



Wyoming Ambient Air Monitoring Annual Network Plan 2013

June 27, 2013



Photo by Jennifer Frazier

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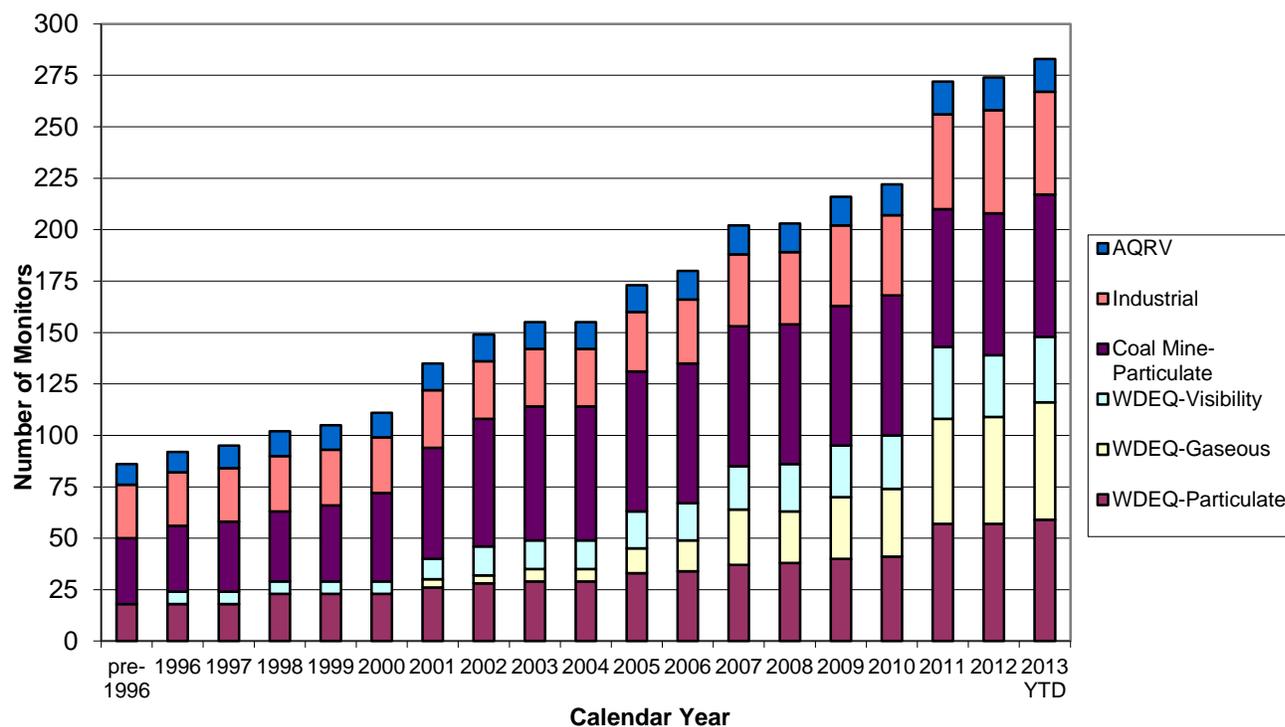
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1.0 Introduction

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 stations. EPA's requirements for the annual plan are listed in 40 CFR § 58.10. The annual plan will cover a review of the ambient air monitoring stations and verify the network is meeting the requirements of 40 CFR § 58, Appendices A, C, D, and E. 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 The AQD Monitoring History

Since the 1970's the AQD Monitoring Program has been working actively to evaluate monitoring requirements and use available resources effectively for the State of Wyoming. The Air Quality Resource Management Program serves the Division by looking at monitored data in conjunction with emission inventory trends and planned development to shape the AQD's air quality management policies in the future. Not only does the AQD run the State and Local Air Monitoring Stations (SLAMS) to monitor public health, but also runs or oversees several special purpose monitoring stations (SPM) to track impacts from the many industrial sources that reside in Wyoming. The 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 the AQD runs or oversees by year since 1996.



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. The 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, the 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, as a whole, is designed to meet the following seven basic ambient air monitoring objectives:

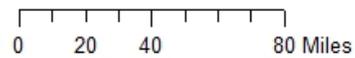
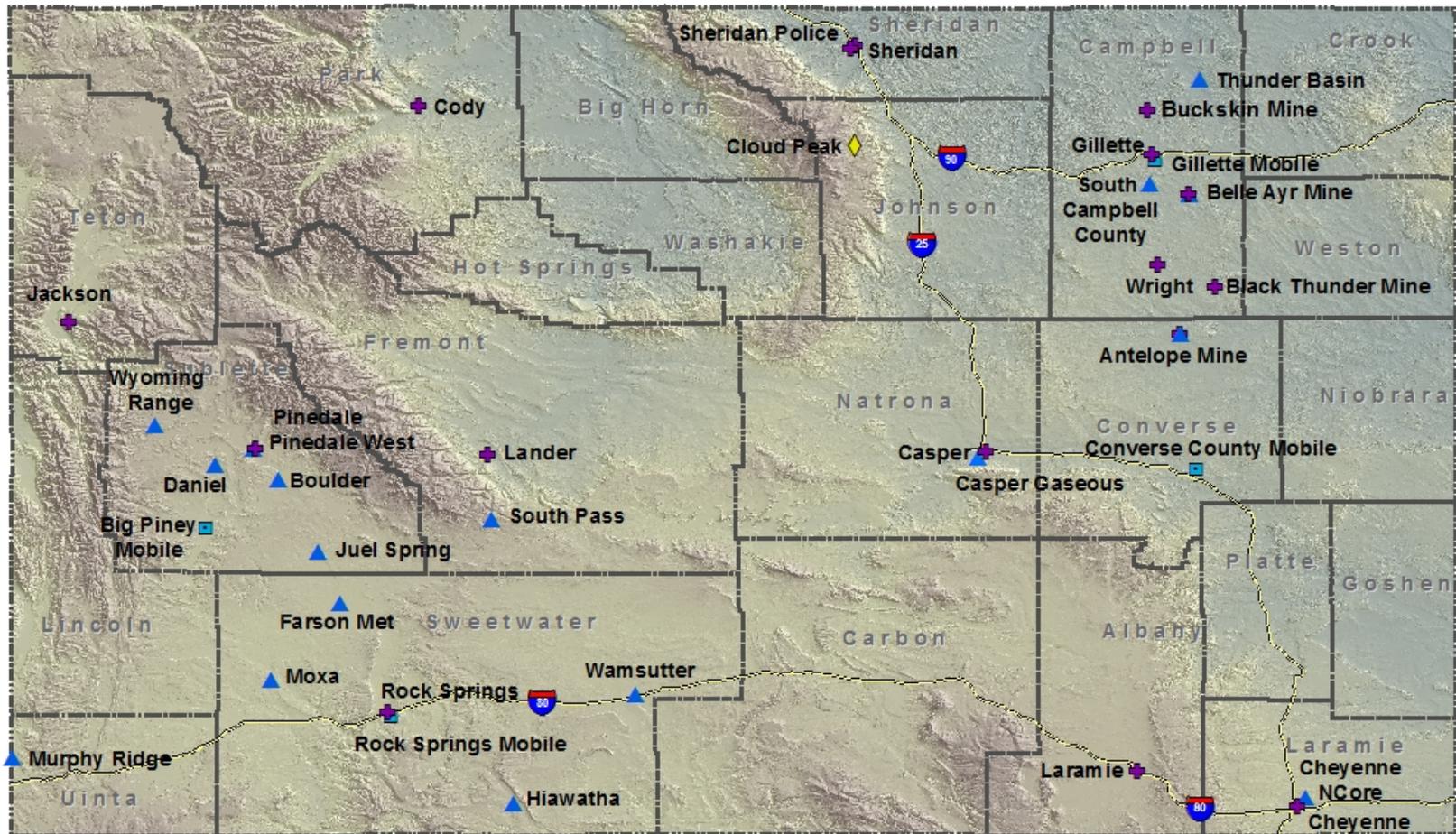
- 1) Determine representative concentrations in areas of high population density
- 2) Determine impact on ambient air quality from significant sources
- 3) Determine general background concentration levels
- 4) Determine the extent of regional pollutant transport among populated areas and in rural and remote areas
- 5) Determine welfare-related impacts in support of secondary standards
- 6) Determine highest concentration expected to occur in the area covered by the network
- 7) Research pollutant and meteorological behaviors in areas of concern

Not every monitor will meet each one of the objectives, but the complete monitoring network will encompass all seven objectives.

The following map shows the Wyoming monitor locations separated into Particulate Matter, Gaseous, Visibility and Mobile stations that were operated by the AQD between May 2012 and May 2013.

The table below provides a brief overview of the Wyoming Monitoring Network.

State of Wyoming Ambient Air Quality Monitors



- Mobile Stations - Gaseous, PM, and Met
- ▲ Gaseous, PM, and Met
- + Particulate Monitoring
- ◆ Visibility and Met



Overview of Wyoming Monitors

| Name | County | PARAMETER | | | | | | | | | | |
|-------------------------------------|-------------|------------------------------|----------------------------------|-------------------------------|-----------------------------------|-----------------|----------------|-----------------|-------|--------|-----|---|
| | | PM ₁₀ (manual) | PM ₁₀ (continuous) | PM _{2.5} (manual) | PM _{2.5} (continuous) | NO _x | O ₃ | SO ₂ | CO | Camera | Met | Other |
| Laramie | Albany Co | X | | X | | | | | | | | |
| Belle Ayr Mine | Campbell Co | | | | X | X | | | | | X | |
| Black Thunder Mine | Campbell Co | | | | X | | | | | | | |
| Buckskin Mine | Campbell Co | | | | X | | | | | | | |
| Campbell County | Campbell Co | | X | | | X | X | | | X | X | |
| Gillette | Campbell Co | X | | | | | | | | | | |
| Thunder Basin | Campbell Co | | | | | X | X | | | X | X | Visibility |
| Wright | Campbell Co | X | | | | | | | | | | |
| Antelope Mine | Converse Co | | | | X | X | | | | | X | |
| Converse County (Mobile #3) | Converse Co | | X | | X | X | X | | | X | X | Methane/NMHC* |
| Lander | Fremont Co | X | | X | | | | | | | | |
| South Pass | Fremont Co | | X | | | X | X | | | X | X | Aerosol |
| Cloud Peak | Johnson Co | | | | | | | | | X | X | Visibility |
| Cheyenne | Laramie Co | X | | X | | | | | | | | |
| Cheyenne NCore | Laramie Co | | | X | X | X | X | Trace | Trace | X | X | NO/NO _y , PM _{10-2.5} , Speciated PM _{2.5} |
| Casper | Natrona Co | X | | X | | | | | | | | |
| Casper gaseous | Natrona Co | | | | | X | X | | | X | X | |
| Cody | Park Co | X | | X | | | | | | | | |
| Sheridan - Highland Park/Meadowlark | Sheridan Co | X | | X | | | | | | | | |
| Sheridan - Police Station | Sheridan Co | | X | X | | | | | | | | |
| Big Piney (Mobile # 2) | Sublette Co | | X | | X | X | X | | | X | X | Methane/NMHC* |
| Boulder | Sublette Co | | X | | | X | X | | | X | X | Visibility, NO _y , Methane/NMHC*, Photolytic NO ₂ |
| Daniel South | Sublette Co | | X | | | X | X | | | X | X | |
| Farson | Sublette Co | | | | | | | | | | X | |
| Juel Spring | Sublette Co | | | | | X | X | | | X | X | |

Overview of Wyoming Monitors (continued)

| Name | County | PARAMETER | | | | | | | | | | |
|--------------------------|---------------|------------------------------|----------------------------------|-------------------------------|-----------------------------------|-----------------|----------------|-----------------|----|--------|-----|---------------|
| | | PM ₁₀ (manual) | PM ₁₀ (continuous) | PM _{2.5} (manual) | PM _{2.5} (continuous) | NO _x | O ₃ | SO ₂ | CO | Camera | Met | Other |
| Pinedale | Sublette Co | | | X | X | X | X | | | X | X | |
| Hiawatha | Sweetwater Co | | | | | | X | | | X | X | |
| Moxa | Sweetwater Co | | X | | | X | X | X | | X | X | |
| Rock Springs | Sweetwater Co | X | | X | | | | | | | | |
| Rock Springs (Mobile #1) | Sweetwater Co | | X | | X | X | X | | | X | X | Methane/NMHC* |
| Wamsutter | Sweetwater Co | | X | | | X | X | | | X | X | |
| Wyoming Range | Sweetwater Co | | X | | X | X | X | | | X | X | |
| Jackson | Teton Co | X | | X | | | | | | | | |
| Murphy Ridge | Uinta Co | | X | | X | X | X | | | X | X | |

*Non Methane Hydrocarbons

2.0 Air Monitoring Plan in 2013

2.1 State and Local Air Monitoring Stations (SLAMS)

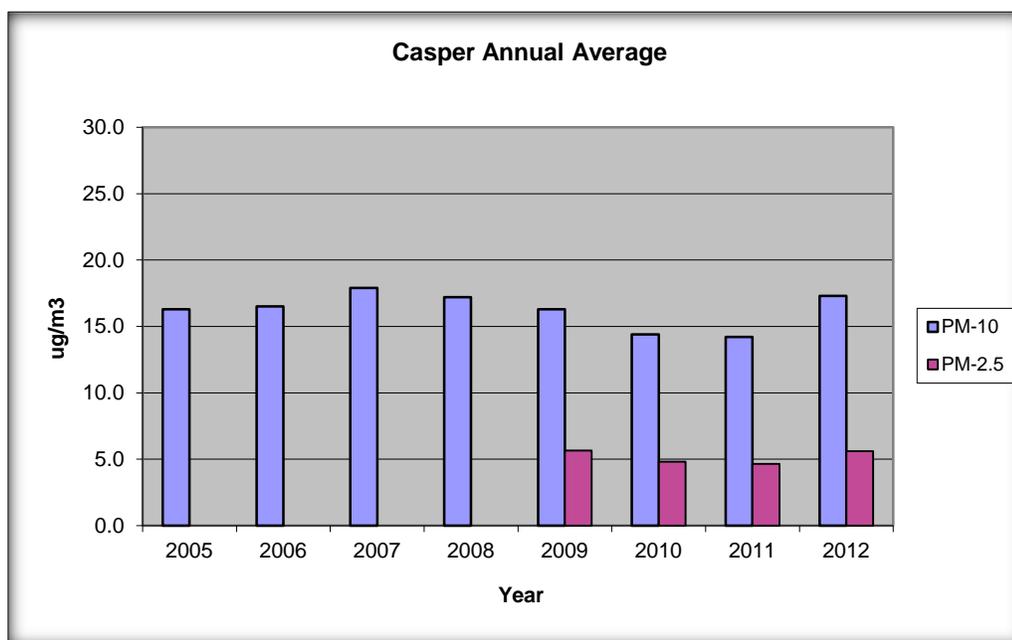
The State and Local Air Monitoring Stations (SLAMS) are used for supplying general monitoring data for criteria pollutants and determining compliance with the NAAQS. The SLAMS are relatively stable stations that must meet and follow specific quality assurance, monitoring methodology, sampling objectives and siting requirements. The AQD SLAMS stations 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 stations 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 | Sample Frequency | Operational Status |
| Casper PM ₁₀ with collocation | City, County Bldg; Center & C Streets (Casper MSA) | 56-025-0001 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 Collocation 1/12 | No planned changes; collocation frequency change (7/1/12) |
| Casper PM _{2.5} | City, County Bldg; Center & C Streets (Casper MSA) | 56-025-0001 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |

This station is located in downtown Casper, a city of approximately 56,000 people. Casper is the second largest city in Wyoming, located in Natrona County near the center of the State. This station is in the Casper, Wyoming Metropolitan Statistical Area (MSA). PM₁₀ sampling began at this station in 1991. A collocated PM₁₀ sampler was added in 2001 and the station hi-volume PM₁₀ samplers were replaced with low-volume partisol during 2010. The AQD added PM_{2.5} sampling at the Casper station on May 22, 2009. The AQD is interested in monitoring PM_{2.5} concentrations in Casper because it is one of Wyoming's most heavily populated areas.

