteorological parameters in this area. The purpose of the assessment is to determine efficient and effective placement of gaseous, particulate, and meteorological monitoring stations in the current Southwest Wyoming network. Results of the network

assessment will be used to guide future monitor placement in Southwest Wyoming. The network assessment will be performed, with the help of a contractor, in early 2008. AQD will also solicit the help of an External Advisory Committee which will consist of public participants, federal land managers, EPA, environmental organizations and industry to help evaluate assessment methods and the results. This network assessment is intended to fulfill part of the 40 CFR Part 58.10 requirements.

4.2 VOC Monitoring

AQD also committed to performing VOC and/or Hazardous Air Pollutant (HAP) Monitoring in the Southwest Wyoming Operator's Agreement. In 2007 and 2008, AQD performed limited VOC monitoring in the Upper Green River Basin during the Upper Green Winter Ozone Study. Results of this monitoring can be downloaded at AQD's monitoring website:

<http://deq.state.wy.us/aqd/Monitoring%20Data.asp>

AQD will also be participating in HAP and ozone monitoring for use in a Health Risk Assessment for the Upper Green River Basin. Specific details of this study have not been determined yet, but the study is expected to take place for the entire year of 2009.

5.0 Conclusion

There is an ongoing effort to help ensure the Wyoming Ambient Air Monitoring Network demonstrates adequate coverage across the entire state. As the state's population and industry changes, AQD works to make sure the monitoring needs in the State of Wyoming are being met. At this time, AQD plans to add monitors in 2008 to determine impacts from energy development and population growth around Wyoming. AQD is also changing out old equipment at several community monitoring locations to increase the reliability and efficiency of the PM₁₀ monitoring network.

Data collected at AQD monitoring stations though 2007 show that all monitors are attaining NAAQS. AQD continually evaluates data collected at AQD, industrial and AQRV monitors to determine if changes in policy are needed to continue to manage the air resource in the State of Wyoming.

Any comments pertaining to the Wyoming Ambient Air Monitoring Annual Network Plan should be sent to the following contact.

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Appendix A

AQD ID	Site Name	Address	Land Use Type	Location Type	Monitor Type	Monitor Objective	Longitude	Latitude	Site Start Date
56-025-0001	Casper	City County Bldg - Center & C Streets	Commercial	Urban And Center City	SLAMS	Population Exposure	-106.3	42.851	1/1/1967
56-021-0001	Cheyenne	State Office Bldg 23rd & Central Avenue	Residential	Urban And Center City	SLAMS	Population Exposure	-104.8	41.14	1/1/1979
56-029-0001	Cody	Cody Jr High School	Residential	Suburban	SLAMS	Population Exposure	-109.1	44.533	1/1/1975
56-005-1002	Gillette	1000 West 8th St	Mobile	Urban And Center City	SLAMS	Population Exposure	-105.5	44.288	1/1/1978
56-039-0006	Jackson	40 E Pearl Ave.	Commercial	Urban And Center City	SLAMS	Population Exposure	-110.8	43.478	6/8/2007
56-013-1003	Lander	600 Washington	Residential	Suburban	SLAMS	Highest Concentration, General/Background	-108.7	42.841	1/1/1987
56-001-0006	Laramie	406 Ivinson	Commercial	Urban And Center City	SLAMS	Populations Exposure	-105.6	41.312	1/1/1968
56-037-0007	Rock Springs	625 Ahsay Ave	Residential	Urban And Center City	SLAMS	Population Exposure	-109.2	41.592	1/1/1983
56-033-0002	Sheridan - Police Station	45 West 12th St	Commercial	Urban And Center City	SLAMS	Highest Concentration, Population Exposure	-107	44.833	10/5/1983
56-033-0003	Sheridan-Highland Park	1301 Avon	Residential	Urban And Center City	SLAMS	Population Exposure	-107	44.806	7/1/2005
56-009-0819	Antelope	Antelope Site 3	Industrial	Rural	Special Purpose	General/Background	-105.4	43.427	9/1/1982
56-033-0099	Arvada	Adjacent to Arvada Elem. School	Residential	Rural	Special Purpose	General/Background	-106.1	44.654	11/1/2002
56-005-0892	Belle Ayr	Belle Ayr Ba-4,5N,5S	Industrial	Rural	Special Purpose	Highest Concentration, Source Oriented	-105.3	44.099	7/9/1991
56-005-0877	Black Thunder PM2.5	Black Thunder BTM 26-2	Industrial	Rural	Special Purpose	General/Background	-105.2	43.677	1/1/1985