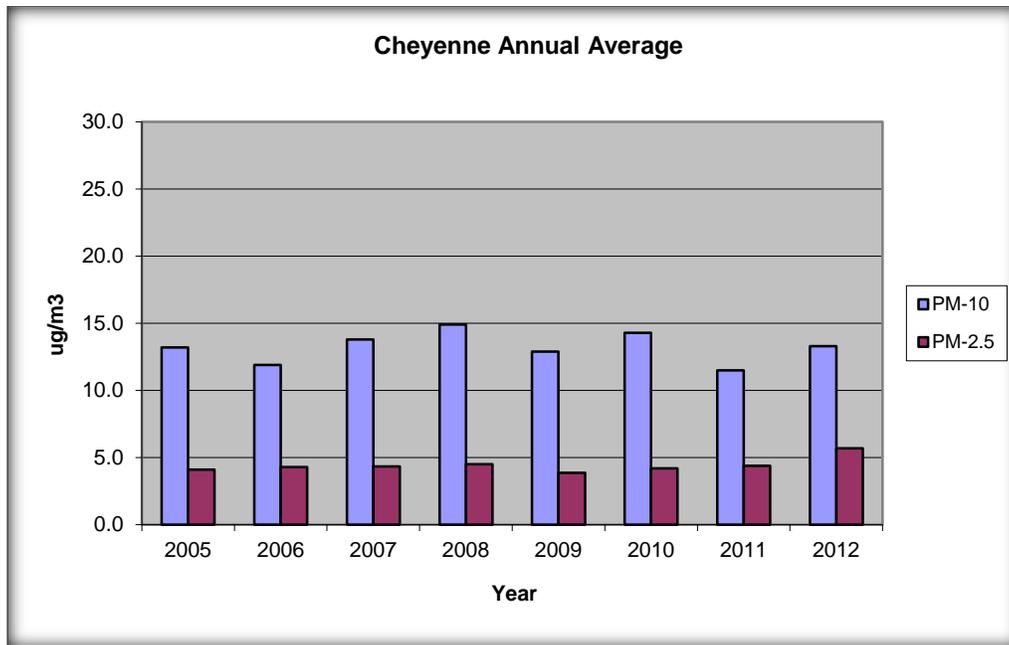


2.1.2 Cheyenne



| Cheyenne Monitoring Site Specifications | | | | | | | |
|---|--|-------------|-------------------|--|--------------|-------------------------|---|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Cheyenne PM ₁₀ with collocation | State Office Building 23 rd & Central Ave. (Cheyenne MSA) | 56-021-0001 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 Collocation 1/12 | No planned changes: collocation frequency change (7/1/12) |
| Cheyenne PM _{2.5} with collocation | State Office Building 23 rd & Central Ave. (Cheyenne MSA) | 56-021-0001 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 Collocation 1/12 | No planned changes: collocation frequency change (7/1/12) |

The Cheyenne monitoring station is located in downtown Cheyenne on a State of Wyoming building. Cheyenne's population is approximately 60,100 people; it is the capital and largest city in Wyoming. This station is in the Cheyenne, Wyoming MSA. The PM₁₀ sampling began at this station in 1991. A collocated PM₁₀ sampler was added in 2002. The PM_{2.5} monitors were installed in 1998. A collocated PM_{2.5} sampler was added in March, 2009 to comply with 40 CFR § 58 requirements for collocation of samplers.

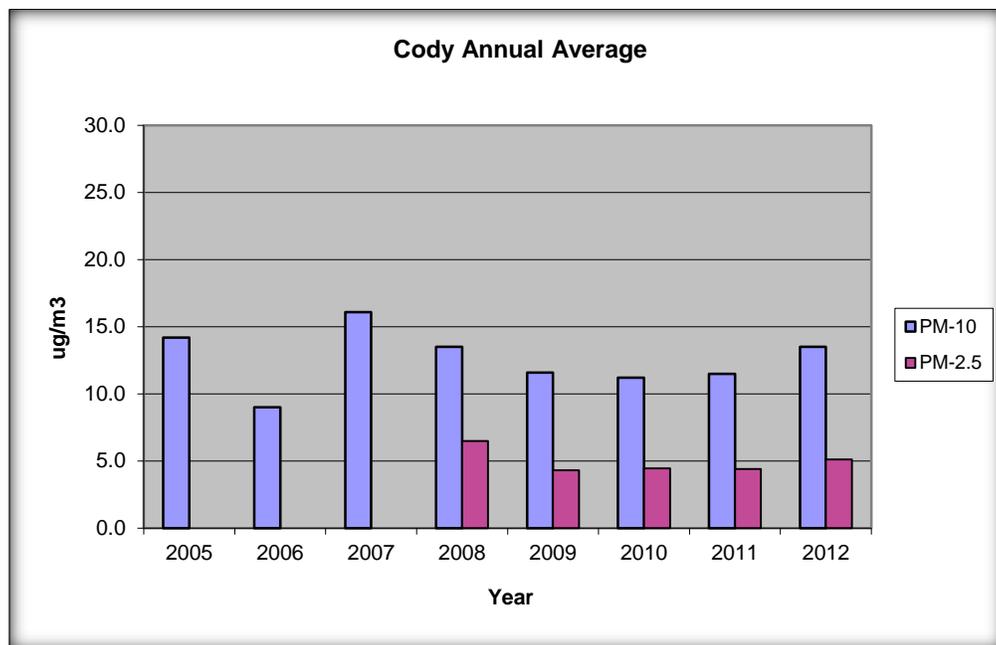


2.1.3 Cody

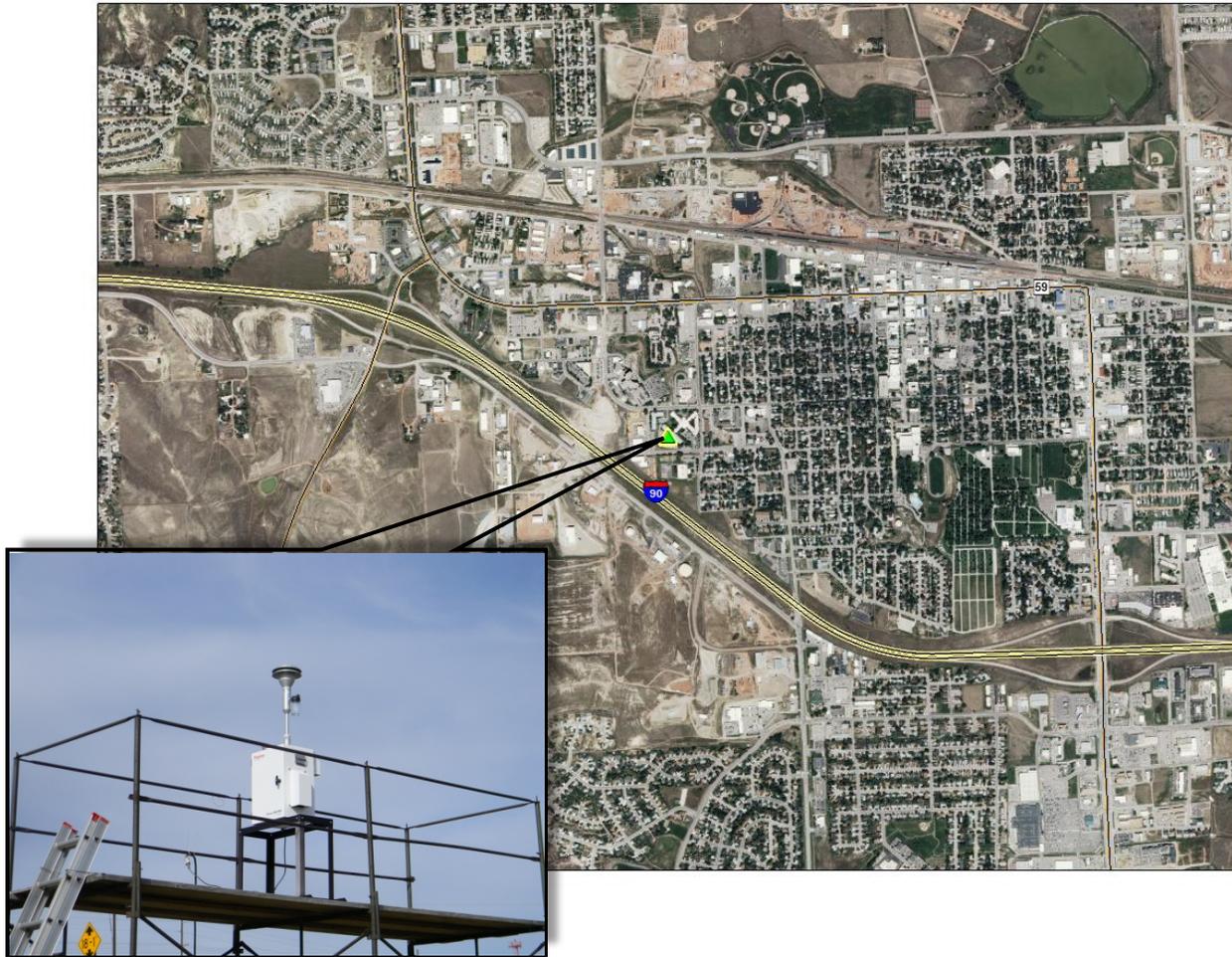


| Cody Monitoring Site Specifications | | | | | | | |
|-------------------------------------|----------------------|-------------|-------------------|--|--------------|------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Cody PM ₁₀ | Cody Jr. High School | 56-029-0001 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |
| Cody PM _{2.5} | Cody Jr. High School | 56-029-0001 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |

Cody is located in the northwest portion of the State situated in Park County; its population is approximately 9,600. PM₁₀ sampling began at this station in 1988 and the PM₁₀ samplers were upgraded to more reliable low-volume samplers during 2010. Cody PM_{2.5} monitoring started in June, 2008. The AQD is interested in monitoring PM_{2.5} concentrations in Cody to monitor impacts from wintertime sanding, wood smoke, summertime forest fires, and the nearby lake bed that can be exposed when available water is low.

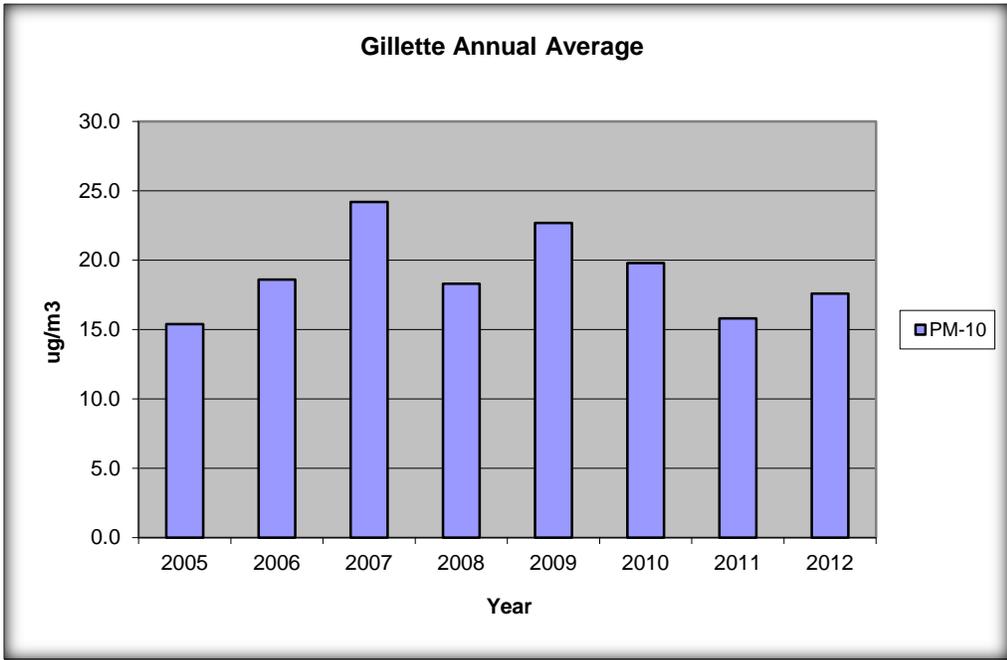


2.1.4 Gillette

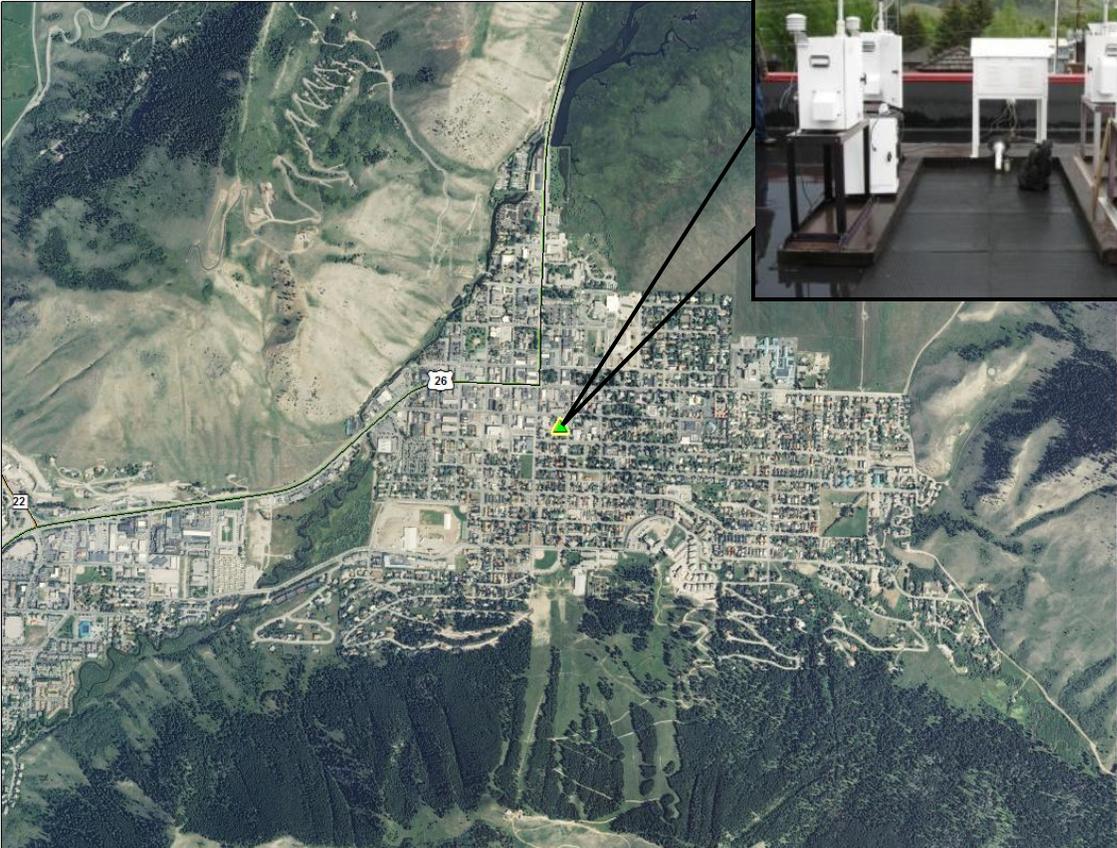


| Gillette Monitoring Site Specifications | | | | | | | |
|---|----------------------------------|-------------|------------------|--|--------------|------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Gillette PM ₁₀ | 1000 West 8 th Street | 56-005-1002 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/6 | No planned changes |

Gillette is located in Campbell County Wyoming; its population is approximately 29,400 and is considered a micropolitan statistical area. PM₁₀ sampling began at this station in 1991. The Gillette PM₁₀ sampler was upgraded to a more reliable low-volume sampler during 2010.

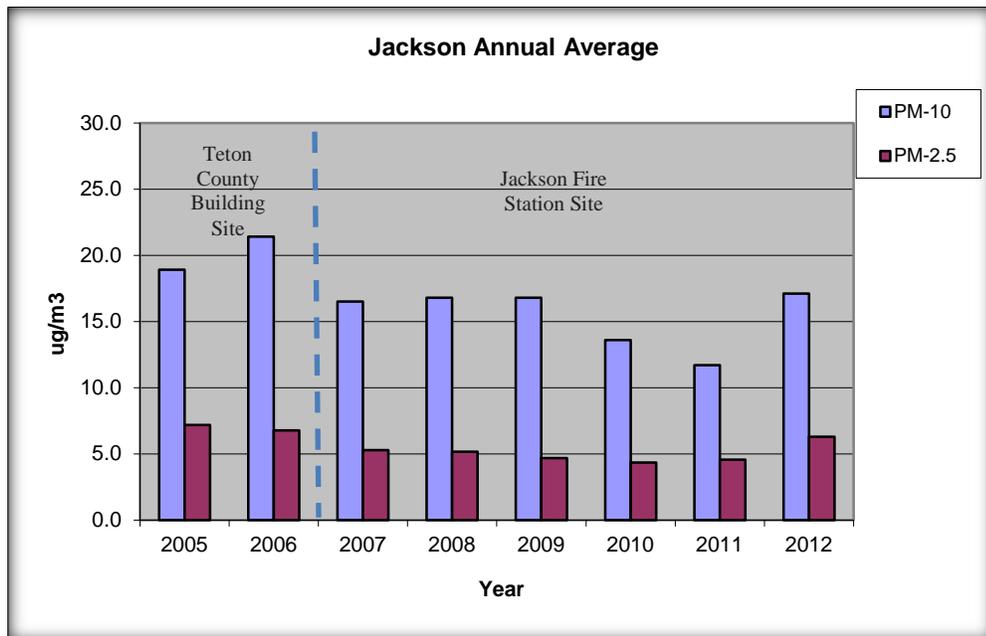


2.1.5 Jackson



| Jackson Monitoring Site Specifications | | | | | | | |
|--|-----------------|-------------|-------------------|--|--------------|------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Jackson PM ₁₀ | 40 E Pearl Ave. | 56-039-1006 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |
| Jackson PM _{2.5} | 40 E Pearl Ave. | 56-039-1006 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |

Jackson is located in Teton County in northwest Wyoming. Jackson is considered a micropolitan statistical area with a population of approximately 9,700. PM₁₀ and PM_{2.5} sampling began in Jackson in 2001 at the Teton County Building Site. Sampling at the current location, Jackson Fire Station site, began in 2007.



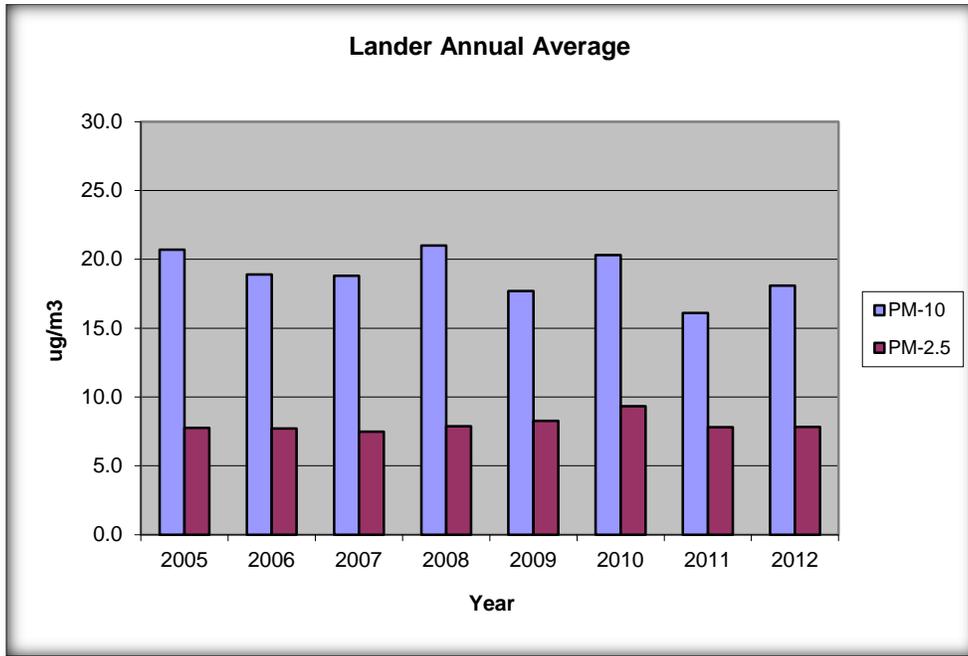
2007 value is a weighted value for the Teton County Building Site and the Fire Station Site

2.1.6 Lander



| Lander Monitoring Site Specifications | | | | | | | |
|---------------------------------------|----------------|-------------|-------------------|--|--------------|------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Lander PM ₁₀ | 600 Washington | 56-013-1003 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |
| Lander PM _{2.5} | 600 Washington | 56-013-1003 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |

The Lander monitoring station is located at 600 Washington. Lander is located in Fremont County and has a population of approximately 7,600. PM₁₀ sampling began at this station in 1989. The PM_{2.5} monitors were installed in 2001.

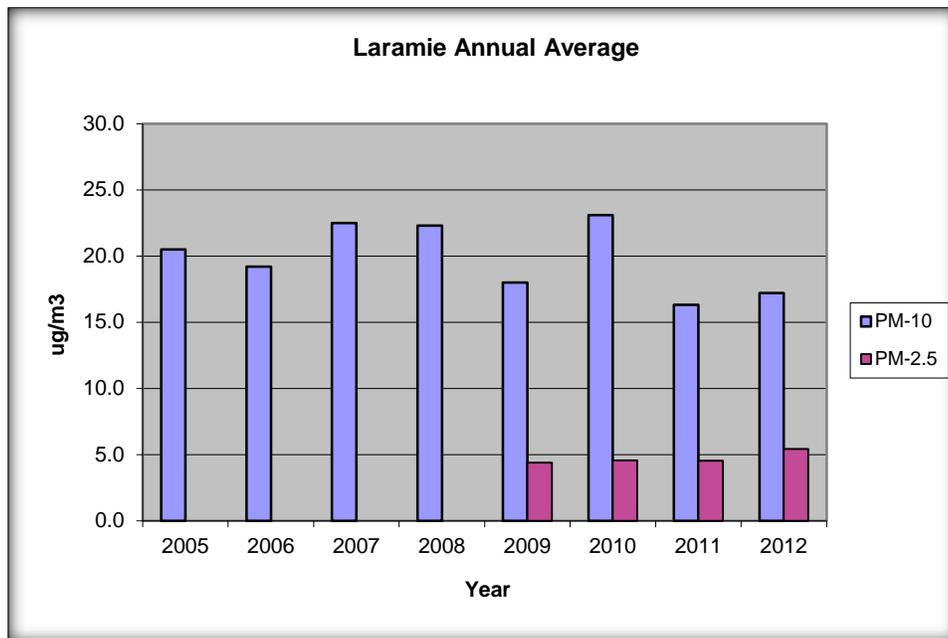


2.1.7 Laramie



| Laramie Monitoring Site Specifications | | | | | | | |
|--|-------------|-------------|-------------------|--|--------------|------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Laramie PM ₁₀ | 406 Ivinson | 56-001-0006 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |
| Laramie PM _{2.5} | 406 Ivinson | 56-001-0006 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |

Laramie is located in the southeast portion of Wyoming in Albany County. Laramie has a population of approximately 31,300 and is considered a micropolitan statistical area. PM₁₀ sampling began at this station in 1989 and The AQD upgraded the Laramie station PM₁₀ samplers to low-volume samplers during 2010. The AQD began PM_{2.5} sampling in Laramie on July 12, 2009 to monitor impacts from wintertime sanding, wood smoke, and summertime forest fires.

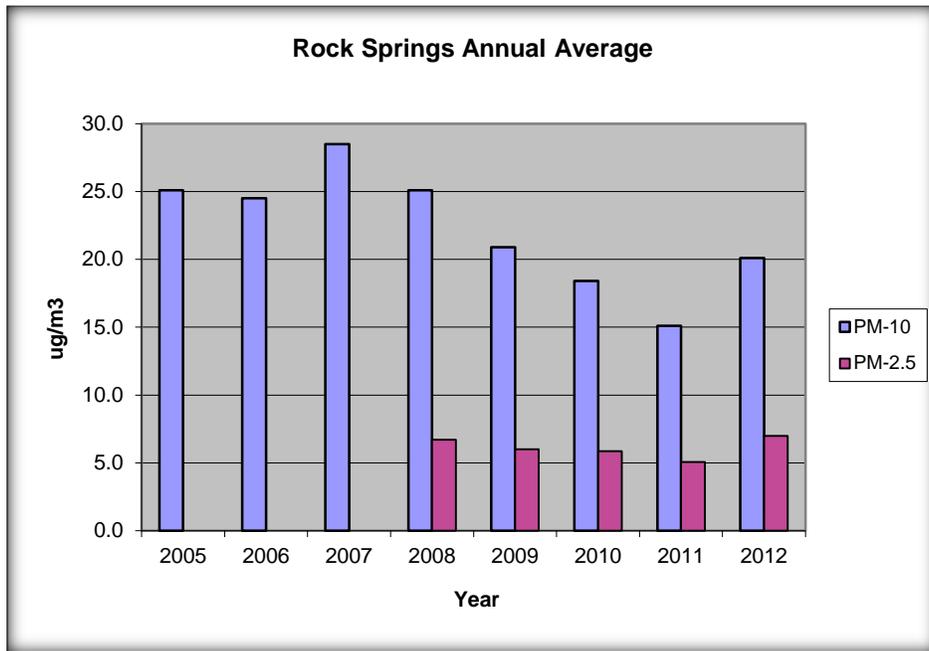


2.1.8 Rock Springs



| Rock Springs Monitoring Site Specifications | | | | | | | |
|---|----------------|-------------|-------------------|--|--------------|------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Rock Springs PM ₁₀ | 625 Ahsay Ave. | 56-037-0007 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |
| Rock Springs PM _{2.5} | 625 Ahsay Ave. | 56-037-0007 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | No planned changes |

Rock Springs is located in Sweetwater County in southwest Wyoming. Rock Springs is a micropolitan statistical area and has a population of approximately 23,200. PM₁₀ sampling began at this station in 1989. The AQD added PM_{2.5} monitoring to Rock Springs in March 2008 to monitor PM_{2.5} concentrations with population growth and energy development occurring in the area.