AQD ID	Site Name	Address	Land Use Type	Location Type	Monitor Type	Monitor Objective	Longitude	Latitude	Site Start Date
56-035-0099	Boulder	5 miles southwest of Boulder, Wy	Desert	Rural	Special Purpose	Source Oriented, General/Background	-109.8	42.719	2/1/2005
56-005-0899	Buckskin	Triton Coal Gillette, Wy	Industrial	Rural	Special Purpose	General/Background	-105.6	44.472	4/10/1994
56-005-0456	Campbell County	Approx 15 Miles SSW of Gillette, Wy	Desert	Rural	Special Purpose	Source Oriented, General/Background	-105.5	44.147	7/15/2003
56-035-0100	Daniel South	5 miles south of Daniel	Desert	Rural	Special Purpose	General/Background	-110.1	42.791	7/1/2005
56-035-0098	Jonah	Approx 40 Miles NW of Farson, Wy	Industrial	Rural	Special Purpose	Source Oriented	-109.7	42.429	11/5/2004
56-041-0101	Murphy Ridge	Near Wyoming Utah Border	Agricultural	Rural	Special Purpose	General/Background	-111.0	41.373	1/1/2007
56-035-0705	Pinedale	101 East Hennick	Residential	Suburban	Special Purpose	Population Exposure	-109.7	42.429	7/1/2005
56-013-0099	South Pass	South Pass, Wy	Forest	Rural	Special Purpose	General/Background	-108.4	42.315	3/12/2007
56-005-0123	Thunder Basin	Thunder Basin Grassland Site 30 Mi N-NE of Gillette, Wy	Desert	Rural	Special Purpose	General/Background	-105.3	44.672	5/1/2001
56-037-0200	Wamsutter	2 miles west of Wamsutter, Wy	Desert	Rural	Special Purpose	Source Oriented, General/Background	-108	41.678	3/1/2006
56-005-0099	Wright	Adjacent To Wright Jr-Senior High School	Residential	Rural	Special Purpose	General/Background, Population Exposure	-105.5	43.758	11/1/2002

Appendix B

SLAMS Precision and Accuracy

Parameter	AQS ID	POC	Site Name	Precision Checks	Accuracy Audits			
					1 st Q	2 nd Q	3 rd Q	4 th Q
PM ₁₀	56-025-0001	1	Casper	57 Hi-Vol	0	1	0	0
	56-025-0001	2	Casper	13 Hi-Vol	0	1	0	0
	56-021-0001	1	Cheyenne	51 Hi-Vol/Partisol	1	0	1	0
	56-021-0001	2	Cheyenne	5 Hi-Vol/Partisol	1	0	0	0
	56-029-0001	2	Cody	N/A	0	0	1	0
	56-005-1002	3	Gillette	N/A	1	0	0	1
	56-039-1006	1	Jackson	N/A	0	0	1	1
	56-013-1003	3	Lander	N/A	1	0	0	1
	56-001-0006	2	Laramie	N/A	0	1	0	0
	56-037-0007	2	Rock Springs	N/A	0	1	0	1
	56-033-0002	1	Sheridan - Police Station	39 Hi-Vol/Partisol 6 for the TEOM	0	0	0	1
	56-033-0003	1	Sheridan- Highland Park	3 Partisol	0	0	0	0

Parameter	AQS ID	POC	Site Name	Precision Checks	Accuracy Audits			
					1 st Q	2 nd Q	3 rd Q	4 th Q
PM _{2.5}	56-021-0001	1	Cheyenne	N/A	1	0	1	0
	56-039-1006	1	Jackson	N/A	0	0	1	0
	56-013-1003	1	Lander	N/A	1	0	1	0
	56-033-0002	1	Sheridan- Police Station	49	1	0	1	0
	56-033-0002	2	Sheridan- Police Station	1	1	0	0	0
	56-033-0003	1	Sheridan – Highland Park	N/A	1	0	1	0