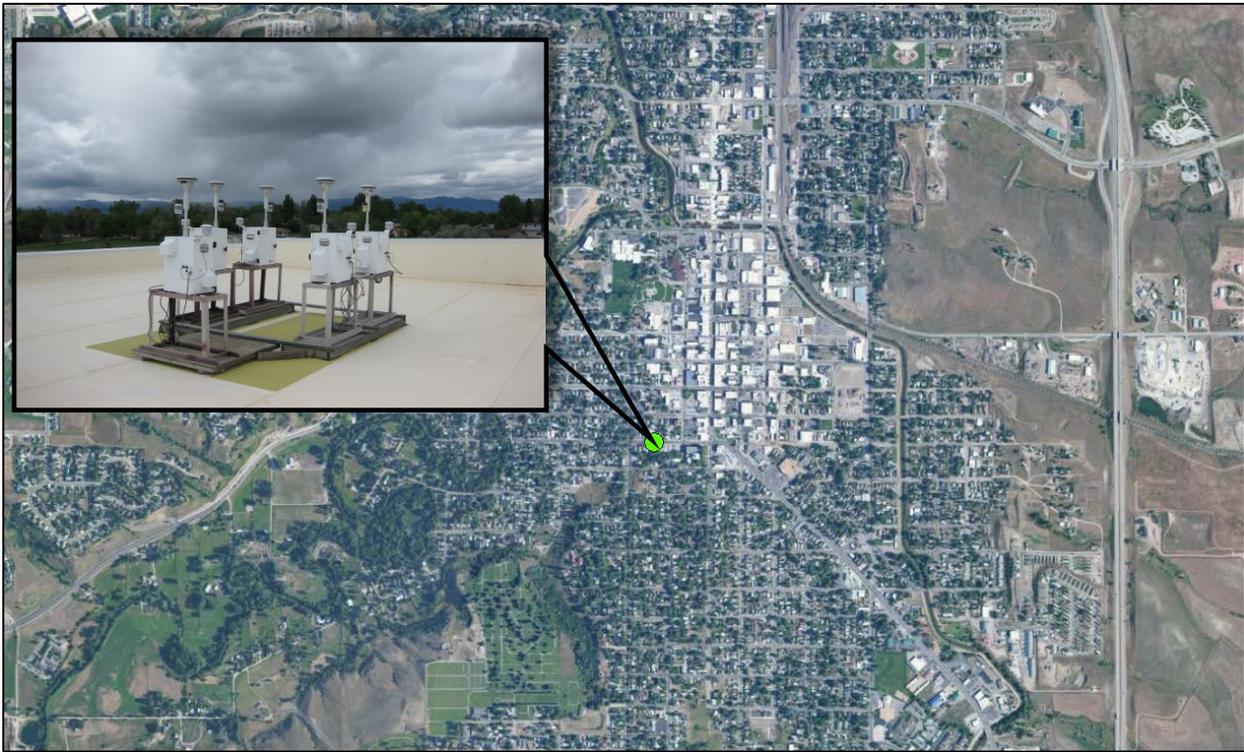


2.1.9 Sheridan – (Highland Park / Meadowlark) Highland Park



| Sheridan – Highland Park Monitoring Site Specifications | | | | | | | |
|--|----------------------------|-------------|-------------------|--|--------------|-------------------------------|----------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Sheridan – Highland Park PM ₁₀ with collocation | Highland Park 1301 Avon | 56-033-0003 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 Collocation 1/6 | Shut down 5/21/12 |
| Sheridan – Highland Park PM _{2.5} | Highland Park 1301 Avon | 56-033-0003 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | Shut down 5/21/12 |

Meadowlark



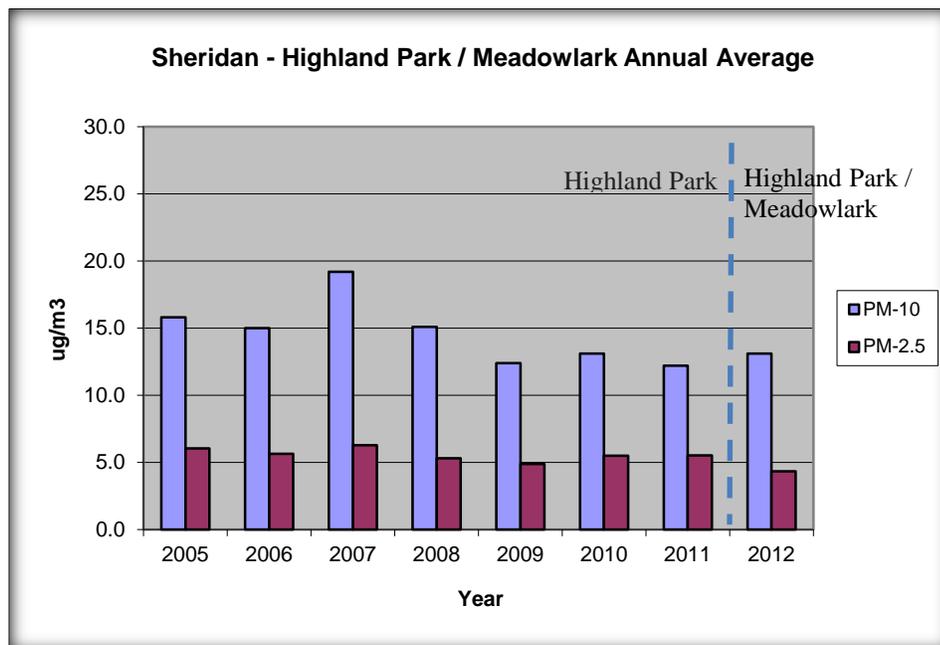
| Sheridan – Meadowlark Monitoring Site Specifications | | | | | | | |
|---|--------------------------------|-------------|-------------------|--|--------------|--------------------------------|----------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Sheridan – Meadowlark PM ₁₀ with collocation | Meadowlark 1410 DeSmet Ave. | 56-033-1003 | PM ₁₀ | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 Collocation 1/12 | Start Date 7/1/12 |
| Sheridan – Meadowlark PM _{2.5} | Meadowlark 1410 DeSmet Ave. | 56-033-1003 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | Start Date 7/1/12 |

The Sheridan Highland Park Elementary School station (56-033-0003) had to be relocated due to the Sheridan County School District #2's decision to vacate the school in May 2012. The new Sheridan Meadowlark Elementary School station is intended to be the long-term replacement for the Highland Park Elementary station. Sampling at the current location began in July 2012. The Meadowlark Elementary School station is located at 1410 DeSmet Avenue in Sheridan Wyoming (coordinates 44°46.965 N, 106°57.859 W). The Meadowlark Elementary School station is located about 1 ½ miles southeast of the current Highland Park Elementary School. This station represents a neighborhood scale, population oriented station within a PM₁₀ nonattainment area. Parameters operating at the station include PM₁₀ and PM_{2.5}, both filter-based, and PM₁₀ collocated on a 1/12 day schedule.

Since this was a change in a SLAMS location, the AQD must request permission to move the station. The AQD requested permission on April 12, 2012 and initial approval was granted by EPA Region 8 on April 27, 2012. This documentation and final Network Modification Form can be found in Appendix C.

This monitoring location is one of two monitoring stations in the city of Sheridan, a micropolitan statistical area. Sheridan is located in Sheridan County and has a population of approximately 17,500. The City of Sheridan is Wyoming's only nonattainment area for annual PM₁₀.

Since 1998, the neighborhood scale, population oriented station has moved several times. From 1998 to 2005 PM₁₀ had been monitored at the Sheridan Middle School; from 2005 to 2012 the station was located at the Highland Park School; beginning July 2012 the station is currently located at the Meadowlark Elementary School. A collocated PM₁₀ monitor was placed at the station, in 2007, to fulfill collocation requirements for the SLAMS network.



2012 value is a weighted average of the Highland Park and Meadowlark values

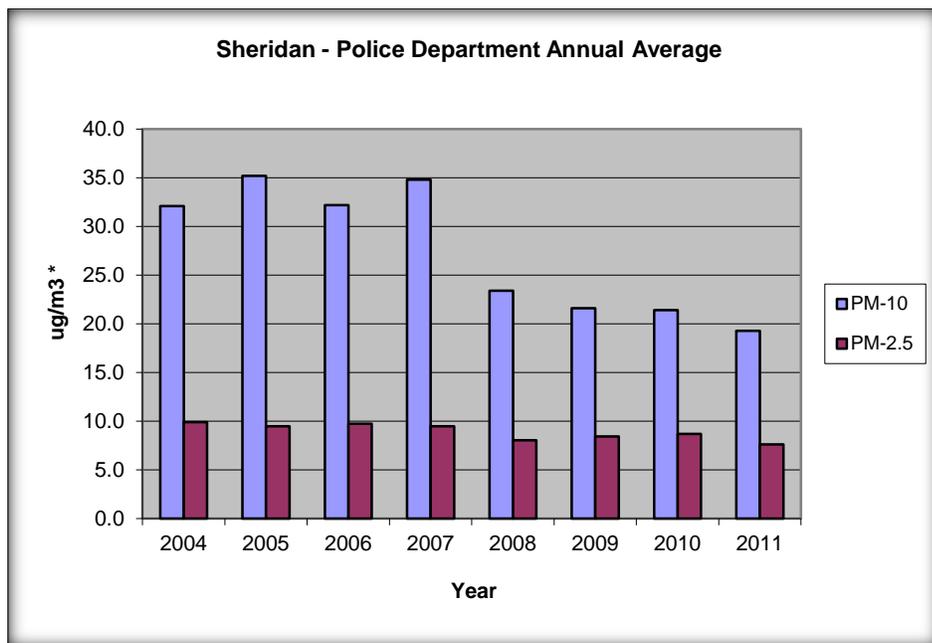
2.1.10 Sheridan – Police Station



| Sheridan – Police Station Monitoring Site Specifications | | | | | | | |
|--|---------------------------------|-------------|-------------------|--|--------------|----------------------------|--|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Sample Frequency | Operational Status |
| Sheridan – Police Station PM ₁₀ | 45 West 12 th Street | 56-033-0002 | PM ₁₀ | Continuous TEOM | Neighborhood | Hourly | No planned changes |
| Sheridan – Police Station PM _{2.5} with collocation | 45 West 12 th Street | 56-033-0002 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 Collocation 1/12 | No planned changes: collocation frequency change (7/1/12) |

The Sheridan – Police Station station is one of the oldest monitoring stations in Wyoming. Sheridan has a population of approximately 17,400 and is considered a micropolitan statistical area. Sheridan is a nonattainment area for annual PM₁₀. Filter-based PM₁₀ sampling began at this station in 1985. A PM₁₀ continuous TEOM sampler replaced the filter-based monitors on October 1, 2007. This allows the AQD to run year-round everyday sampling in Sheridan in an efficient and cost effective manner. Additionally, meteorology instrumentation was added to the Police Station station in 2008 to monitor weather conditions, giving the AQD better information

to work with the community to prevent PM₁₀ exceedances. PM_{2.5} sampling started in 1998 at this station.



*Note: Vertical scale is larger than other SLAMS graphs.

2.2 Special Purpose Monitoring (SPM)

The Special Purpose Monitoring (SPM) stations are used in addition to the SLAMS stations and provide information needed by the State and local agencies to support air program activities and fulfill the objectives of the air monitoring network. The SPMs can be adjusted to accommodate changing circumstances, needs and priorities. Section 2.2 includes SPM stations operating in Wyoming as of May 2013.

The following SPM stations have a spatial (measurement) scale associated with each parameter at each station used to allow for an understanding of what the ambient air monitor represents in terms of a surrounding, relatively homogeneous parcel of air. These spatial scales are spelled out in 40 CFR § 58. A scale is assigned to each parameter at the station to indicate what the measurement scale of a particular monitor represents. The monitoring objective and spatial scale are determined when the monitoring station is initiated and may be updated if the monitoring objective changes throughout the life of the monitoring station.

2.2.1 Boulder

The Boulder Station 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 began monitoring in February 2005, and includes gaseous (NO_x and ozone), continuous



particulate (PM₁₀ TEOM), camera system and meteorological monitoring. The nephelometer for visibility data was removed from this station on June 30, 2012 due to budget constraints. The Boulder Monitoring Station was also a hub for the AQD's 2007 - 2013 Upper Green Winter Ozone Studies. There is also long-term monitoring at the Boulder Station to further understand ozone formation in the Upper Green River Basin Ozone Nonattainment Area. In 2013, this monitoring included photolytic NO₂, methane/non-methane hydrocarbons, speciated VOC monitoring, NO_y monitoring, UV radiometers, and upper air monitoring. Shell Exploration and Production assisted with funding for this station and uses the station, since December 2006, to monitor for ammonia.

| 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 | Neighborhood/Urban | Hourly | No planned changes |
| | | | Nitric Oxide | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Nitrogen Dioxide | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Oxides of Nitrogen | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Methane/NMHC | Real Time | Regional | Hourly | No planned changes |
| | | | PM ₁₀ | Continuous TEOM | Neighborhood | Hourly | No planned changes |

2.2.2 Casper

The Casper Station began operation in March 2013. The Casper station is sited to monitor population-based ozone concentrations in Wyoming's second largest city. Population based ozone monitoring in Casper was identified as a need in the 2010 Network Assessment. The Casper Station includes ozone, NO_x, and meteorological monitoring, and a camera.



| Casper Monitoring Site Specifications | | | | | | | |
|---------------------------------------|-------------------|-------------|--------------------|-----------------|--------------------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Casper | 2800 Pheasant Dr. | 56-025-0100 | Ozone | Real Time | Neighborhood/Urban | Hourly | No planned changes |
| | | | Nitric Oxide | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Nitrogen Dioxide | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Oxides of Nitrogen | Real Time | Neighborhood | Hourly | No planned changes |

2.2.3 Cloud Peak



The Cloud Peak Station began in October 1999 and is located approximately 15 miles west of Buffalo, WY. This station is used to track visibility and meteorology in the area. The Cloud Peak Station includes a camera system and meteorological monitoring. The nephelometer that was located at the station was removed June 30, 2012 due to budget constraints.

2.2.4 Farson

The AQD established a meteorological monitoring station in May 2011 to obtain meteorological data for the purposes of characterizing the general meteorology and air characteristics near Farson, Wyoming. This general area was targeted, in the Southwest Wyoming and 2010 Network Assessment, as a location to help fill a gap in needed meteorological data. The data collected at this station will be used for AERMOD modeling and comparison with other ambient air monitoring data.



2.2.5 Hiawatha



The AQD began operation of the Hiawatha Station in May 2011. This is the AQD's first monitoring station that uses renewable energy as its primary power source. The solar/wind powered monitoring station is located 35 miles south of Rock Springs, in the Hiawatha Gas Field. This area of industrial oil and gas development was noted in the 2010 Network Assessment as an area that would benefit from ambient quality monitoring. The Hiawatha station includes ozone, camera system, and meteorological monitoring. The Hiawatha station is part of the Three-State Study.

| Hiawatha Monitoring Site Specifications | | | | | | | |
|---|------------------------------|-------------|-----------|-----------------|----------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Hiawatha | 35 mi. S of Rock Springs, WY | 56-037-0077 | Ozone | Real Time | Regional | Hourly | No planned changes |

2.2.6 Juel Spring

The Juel Spring monitoring began operation in December 2009. This station is located downwind from the Jonah Gas Field, an area of heavy oil and gas development. The Juel Spring Station includes gaseous (NO_x and ozone), camera system and meteorological monitoring. This station is located in conjunction with the Union Cellular Juel Spring Tower station. It is located approximately 15 miles southeast of the old Jonah monitoring station. The results of the AQD's Southwest Wyoming Network Assessment in 2008 concluded that the old Jonah monitor was no longer meeting its original objective as a downwind monitoring station for the Jonah Gas Field. This area was suggested as a superior location for meeting this downwind objective.



| Juel Spring Monitoring Site Specifications | | | | | | | |
|--|---------------------------|-------------|--------------------|-----------------|-------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Juel Spring | 20 miles NW of Farson, WY | 56-035-1002 | 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 |

2.2.7 Moxa

The Moxa station was installed in May 2010. This station is located approximately 25 miles northwest of the city of Green River. The purpose of this monitoring station is to characterize and monitor meteorology and air quality in an area of heavy energy development. This station includes NO_x, SO₂, ozone, continuous particulate (PM₁₀ TEOM), camera system, and meteorology monitors.



| Moxa Monitoring Site Specifications | | | | | | | |
|-------------------------------------|----------------------------|-------------|--------------------|-----------------|-------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Moxa | 25 miles NW of Green River | 56-037-0300 | 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 | Continuous TEOM | Urban | Hourly | No planned changes |

2.2.8 Murphy Ridge

The Murphy Ridge Station began operations during 2007. The station is located in the Town of Bear River, approximately ten (10) miles north of Evanston on the Wyoming/Utah border. The



Murphy Ridge station is located approximately 1 mile from the former Murphy Ridge NADP wet deposition station. The purpose of this station is to monitor the air masses coming from Utah and to provide insight on these air masses. This station monitors NO_x, ozone, continuous particulate (PM₁₀ TEOM), and meteorology. The station is also equipped with a camera. The Murphy Ridge NADP monitor was removed on June 30, 2012 due to budget constraints.

| 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 | 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 | Continuous TEOM | Regional | Hourly | No planned changes |

2.2.9 Pinedale

Pinedale is located in Sublette County with a population of approximately 2,000 people. There are two (2) monitoring stations in Pinedale. The PM_{2.5} station located at 101 East Hennick began operation in 2005 and the gaseous station, which started in 2009 located on the west side of the city park.



The AQD shut down the PM_{2.5} manual –filter based sampling on June 30, 2012. To reach this decision, the AQD evaluated several factors including redundancy, operational differences, budgetary considerations, and data comparability. The AQD found that data collected at the Pinedale PM_{2.5} station was redundant with the Pinedale Gaseous Station PM_{2.5} data and made the decision to maintain the most efficient and effective network possible, the Pinedale PM_{2.5} station should be shut down.

| Pinedale PM _{2.5} Monitoring Site Specifications | | | | | | | |
|---|------------------|-------------|-------------------|--|--------------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Pinedale PM _{2.5} | 101 East Hennick | 56-035-0705 | PM _{2.5} | Manual Filter-based Gravimetric (partisol) | Neighborhood | 1/3 | Shut Down 6/30/12 |

In January 2009, the AQD added a gaseous monitoring station in Pinedale, Wyoming. The need for population based monitoring in this location was noted in the Southwest Wyoming Network Assessment. This station includes ozone, NO_x, continuous PM_{2.5} Beta Attenuation Monitor (BAM), camera system and meteorology within the town of Pinedale to monitor concentrations in this increasingly populated area. In 2012, after three years of operation, the continuous PM_{2.5} BAM was designated as a primary PM_{2.5} monitor, consistent with EPA direction on implementing continuous PM_{2.5} Federal Equivalent Methods ([June 24, 2008 memo](#))



| Pinedale Gaseous Monitoring Site Specifications | | | | | | | |
|---|---------------------------------------|-------------|--------------------|-----------------|-------|--------------------|----------------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Pinedale | West side of City Park and Pine Creek | 56-035-0101 | 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 _{2.5} | Continuous BAM | Urban | Hourly | Changed to primary monitor |



2.2.10 South Campbell County

The South Campbell County station began operation in June 2003 and is located approximately 15 miles southwest of Gillette. This station is used to track air quality in an area of heavy coal-bed methane development. This station includes gaseous (NO_x and ozone), continuous particulate (PM₁₀ TEOM), camera system and meteorological monitoring.

| 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 | 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 | Continuous TEOM | Urban | Hourly | No planned changes |

2.2.11 South Daniel

The South Daniel Station is located approximately five (5) miles south of the town of Daniel 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. The South Daniel Station began operation in July 2005.



| 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 | Continuous TEOM | Regional | Hourly | No planned changes |

2.2.12 South Pass



The South Pass Station 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, continuous particulate (PM₁₀ TEOM), meteorology, and a camera. The B and C modules of an IMPROVE-type aerosol monitors along with the nephelometer were

removed due to budget constraints at the end of June 2012.

| 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 |
| | | | 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 | Continuous TEOM | Urban | Hourly | No planned changes |

2.2.13 Thunder Basin

The Thunder Basin Station 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 began operating in October 1999 and includes gaseous (NO_x and ozone), camera system and meteorological monitoring. The station nephelometer was removed on June 30, 2012 due to budget constraints.



| 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 |

2.2.14 Wamsutter

The Wamsutter Station is approximately two (2) miles west of 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 and ozone), continuous particulate (PM₁₀ TEOM), camera system and meteorological monitoring. This station began operations on March 13, 2006. In 2011 the AQD added continuous methane/non-methane hydrocarbon monitoring along with periodic canisters to the Wamsutter Station as part of the Three-State Study agreement.



| 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 | 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 |
| | | | Methane/NMHC | Real Time | Urban | Hourly | No planned changes |
| | | | PM ₁₀ | Continuous TEOM | Urban | Hourly | No planned changes |

2.2.15 Wright

The Wright monitoring station 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.



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

2.2.16 Wyoming Range

The Wyoming Range Station is located in Sublette County approximately 16 miles south of Bondurant and east of the Wyoming Range. Monitoring at this station began in January 2011. This location lends itself to monitoring for transport into the State along with meteorological monitoring filling a need stated in the 2010 Network Assessment. The Wyoming Range station includes gaseous (NO_x and ozone), continuous particulate (PM₁₀ BAM and PM_{2.5} BAM), camera system and meteorological monitoring. The primary objective of this station is to monitor transported pollutants entering the Upper Green River Basin from the west.



| Wyoming Range Monitoring Site Specifications | | | | | | | |
|--|---------------------------|-------------|--------------------|-----------------|----------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Wyoming Range | 16 mi. S of Bondurant, WY | 56-035-0097 | 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 | Continuous BAM | Regional | Hourly | No planned changes |
| | | | PM _{2.5} | Continuous BAM | Regional | Hourly | No planned changes |

2.2.17 Powder River Basin (PRB) NO_x

The Powder River Basin NO_x network began operation in January 2001 through a cooperative agreement between the AQD and the Wyoming Mining Association. The purpose of the network is to monitor regional NO₂ concentrations in the Powder River Basin (PRB). The Belle Ayr Station is located near the railroad and represents a “maximum concentration” in and around the coal mines. The Antelope Station is located away from mining activities and is considered to be background. The AQD also collects and uploads data from the Thunder Basin Coal Company’s Station at the Tracy Ranch; this monitoring station is considered downwind of mining activity. The AQD did not list the Tracy Ranch Station below because it is funded solely by the Thunder Basin Coal Company. The Antelope Station has been temporarily mothballed due to power constraints at the current site. In an effort to bring the Antelope station back online, the AQD is currently working with the Antelope Mine to upgrade the electrical service at the Antelope site.

| 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 | Site changes needed |
| | | | Nitrogen Dioxide | Real Time | Regional | Hourly | Site changes needed |
| | | | Oxides of Nitrogen | Real Time | Regional | Hourly | Site changes needed |
| 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 |

2.2.17 Powder River Basin (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. Due to the age of the instrumentation in the network, the AQD upgraded the instruments to continuous Thermo 1405DF TEOM monitors in 2010. In 2013, the AQD plans to replace the 1405DF instruments with Beta Attenuation Monitors (BAMs) due to reliability issues with the 1405DF instruments.

| PRB PM _{2.5} Monitoring Site Specifications | | | | | | | |
|--|-----------------|-------------|-------------------|-----------------|--------------|--------------------|--------------------------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Antelope Mine (PRB-8) | Converse County | 56-009-0819 | PM _{2.5} | Continuous TEOM | Regional | Hourly | Instrument upgrades planned for 2013 |
| Belle Ayr Mine (PRB-3) | Campbell County | 56-005-0892 | PM _{2.5} | Continuous TEOM | Neighborhood | Hourly | Instrument upgrades planned for 2013 |
| Black Thunder Mine (PRB-5) | Campbell County | 56-005-0891 | PM _{2.5} | Continuous TEOM | Neighborhood | Hourly | Instrument upgrades planned for 2013 |
| Buckskin Mine (PRB-1) | Campbell County | 56-005-1899 | PM _{2.5} | Continuous TEOM | Neighborhood | Hourly | Instrument upgrades planned for 2013 |

2.3 Mobile Monitoring Trailers

Three (3) mobile monitoring trailers have been established and are being operated to help characterize air quality at various locations throughout the State of Wyoming. The mobile monitoring stations are self-contained monitoring shelters that may be moved to different locations in a relatively short time frame. The trailers include gaseous monitors (NO_x, O₃ and methane/non-methane hydrocarbons), continuous PM₁₀, continuous PM_{2.5}, camera system, and meteorological instrumentation. The mobile monitoring stations may be used to monitor and characterize events, trends in air quality or areas downwind of industrial development areas. The AQD locates and operates the mobile monitoring trailers at a location for approximately one (1) year at a time. Current locations for the three (3) mobile trailers include: Mobile #1 Rock Springs, Mobile #2 Big Piney, and Mobile #3 Converse County.

The Mobile #1 station began operation in Pavillion in January 2011 and continued to operate in that location until March 2012. The Mobile #1 was moved from Pavillion to Rock Springs in early 2013. The Mobile #2 station in Big Piney began operations in March 2011 and remains at that location. The Mobile #3 began operation in Gillette in October of 2011 and continued to operate there until December 2012 at which time it was moved to its current location in Converse County. More information about the future mobile monitoring trailers locations can be found in Section 5.2 of this Network Plan.

2.3.1 Mobile #1 Rock Springs



The Rock Springs air quality mobile monitoring station began operation in March 2013 and is expected to operate at this location for one year. The mobile station is located within the city limits of Rock Springs, in a residential neighborhood. The station's objective is to characterize the population based ozone and other air quality parameters in the city of Rock Springs. A digital camera, ozone analyzer, oxides of nitrogen analyzer, methane/NMHC, continuous PM₁₀ BAM, PM_{2.5} BAM monitor and meteorology equipment are located at this station.

| Rock Springs Monitoring Site Specifications | | | | | | | |
|---|--|-------------|--------------------|-----------------|----------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Rock Springs | Inside city limits, southeastern portion of city | 56-037-0100 | 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 |
| | | | Methane/ NMHC | Real Time | Regional | Hourly | No planned changes |
| | | | PM ₁₀ | Continuous BAM | Regional | Hourly | No planned changes |
| | | | PM _{2.5} | Continuous BAM | Regional | Hourly | No planned changes |

2.3.2 Mobile #2 Big Piney



The Big Piney air quality mobile monitoring station began operation in March 2011. The mobile station is located 4 miles south of the Town of Big Piney. A digital camera, ozone analyzer, oxides of nitrogen analyzer, methane/non methane hydrocarbons, continuous PM₁₀ beta attenuation monitor (BAM), PM_{2.5} BAM monitor and meteorology equipment are located at this station. As noted in the Network Assessment the objective of this station is to monitor near the Big Piney and LaBarge Gas Fields.

| Big Piney Monitoring Site Specifications | | | | | | | |
|--|------------------------------|-------------|--------------------|-----------------|----------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Big Piney | 4 mi. South of Big Piney, WY | 56-035-0700 | 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 |
| | | | Methane/ NMHC | Real Time | Regional | Hourly | No planned changes |
| | | | PM ₁₀ | Continuous BAM | Regional | Hourly | No planned changes |
| | | | PM _{2.5} | Continuous BAM | Regional | Hourly | No planned changes |

2.3.3 Mobile #3 Gillette

From October 1, 2011 through December 12, 2012 the AQD monitored at the Gillette College, to help characterize air quality in Gillette, Wyoming. One conclusion of the 2010 Network Assessment was that population-based ozone monitoring was needed in Gillette. The AQD operated one (1) of the three (3) mobile monitoring trailers at the Gillette station for approximately one year. The trailer includes gaseous monitors (NO_x, O₃ and Methane/Non-Methane Hydrocarbons), continuous PM₁₀, continuous PM_{2.5}, camera system, and meteorological instrumentation.



| Gillette Monitoring Site Specifications | | | | | | | |
|---|-------------------------------|-------------|--------------------|-----------------|----------|--------------------|-----------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Gillette | Gillette College, Gillette WY | 56-005-0800 | Ozone | Real Time | Regional | Hourly | Moved to Converse Co. |
| | | | Nitric Oxide | Real Time | Regional | Hourly | Moved to Converse Co. |
| | | | Nitrogen Dioxide | Real Time | Regional | Hourly | Moved to Converse Co. |
| | | | Oxides of Nitrogen | Real Time | Regional | Hourly | Moved to Converse Co. |
| | | | Methane/ NMHC | Real Time | Regional | Hourly | Moved to Converse Co. |
| | | | PM ₁₀ | Continuous BAM | Regional | Hourly | Moved to Converse Co. |
| | | | PM _{2.5} | Continuous BAM | Regional | Hourly | Moved to Converse Co. |

2.3.4 Mobile #3 Converse County

The AQD established a monitoring location in Converse County near Douglas, Wyoming on December 17, 2012. This station was sited due to citizen concerns about oil and gas development in an area of rural residential population. This mobile monitoring station is slated to operate for approximately one year. The trailer includes gaseous monitors (NO_x, O₃ and Methane/Non-Methane Hydrocarbons), continuous PM₁₀, continuous PM_{2.5}, camera system, and meteorological instrumentation.



| Converse County Monitoring Site Specifications | | | | | | | |
|--|--------------------------------|-------------|--------------------|-----------------|----------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Converse County | 369 Antelope Road, Douglas, WY | 56-009-0801 | 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 |

| Converse County Monitoring Site Specifications | | | | | | | |
|--|----------|--------|-------------------|-------------------|----------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| | | | Methane/ NMHC | Real Time | Regional | Hourly | No planned changes |
| | | | PM ₁₀ | Continuous BAM | Regional | Hourly | No planned changes |
| | | | PM _{2.5} | Continuous BAM | Regional | Hourly | No planned changes |

2.4 Cheyenne National Core (NCore) Multi Pollutant Station



| Cheyenne NCore Monitoring Site Specifications | | | | | | | |
|---|---|-------------|-----------------------|-----------------|--------------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| Cheyenne NCore | 6909 Chief Washakie Ave. Cheyenne, WY | 56-021-0100 | Ozone | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Trace Sulfur Dioxide | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Trace Carbon Monoxide | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Nitric Oxide | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Nitrogen Dioxide | Real Time | Neighborhood | Hourly | No planned changes |
| | | | Oxides of Nitrogen | Real Time | Neighborhood | Hourly | No planned changes |

| Cheyenne NCore Monitoring Site Specifications | | | | | | | |
|---|----------|--------|-----------------------------|---------------------------------|--------------|--------------------|--------------------|
| Site Name | Location | AQS ID | Parameter | Analysis Method | Scale | Operating Schedule | Operational Status |
| | | | Total Reactive Nitrogen | Real Time | Neighborhood | Hourly | No planned changes |
| | | | PM _{10-2.5} | Continuous BAM | Neighborhood | Hourly | No planned changes |
| | | | PM _{2.5} (Primary) | Continuous BAM | Neighborhood | Hourly | No planned changes |
| | | | PM _{2.5} | Manual Filter-based Gravimetric | Neighborhood | 1/12 | No planned changes |
| | | | Speciated PM _{2.5} | Manual Filter-based Gravimetric | Neighborhood | 1/3 | No planned changes |

The Wyoming NCore monitoring station is located in the City of Cheyenne, North Soccer Complex Park. The NCore monitoring station was established during the summer of 2010 and became fully operational January 1, 2011. This station was incorporated as part of the National Core Monitoring Network. The NCore stations will be the basis for developing a representative report card on air quality across the nation, capable of delineating differences among geographic and climatological regions. The monitored data will be used to characterize and monitor trends in air quality, air quality standards' compliance and may be used for national health assessments, model evaluations, and comparison with other ambient air monitoring data.

The AQD has determined a more economical way to monitor PM_{10-2.5} and PM_{2.5} at the Cheyenne NCore monitoring station. This new setup helps fulfill the Wyoming PM_{2.5} monitor network Federal Reference Monitoring (FRM) and Federal Equivalent Method (FEM) collocation requirements. A MetOne BAM Coarse system (includes PM₁₀ and PM_{2.5} instruments) was installed on July 1, 2012. The BAM PM_{2.5} (FEM) is considered the primary monitor at the NCore station. A Thermo Partisol 2000i (FRM) was installed and began sampling on the 1-in-12 day schedule on January 1, 2013.

2.5 Industrial Monitoring Sites

Historically, the 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 Powder River Basin coal mines and consists of approximately 50 PM₁₀ monitoring locations. The 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 the 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 the NAAQS as well as confirming that the facilities are following appropriate quality assurance measures.

2.6 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.

3.0 Compliance with NAAQS

The primary purpose of the AQD's SLAMS and SPM networks is to evaluate compliance with the NAAQS. The 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 the NAAQS. The AQD's SLAMS and SPM networks currently operate under project specific quality assurance plans, which are available in the Cheyenne State Office for viewing.

The following tables show 2010 through 2012 data and design values for each SLAMS and SPM monitor. All stations that operated in 2012 are included with the exception of the Mobile #3: Converse County. The AQD chose not to report data in these table since the monitors were only operational for 14 days in 2012. All stations operated by the AQD are in compliance with the NAAQS from 2010-2012, with the exception of the Boulder monitor for ozone.

3.1 Particulate Matter (PM_{10})

In the Wyoming Monitoring Network there are twenty-two (22) stations with PM_{10} monitors. The PM_{10} SLAMS network, consisting of ten stations, has two types of monitors (Thermo Partisol 2000 or Thermo TEOM). The Thermo Partisol 2000 PM_{10} monitors, in the network, have 30% collocation. This fulfills the collocation requirements in 40 CFR 58 Appendix A. The Sheridan Police Department PM_{10} TEOM is not required to have another analyzer collocated for precision purposes according to 40 CFR 58, Appendix A. The AQD network has seven (7) stations that have continuous Thermo TEOM PM_{10} monitors and five (5) stations that have continuous MetOne BAM PM_{10} monitors.

To comply with the 24-hour PM_{10} NAAQS, a monitor must record one or less "exceedance" (24-hour concentration greater than $150 \mu\text{g}/\text{m}^3$) per year over a three year period. The design value is the average number of exceedances per year from 2010-2012. A Design Value of zero (0) means the station has recorded no values above $150 \mu\text{g}/\text{m}^3$ during that three-year time frame. Wyoming also has an annual ambient air quality standard for PM_{10} . Compliance with the annual PM_{10} Wyoming Ambient Air Quality Standards (WAAQS) is determined by the three year average of the annual mean. The three year average of the means must be below $50 \mu\text{g}/\text{m}^3$.

| PM₁₀ Compliance with WAAQS of 50 µg/m³ Annual Arithmetic Mean (µg/m³) | | | | | |
|---|------|------|------|----------------------|------------------|
| Site Name | 2010 | 2011 | 2012 | Average (‘10-‘12) | In Compliance |
| SLAMS | | | | | |
| Casper | 14 | 14 | 18 | 15 | Yes |
| Cheyenne | 14 | 12 | 13 | 13 | Yes |
| Cody | 11 | 12 | 14 | 12 | Yes |
| Gillette | 20* | 16 | 18 | 18 | Yes |
| Jackson | 14 | 12 | 17 | 14 | Yes |
| Lander | 20 | 16 | 18 | 18 | Yes |
| Laramie | 23* | 16 | 17 | 19 | Yes |
| Rock Springs | 18 | 15* | 20 | 19 | Yes |
| Sheridan – Highland Park | 13 | 12 | 11* | 12 | Yes |
| Sheridan - Meadowlark | N/A | N/A | 15* | N/A | N/A |
| Sheridan – Police Dept. | 21 | 19 | 22 | 21 | Yes |
| SPM | | | | | |
| Boulder | 9 | 9 | 11 | 10 | Yes |
| Moxa | 8.3* | 9 | 14 | 10 | Yes |
| Murphy Ridge | 12* | 10 | 12 | 11 | Yes |
| South Campbell County | 12 | 11 | 16 | 13 | Yes |
| South Daniel | 8 | 8 | 12 | 9 | Yes |
| South Pass | 9 | 8 | 11 | 9 | Yes |
| Wamsutter | 14 | 12 | 16 | 14 | Yes |
| Wright | 12 | 11 | 17* | 13 | Yes |
| Wyoming Range | N/A | 7 | 12 | 10 | N/A |
| Mobile Trailers** | | | | | |
| Big Piney | N/A | 8* | 12 | N/A | N/A |
| Gillette | N/A | 11* | 19* | N/A | N/A |
| Pavillion | N/A | 10* | 16* | N/A | N/A |

N/A – data not available

* - site has one or more quarterly reports that did not meet data completeness or operated less than 4quarters

** - Mobile Trailers are located in one location for approximately one year

| PM₁₀ Compliance with NAAQS of 150 µg/m³ Highest 24- Hour Average (µg/m³) | | | | | |
|--|------|------|--------|------------------------|---------------|
| Site Name | 2010 | 2011 | 2012 | Design Value ('10-'12) | In Compliance |
| Casper | 45 | 63 | 66 | 0 | Yes |
| Cheyenne | 41 | 44 | 50 | 0 | Yes |
| Cody | 29 | 46 | 45 | 0 | Yes |
| Gillette | 49* | 45 | 65 | 0 | Yes |
| Jackson | 79 | 40 | 86 | 0 | Yes |
| Lander | 44 | 40 | 68 | 0 | Yes |
| Laramie | 94* | 49 | 53 | 0 | Yes |
| Rock Springs | 68 | 59 | 94 | 0 | Yes |
| Sheridan – Highland Park | 36 | 48 | 25* | 0 | Yes |
| Sheridan - Meadowlark | N/A | N/A | 41* | N/A | N/A |
| Sheridan – Police Dept. | 70 | 96 | 75 | 0 | Yes |
| SPM | | | | | |
| Boulder | 37 | 33 | 68 | 0 | Yes |
| Moxa | 48* | 43 | 152*** | 0 | N/A |
| Murphy Ridge | 103 | 51 | 53 | 0.3 | Yes |
| South Campbell County | 36 | 41 | 71 | 0 | Yes |
| SPM | | | | | |
| South Daniel | 45* | 35 | 72 | 0 | Yes |
| South Pass | 65 | 39 | 49 | 0 | Yes |
| Wamsutter | 56* | 71 | 72 | 0 | Yes |
| Wright | 27* | 52 | 76 | 0 | Yes |
| Wyoming Range | N/A | 67 | 79 | N/A | N/A |
| Mobile Trailers** | | | | | |
| Big Piney | N/A | 27 | 190 | N/A | N/A |
| Gillette | N/A | 22 | 104* | N/A | N/A |
| Pavillion | N/A | 71 | 118* | N/A | N/A |

N/A – data not available

*- site has one or more quarterly reports that did not meet data completeness or operated less than 4 quarters

**- Mobile Trailers are located in one location for approximately one year

***- Value rounded to 150 µg/m³ per 40 CFR § 50, Appendix K

3.2 Particulate Matter (PM_{2.5})

There are twenty (20) State run monitoring stations that collect PM_{2.5} data. Within the PM_{2.5} SLAMS network, which includes Thermo Partisol 2000 PM_{2.5} monitors in Casper, Cheyenne, Cody, Jackson, Lander, Laramie, Rock Springs, Sheridan – Meadowlark, and Sheridan – Police Department, the AQD has 22.2% of the monitors collocated. This meets the 40 CFR 58 Appendix A requirement for collocation of 15%. The PRB PM_{2.5} monitors are running Thermo 1405DF monitors. The other six (6) stations are running MetOne BAM 1020 monitors with a

Very Sharp Cut Cyclone (VSSC) used to monitor PM_{2.5}. All of the twenty (20) monitors can be compared to the annual PM_{2.5} NAAQS as defined by 40 CFR § 58.30. The annual PM_{2.5} standard through December 2012 was attained when the three (3) year average was less than or equal to 15.0 µg/m³. In March 2013 the EPA lowered the annual PM_{2.5} standard to 12.0 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.

| PM_{2.5} Compliance with NAAQS of 15.0 µg/m³ Annual Arithmetic Mean (µg/m³) | | | | | |
|--|------|------|------|-------------------|---------------|
| Site Name | 2010 | 2011 | 2012 | Average ('10-'12) | In Compliance |
| SLAMS | | | | | |
| Casper | 4.6 | 4.5 | 5.4 | 4.8 | Yes |
| Cheyenne | 4.2 | 4.4 | 5.7 | 4.8 | Yes |
| Cody | 4.5 | 4.4 | 5.1 | 4.7 | Yes |
| Jackson | 4.3 | 4.6 | 6.3 | 5.1 | Yes |
| Lander | 9.3 | 7.8 | 7.8* | 8.3 | Yes |
| Laramie | 4.8 | 4.6 | 5.6 | 5.0 | Yes |
| Rock Springs | 5.9* | 5.1 | 7.0 | 6.0 | Yes |
| Sheridan – Highland Park | 5.5 | 5.5* | 4.4* | 5.1 | Yes |
| Sheridan - Meadowlark | N/A | N/A | 7.1* | N/A | N/A |
| Sheridan – Police Dept. | 8.7 | 7.6 | 8.3* | 8.2 | Yes |
| SPM | | | | | |
| Antelope Mine | 2.8* | 3.6* | 8.0* | 4.8 | Yes |
| Belle Ayr Mine | 3.6* | 5.5* | 7.9* | 5.7 | Yes |
| Black Thunder Mine | 5.1* | 3.1* | 4.9* | 4.4 | Yes |
| Buckskin Mine | 5.3* | 4.9* | 5.9* | 5.4 | Yes |
| Pinedale 2.5 | 6.0 | 5.7 | 7.0* | 6.2 | Yes |
| Pinedale Gaseous | 3.1 | 5.0 | 7.1 | 5.1 | Yes |
| Wyoming Range | N/A | 3.3 | 4.4 | 3.9 | N/A |
| NCore | | | | | |
| Cheyenne NCore | N/A | 3.4 | 3.8* | N/A | N/A |
| Mobile Trailers** | | | | | |
| Big Piney | N/A | 2.9* | 5.8* | N/A | N/A |
| Gillette | N/A | 4.5* | 3.0* | N/A | N/A |
| Pavillion | N/A | 2.8* | 2.5* | N/A | N/A |

N/A – data not available

* - site has one or more quarterly reports that did not meet data completeness or operated less than 4quarters

** - Mobile Trailers are located in one location for approximately one year

| PM_{2.5} Compliance with NAAQS of 35 µg/m³ 98% 24- Hour Average (µg/m³) | | | | | |
|--|------|------|------|-------------------|---------------|
| Site Name | 2010 | 2011 | 2012 | Average ('10-'12) | In Compliance |
| SLAMS | | | | | |
| Casper | 12 | 13 | 17 | 14 | Yes |
| Cheyenne | 9 | 9 | 17 | 12 | Yes |
| Cody | 11 | 12 | 16 | 13 | Yes |
| Jackson | 9 | 12 | 25 | 12 | Yes |
| Lander | 32 | 30 | 25* | 29 | Yes |
| Laramie | 14 | 10 | 17 | 14 | Yes |
| Rock Springs | 13* | 12 | 27 | 17 | Yes |
| Sheridan – Highland Park | 14 | 15* | 10* | 13 | Yes |
| Sheridan - Meadowlark | N/A | N/A | 19* | N/A | N/A |
| Sheridan – Police Dept. | 27 | 23 | 19* | 23 | Yes |
| SPM | | | | | |
| Antelope Mine | 13* | 11* | 27* | 17 | Yes |
| Belle Ayr Mine | 10* | 20* | 55* | 28 | Yes |
| Black Thunder Mine | 11* | 14* | 16* | 14 | Yes |
| Buckskin Mine | 8* | 16* | 18* | 14 | Yes |
| Pinedale 2.5 | 15 | 21 | 28* | 21 | Yes |
| Pinedale Gaseous | 10 | 11 | 27 | 16 | Yes |
| Wyoming Range | N/A | 8 | 25 | N/A | N/A |
| NCore | | | | | |
| Cheyenne NCore | N/A | 8 | 9* | N/A | N/A |
| Mobile Trailers** | | | | | |
| Big Piney | N/A | 7* | 54* | N/A | N/A |
| Gillette | N/A | 9* | 20* | N/A | N/A |
| Pavillion | N/A | 8* | 7* | N/A | N/A |

N/A – data not available

*- site has one or more quarterly reports that did not meet data completeness or operated less than 4quarters

** - Mobile Trailers are located in one location for approximately one year

3.3 Nitrogen Dioxides (NO₂)

There were sixteen (16) State run monitoring stations that monitored for NO₂ in 2012. Compliance with the annual primary NO₂ NAAQS is met when the annual average concentration in the calendar year is less than or equal to 53 ppb. The primary standard 1-hour average concentration is 100 ppb. The maximum 1-hour concentration per year is listed in the second NO₂ table below. The NO₂ calculated design value is met when the three-year average of the annual 98th percentile of the daily maximum 1-hour average concentration is less than or equal to 100 ppb. This calculated three-year design value is located in the second NO₂ table below.

| NO₂ Compliance with NAAQS of 53 ppb Annual Arithmetic Mean (ppb) | | | | |
|--|-------------|-------------|-------------|----------------------|
| Site Name | 2010 | 2011 | 2012 | In Compliance |
| Antelope Mine | 3* | N/A | N/A | Yes |
| Belle Ayr Mine | 7 | 6 | 8 | Yes |
| Boulder | 3 | 2 | 3 | Yes |
| Juel Spring | 1 | 2 | 1 | Yes |
| Moxa | 1* | 2 | 2 | Yes |
| Murphy Ridge | 1 | 2 | 2 | Yes |
| Pinedale | 3 | 3 | 3 | Yes |
| South Campbell County | 3 | 3 | 3 | Yes |
| South Daniel | 0 | 0 | 0* | Yes |
| South Pass | 0 | 1 | 1 | Yes |
| Thunder Basin | 2 | 2 | 2* | Yes |
| Wamsutter | 5 | 4 | 5* | Yes |
| Wyoming Range | N/A | 1 | 1 | Yes |
| NCore | | | | |
| Cheyenne NCore | N/A | 4 | 4 | Yes |
| Mobile Trailer** | | | | |
| Big Piney | N/A | 1* | 2* | Yes |
| Gillette | N/A | 6* | 5 | Yes |
| Pavillion | N/A | 1 | 2* | Yes |

N/A – data not available

* - site has one or more quarterly reports that did not meet data completeness or operated less than 4quarters

** - Mobile Trailers are located in one location for approximately one year

| NO ₂ Compliance with NAAQS of 100 ppb | | | | | |
|--|------|------|------|--------------------------------------|---------------|
| Annual 98% of Daily Maximum 1-hour average (ppb) | | | | 3-year 98% 1-hour Design Value (ppb) | |
| Site Name | 2010 | 2011 | 2012 | Design Value ('10-'12) | In Compliance |
| Antelope Mine | 33* | N/A | N/A | N/A | N/A |
| Belle Ayr Mine | 34 | 36* | 34 | 35 | Yes |
| Boulder | 39 | 49 | 24 | 37 | Yes |
| Juel Spring | 14 | 16 | 10 | 13 | N/A |
| Moxa | 15* | 23 | 21 | 20 | N/A |
| Murphy Ridge | 15 | 13 | 10 | 13 | Yes |
| Pinedale | 34 | 31 | 26 | 30 | Yes |
| South Campbell County | 32 | 33 | 32 | 32 | Yes |
| South Daniel | 7* | 5 | 5* | 6 | Yes |
| South Pass | 6* | 4 | 5 | 5 | Yes |
| Thunder Basin | 11* | 11 | 11* | 11 | Yes |
| Wamsutter | 40 | 38 | 36* | 38 | Yes |
| Wyoming Range | N/A | 4 | 7 | N/A | N/A |
| NCore | | | | | |
| Cheyenne Ncore | N/A | 32 | 36 | N/A | N/A |
| Mobile Trailers** | | | | | |
| Big Piney | N/A | 12* | 11* | N/A | N/A |
| Gillette | N/A | 39* | 32 | N/A | N/A |
| Pavillion | N/A | 12* | 18* | N/A | N/A |

N/A – data not available

*-site has one or more quarterly reports that did not meet data completeness or operated less than 4quarters

** -Mobile Trailers are located in one location for approximately one year

3.4 Sulfur Oxides (SO₂)

The Moxa monitoring station began monitoring for SO₂ in 2010 and the Cheyenne NCore began monitoring on January 2011, for trace SO₂. In past years the State of Wyoming has operated stations that have monitored for this parameter. Most SO₂ levels were relatively low and the benefit of monitoring at SPM locations was not justified for a long-term period. For SO₂, the AQD has the Wyoming Ambient Air Quality Standards (WAAQS) along with the revised NAAQS for comparison purposes. 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. The AQD has not reported any exceedances of the WAAQS 3-hour, 24-hour, or annual SO₂ standards in 2012. The table below compares the monitored values with the NAAQS rather than the WAAQS. The level of the national 1-hour ambient air quality standard for SO₂ is 75 ppb. The NAAQS 1-hour primary standard is met when the three-year average of

the annual (99th percentile) of the daily maximum 1-hour average concentrations is less than or equal to 75 ppb.

| SO₂ Compliance with NAAQS of 75 ppb | | | | | |
|---|------|------|------|--|---------------|
| Annual 99% 1-hour average (ppb) | | | | 3-year 99% 1-hour average (ppb) | |
| Site Name | 2010 | 2011 | 2012 | Design Value ('10-'12) | In Compliance |
| Moxa | 16 | 17 | 21* | 18 | Yes |
| NCore | | | | | |
| Cheyenne NCore | N/A | 4 | 7 | N/A | N/A |

*-site has one or more quarterly reports that did not meet data completeness or operated less than 4quarters

3.5 Carbon Monoxide (CO)

Starting January 2011, the AQD began trace CO monitoring at the Cheyenne NCore station. In past years the State of Wyoming has operated stations that have monitored for Carbon Monoxide (CO). Most CO levels were relatively low and the benefit of monitoring at SPM locations was not justified for a long-term period. The level for the maximum 8-hour NAAQS for CO is 9 ppm. The national 1-hour ambient air quality standard for CO is 35 ppm.

| CO Compliance with NAAQS | | | | | |
|---------------------------------|--|------|---|------|---------------|
| Site Name | 35 ppm Maximum 1-hour average concentration (ppm) | | 9 ppm Maximum 8-hour average concentration (ppm) | | In Compliance |
| | 2011 | 2012 | 2011 | 2012 | |
| NCore | | | | | |
| Cheyenne NCore | 0.36 | 0.79 | 0.2 | 0.5 | Yes |

3.6 Ozone (O₃)

The AQD operated sixteen (16) O₃ monitoring stations in Wyoming during 2012, and all of the stations 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 0.075 ppm. In July 2012, the EPA designated the Upper Green River Basin, including Sublette and portions of Lincoln and Sweetwater Counties nonattainment for ozone. The area designated nonattainment is classified as Marginal. The remainder of the State is designated as unclassifiable/attainment.

| O₃ Compliance with NAAQS of 0.075 ppm 4th Highest 8-Hour Average (ppm) | | | | | |
|---|-------|-------|-------|---------------------------|------------------|
| Site Name | 2010 | 2011 | 2012 | Design Value (‘10-‘12) | In Compliance |
| Boulder | 0.067 | 0.103 | 0.070 | 0.080 | No |
| Hiawatha | N/A | 0.063 | 0.065 | N/A | N/A |
| Juel Spring | 0.064 | 0.076 | 0.066 | 0.068 | Yes |
| Moxa | 0.066 | 0.068 | 0.064 | 0.066 | Yes |
| Murphy Ridge | 0.065 | 0.065 | 0.067 | 0.065 | Yes |
| Pinedale | 0.062 | 0.076 | 0.067 | 0.068 | Yes |
| South Campbell County | 0.061 | 0.062 | 0.069 | 0.064 | Yes |
| South Daniel | 0.063 | 0.075 | 0.067 | 0.068 | Yes |
| South Pass | 0.068 | 0.068 | 0.067 | 0.067 | Yes |
| Thunder Basin | 0.063 | 0.061 | 0.071 | 0.065 | Yes |
| Wamsutter | 0.067 | 0.064 | 0.063 | 0.064 | Yes |
| Wyoming Range | N/A | 0.072 | 0.066 | N/A | N/A |
| NCore | | | | | |
| Cheyenne Ncore | N/A | 0.067 | 0.068 | N/A | N/A |
| Mobile Trailers ** | | | | | |
| Big Piney | N/A | 0.064 | 0.067 | N/A | N/A |
| Gillette | N/A | 0.041 | 0.065 | N/A | N/A |
| Pavillion | N/A | 0.061 | 0.061 | N/A | N/A |

N/A – data not available

** - Mobile Trailers are located in one location for approximately one year

4.0 Special Studies

In addition to the AQD’s extensive network of long-term monitoring, the AQD is also conducting several short-term special studies. Primarily these studies and additional monitoring revolve around investigations of industrial source growth within the State.

4.1 Upper Green Winter Ozone Study (UGWOS)

In the winters of 2005 and 2006, primarily in the month of February, the AQD measured 8-hour ozone concentrations greater than 80 ppb at the Daniel South, Jonah and Boulder monitoring stations. Elevated ozone concentrations are uncommon during the winter months; however, they do not appear to be an anomaly because these conditions were recorded in both February 2005 and February 2006. After recording elevated values for two (2) years, the AQD decided to conduct a study of winter ozone formation. The purposes of the study were, originally, to better understand the formation mechanisms and collect data to form a conceptual model of the winter ozone formation. Since 2007 the objectives of the study have been modified to fill gaps in data and conceptual understanding of winter ozone formation with the ultimate intent of developing a working photochemical model for the Upper Green River Basin.

The focus of the 2013 winter monitoring study was ongoing regulatory monitoring supplemented with a monitoring trailer in the Jonah Field and three mesonet locations with ozone in the

Pinedale Anticline Field. There were also nine (9) locations for canister collection and speciated VOC analyses.

Quality Assurance Plans and data from the UGWOS campaigns can be downloaded at <http://deq.state.wy.us/aqd/Upper%20Green%20Winter%20Ozone%20Study.asp>. Final reports can also be downloaded at the website. During summer 2013, the AQD will be critically evaluating all studies conducted in the Upper Green to determine whether specific aspects of winter ozone formation will still need to be monitored in the future.

4.2 VOC Monitoring

The AQD continues to perform continuous methane/non-methane measurements at the Boulder location in addition to pulling periodic speciated VOC canisters. The AQD is also operating a methane/non-methane hydrocarbon analyzer in the Big Piney, Rock Springs and Converse County mobile trailers. The AQD also installed a methane/non-methane hydrocarbon analyzer along with a limited number of speciated VOC canisters at the Wamsutter monitoring station. The AQD, in cooperation with other agencies involved in the Three-State Study, continue to collect canisters in 2013.

4.3 Mobile Beta Attenuation Monitor (BAM) Deployment

The AQD has outfitted a mobile monitoring trailer with continuous BAM PM₁₀ and PM_{2.5} monitoring devices for deployment in communities that may be impacted by smoke from wildfire activity or agricultural burning. This portable system will allow the AQD to monitor near real-time PM₁₀ and PM_{2.5} concentrations, and meteorological conditions so the AQD can properly inform the public when particulate levels may cause adverse health effects.

4.3.1 Worland

The AQD deployed the mobile BAM monitoring station to monitor particulate matter in a residential area of Worland, Wyoming that may be impacted by agricultural activities. Data collection began on October 1, 2011. The station also collected data on local wind speed, wind direction and temperature and was located south of town, at Newell Sargent Park. The AQD operated the Worland BAM Trailer for the period of one (1) year to gather data during burn seasons as well as at other times of the year. The Worland BAM sampling concluded on December 31, 2012.

4.4 Grand Teton

The AQD is working cooperatively with the National Park Service to fund a portion of the Grand Teton Monitoring Station near the Teton Science School located in Grand Teton National Park. This monitoring station includes ozone, NADP wet deposition, nephelometer, camera system and meteorological instrumentation.

4.5 Sundance Meteorology Study

In November, 2009, the AQD received comments regarding the potential air quality impacts associated with rock quarries (pits) east of Sundance. After meeting with Crook County Commissioners on May 4, 2010, the AQD suggested setting up two (2) met stations in order to collect met data (wind speed, wind direction, and ambient temp). The AQD operated two (2) 3-meter meteorological (met) stations east of Sundance beginning in September 2011. The met stations operated for over a year to gain a better understanding of the meteorological conditions in the Sundance, Wyoming area. The sampling concluded on December 31, 2012.

4.6 Three-State Study

From 2010 through 2013 the AQD has participated in a cooperative activity known as the “Three-State Study”. The Wyoming AQD is cooperating with Colorado and Utah State agencies as well as Federal Land Managers and EPA to develop systems which will aid in modeling and predicting impacts from energy development. As part of this study, the Federal Government committed to partially fund one new monitoring station in Southwest Wyoming. This new station is the Hiawatha station; it was installed during spring of 2011, more information about the Hiawatha station can be found in Section 2.2.4 of this document. The AQD also received funding to install a methane/non-methane hydrocarbon analyzer along with speciated canisters at the Wamsutter monitoring station. This monitoring was deployed in 2011 and continues to operate.

5.0 Future Air Monitoring Modifications

The State of Wyoming is experiencing rapid energy development, especially in the northeast and southwest quadrants of the State. Energy development is also anticipated to increase in southeast Wyoming. The AQD continues to add new special purpose monitoring stations to monitor for possible impacts from increased development. The AQD tries to anticipate network monitoring requirements before they are needed and is continually updating the future monitoring placement plan for the Monitoring Section. At this time, the AQD is not planning to add or remove any SLAMS locations or monitors in 2013.

5.1 Star Valley

The Wyoming Ambient Monitoring Network Assessment 2010 found the Star Valley area needed PM₁₀ monitoring based on PM₁₀ emissions coupled with population growth. The AQD plans to move the BAM Trailer to Afton, Wyoming during the 3rd quarter of 2013.

5.2 Big Piney

After the Mobile #2 station finished operating for a second year at the Big Piney location, the AQD evaluated the data collected. Taking into account anticipated development, findings of the Network Assessment, ozone nonattainment, and the uniqueness of the LaBarge gas field, the Monitoring Section recommended a long-term monitor, replacing the mobile trailer. The AQD is currently evaluating options to fund and implement long-term monitoring at this location.

6.0 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, the AQD works to make sure the monitoring needs in the State of Wyoming are being met. Wyoming mineral price fluctuations and budgeting constraints may play a part in the availability of ambient monitoring activities deployed throughout the State.

Data collected at the AQD monitoring stations through 2012 show that all monitors are attaining NAAQS for PM₁₀, PM_{2.5}, NO₂, SO₂, and CO. Currently, all of the AQD monitors, except for Boulder, are attaining the NAAQS for ozone. The Boulder monitor and Upper Green River Basin area ozone issue will be addressed in the nonattainment process.

The AQD continually evaluates data collected at the 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:

Ms. Cara Keslar
Monitoring Section Supervisor
Wyoming Air Quality Division
122 West 25th Street, 2-E
Cheyenne, WY 82002
(307) 777-8684
cara.keslar@wyo.gov

Appendix A

| AQS ID | Site Name | Address | Land Use Type | Location Type | Monitor Type | Meets 40 CFR § 58 Appendix A, C, D and E Requirements* | Monitor Objective | Longitude | Latitude | Site Start Date |
|-------------|---------------------------|---|---------------|-----------------------|-----------------|--|--|--------------|-------------|-----------------|
| 56-025-0001 | Casper | City County Bldg - Center & C Streets | Commercial | Urban And Center City | SLAMS | X | Population Exposure | -106.3256921 | 42.85146789 | 10/15/1998 |
| 56-021-0001 | Cheyenne | State Office Bldg 23rd & Central Avenue | Residential | Urban And Center City | SLAMS | X | Population Exposure | -104.8176611 | 41.13686502 | 1/1/1979 |
| 56-029-0001 | Cody | Cody Jr High School | Residential | Suburban | SLAMS | X | Population Exposure | -109.0685071 | 44.52464211 | 1/1/1975 |
| 56-005-1002 | Gillette | 1000 West 8th St | Commercial | Urban And Center City | SLAMS | X | Population Exposure | -105.516389 | 44.288056 | 1/1/1978 |
| 56-039-1006 | Jackson | 40 E Pearl Ave. | Commercial | Urban And Center City | SLAMS | X | Population Exposure | -109.0685071 | 44.52464211 | 6/8/2007 |
| 56-013-1003 | Lander | 600 Washington | Residential | Suburban | SLAMS | X | Highest Concentration, General/Background | -108.735562 | 42.84222775 | 1/1/1987 |
| 56-001-0006 | Laramie | 406 Ivinson | Commercial | Urban And Center City | SLAMS | X | Population Exposure | -105.591725 | 41.31158614 | 1/1/1968 |
| 56-037-0007 | Rock Springs | 625 Ahsay Ave | Residential | Urban And Center City | SLAMS | X | Population Exposure | -109.220125 | 41.59259168 | 1/1/1983 |
| 56-033-0002 | Sheridan - Police Station | 45 West 12th St | Commercial | Urban And Center City | SLAMS | X | Highest Concentration, Population Exposure | -106.955933 | 44.815142 | 10/5/1983 |
| 56-033-0003 | Sheridan-Highland Park | 1301 Avon | Residential | Urban And Center City | SLAMS | X | Population Exposure | -106.9762423 | 44.80549148 | 7/1/2005 |
| 56-033-1003 | Sheridan - Meadowlark | 1410 DeSmet Ave. | Residential | Urban And Center City | SLAMS | X | Population Exposure | -106.9643166 | 44.78275 | 7/1/2012 |
| 56-009-0819 | Antelope | Antelope Site 3 | Industrial | Rural | Special Purpose | X | General/Background | -105.386161 | 43.426103 | 9/1/1982 |
| 56-005-0892 | Belle Ayr | Belle Ayr Ba-4,5N,5S | Industrial | Rural | Special Purpose | X | Highest Concentration, Source Oriented | -105.343164 | 44.097074 | 7/9/1991 |
| 56-035-0700 | Big Piney | 4 miles south of Big Piney, WY | Residential | Rural | Special Purpose | X | Source Oriented, General/Background | -110.0989 | 42.4864 | 3/30/2011 |
| 56-005-0877 | Black Thunder PM2.5 | Black Thunder BTM 26-2 | Industrial | Rural | Special Purpose | X | General/Background | -105.2 | 43.677 | 1/1/1985 |
| 56-035-0099 | Boulder | 5 miles southwest of Boulder, WY | Desert | Rural | Special Purpose | X | Source Oriented, General/Background | -109.753 | 42.719 | 2/1/2005 |
| 56-005-0899 | Buckskin | Triton Coal Gillette, WY | Industrial | Rural | Special Purpose | X | General/Background | -105.6 | 44.472 | 4/10/1994 |
| 56-005-0456 | Campbell County | Approx 15 Miles SSW of Gillette | Desert | Rural | Special Purpose | X | Source Oriented, General/Background | -105.529994 | 44.146964 | 7/15/2003 |

| AQS ID | Site Name | Address | Land Use Type | Location Type | Monitor Type | Meets 40 CFR § 58 Appendix A, C, D and E Requirements* | Monitor Objective | Longitude | Latitude | Site Start Date |
|-------------|------------------|---|---------------|---------------|---------------------|--|---|--------------|-------------|-----------------|
| 56-021-0100 | Cheyenne – NCore | 6909 Washakie Ave. Cheyenne | Residential | Suburban | NCore | X | National Core Monitoring Site | -104.77842 | 41.18235 | 1/1/2011 |
| 56-009-0801 | Converse County | 369 E. Antelope, Douglas | Agricultural | Rural | Special Purpose | X | Population Exposure | -105.303528 | 42.766972 | 12/17/2012 |
| 56-035-0100 | Daniel South | 5 miles south of Daniel, Wy | Desert | Rural | Special Purpose | X | General/Background | -110.0551 | 42.7907 | 7/1/2005 |
| 56-035-1000 | Farson Met | 0.7 mi NW of intersection of HWY 191 & State Route 28 | Desert | Rural | Special Purpose Met | | General Background | -109.4541 | 42.1184 | 4/27/2011 |
| 56-005-0800 | Gillette | Gillette College | Residential | Suburban | Special Purpose | X | Population Exposure | -105.504167 | 44.265833 | 10/1/2011 |
| 56-037-0077 | Hiawatha | Bitter Creek Rd. 43 miles SE of Rock Springs | Desert | Rural | Special Purpose | X | General Background | -108.6176 | 41.1545 | 3/30/2011 |
| 56-035-1002 | Juel Spring | 20 miles NW of Farson | Desert | Rural | Special Purpose | X | Source Oriented, General/Background | -109.5604983 | 42.37349916 | 12/11/2009 |
| 56-037-0300 | Moxa | 25 miles NW of Green River | Desert | Rural | Special Purpose | X | Source Oriented, General/Background | -109.788654 | 41.751009 | 5/27/2010 |
| 56-041-0101 | Murphy Ridge | Near Wyoming Utah Border | Agricultural | Rural | Special Purpose | X | General/Background | -111.0417 | 41.373 | 1/1/2007 |
| 56-013-0900 | Pavillion | West Power Line Road | Industrial | Rural | Special Purpose | X | Source Oriented, General/Background | -108.5789 | 43.2586 | 1/31/2011 |
| 56-035-0705 | Pinedale PM-2.5 | 101 East Hennick | Residential | Suburban | Special Purpose | X | Population Exposure | -109.8601978 | 42.87060057 | 7/1/2005 |
| 56-035-0101 | Pinedale Gaseous | West side of City Park & Pine Creek | Residential | Suburban | Special Purpose | X | Population Exposure | -109.87076 | 42.869824 | 1/1/2009 |
| 56-037-0100 | Rock Springs | 1275 Adams Ave. | Residential | Suburban | Special Purpose | X | Population Exposure | -109.207000 | 41.575000 | 2/12/2013 |
| 56-013-0099 | South Pass | South Pass | Forest | Rural | Special Purpose | X | General/Background | -108.7200027 | 42.52999916 | 3/12/2007 |
| 56-005-0123 | Thunder Basin | Thunder Basin Grassland Site 30 Mi N-NE of Gillette | Desert | Rural | Special Purpose | X | General/Background | -105.2903 | 44.6522 | 5/1/2001 |
| 56-037-0200 | Wamsutter | 2 miles west of Wamsutter | Desert | Rural | Special Purpose | X | Source Oriented, General/Background | -108.0238889 | 41.6775 | 3/1/2006 |
| 56-005-0099 | Wright | Adjacent To Wright Jr-Senior High School | Residential | Rural | Special Purpose | X | General/Background, Population Exposure | -105.490771 | 43.757812 | 11/1/2002 |
| 56-035-0097 | Wyoming Range | Wyoming Range/West Fontenelle Drive | Agricultural | Rural | Special Purpose | X | General/Background | -110.3530 | 42.9800 | 1/1/2011 |

*All SLAMS, NCore, SPM and speciation stations Network Modification Request Forms will be supplied to EPA Region 8 during the Wyoming Systems Audit during 2013.

Appendix B
2012 SLAMS Precision and Accuracy for PM₁₀

| | Site AQS I.D. | POC | Site Name | Precision Checks (Number - Type) | Accuracy Audit | | | | Flow Verification | | | |
|------------------|---------------|-------|----------------------------|-------------------------------------|----------------|-------|-------|-------|-------------------|-------|-------|-------|
| | | | | | 1st Q | 2nd Q | 3rd Q | 4th Q | 1st Q | 2nd Q | 3rd Q | 4th Q |
| PM ₁₀ | 56-025-0001 | POC 4 | Casper | 44- Analytical | 1 | 0 | 1 | 0 | 3 | 3 | 2 | 3 |
| | 56-025-0001 | POC 5 | Casper | NA | 1 | 0 | 1 | 0 | 3 | 3 | 2 | 3 |
| | 56-021-0001 | POC 1 | Cheyenne | 41 - Analytical | 1 | 0 | 1 | 0 | 3 | 3 | 2 | 3 |
| | 56-021-0001 | POC 2 | Cheyenne | NA | 1 | 0 | 1 | 0 | 3 | 3 | 2 | 3 |
| | 56-021-0100 | POC 3 | Cheyenne NCore | NA | NA | NA | 1 | 0 | NA | NA | 3 | 3 |
| | 56-029-0001 | POC 3 | Cody | NA | 0 | 1 | 0 | 1 | 2 | 3 | 3 | 3 |
| | 56-005-1002 | POC 5 | Gillette | NA | 0 | 1 | 0 | 1 | 3 | 3 | 3 | 3 |
| | 56-039-1006 | POC 1 | Jackson | NA | 0 | 1 | 0 | 1 | 3 | 3 | 3 | 3 |
| | 56-013-1003 | POC 3 | Lander | NA | 0 | 1 | 0 | 1 | 3 | 3 | 3 | 3 |
| | 56-001-0006 | POC 5 | Laramie | NA | 1 | 0 | 1 | 0 | 3 | 3 | 3 | 3 |
| | 56-037-0007 | POC 2 | Rock Springs | NA | 0 | 1 | 0 | 1 | 3 | 3 | 3 | 3 |
| | 56-033-0002 | POC 1 | Sheridan PD TEOM | NA | 1 | 0 | 1 | 0 | 3 | 3 | 3 | 3 |
| | 56-033-0003 | POC 1 | Sheridan Highland Park | 24 - Analytical | 1 | 0 | NA | NA | 3 | 2 | NA | NA |
| | 56-033-0003 | POC 2 | Sheridan Highland Park | NA | 1 | 0 | NA | NA | 3 | 2 | NA | NA |
| | 56-033-1003 | POC 1 | Sheridan Meadowlark School | 12 - Analytical | NA | NA | 1 | 0 | NA | NA | 3 | 3 |
| | 56-033-1003 | POC 2 | Sheridan Meadowlark School | NA | NA | NA | 1 | 0 | NA | NA | 3 | 3 |

2012 SLAMS Precision and Accuracy for PM_{2.5}

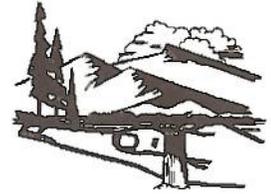
| | Site AQS I.D. | POC | Site Name | Precision Checks (Number - Type) | Accuracy Audit | | | | Flow Verification | | | |
|-------------------------|---------------|-------|----------------------------|-------------------------------------|----------------|-------|-------|-------|-------------------|-------|-------|-------|
| | | | | | 1st Q | 2nd Q | 3rd Q | 4th Q | 1st Q | 2nd Q | 3rd Q | 4th Q |
| PM_{2.5} | 56-021-0100 | POC 1 | Cheyenne NCore | 26 – Analytical | 1 | 1 | NA | NA | 3 | 3 | NA | NA |
| | 56-021-0100 | POC 2 | Cheyenne NCore | NA | 1 | 0 | 1 | 0 | 3 | 3 | 3 | 3 |
| | 56-021-0100 | POC 3 | Cheyenne NCore | 13 – Analytical | 1 | 0 | 1 | 0 | 3 | 2 | 3 | 3 |
| | 56-021-0001 | POC 1 | Cheyenne | 51 - Analytical | 1 | 0 | 1 | 0 | 3 | 3 | 2 | 3 |
| | 56-021-0001 | POC 2 | Cheyenne | N/A | 1 | 0 | 1 | 0 | 3 | 3 | 2 | 3 |
| | 56-025-0001 | POC 1 | Casper | N/A | 1 | 0 | 1 | 0 | 3 | 3 | 3 | 3 |
| | 56-039-1006 | POC 1 | Jackson | N/A | 0 | 1 | 0 | 1 | 3 | 3 | 3 | 3 |
| | 56-029-0001 | POC 1 | Cody | N/A | 0 | 1 | 0 | 1 | 2 | 3 | 3 | 3 |
| | 56-013-1003 | POC 1 | Lander | N/A | 0 | 1 | 0 | 1 | 3 | 3 | 3 | 3 |
| | 56-001-0006 | POC 1 | Laramie | N/A | 1 | 0 | 1 | 0 | 3 | 3 | 3 | 3 |
| | 56-035-0705 | POC 1 | Pinedale | N/A | 0 | 1 | 0 | 1 | 3 | 3 | 3 | 3 |
| | 56-037-0007 | POC 1 | Rock Springs | N/A | 0 | 1 | 0 | 1 | 3 | 3 | 3 | 3 |
| | 56-033-0002 | POC 1 | Sheridan Police Dept. | 56 - Analytical | 1 | 0 | 1 | 0 | 3 | 2 | 2 | 3 |
| | 56-033-0002 | POC 2 | Sheridan Police Dept. | N/A | 1 | 0 | 1 | 0 | 3 | 3 | 2 | 3 |
| | 56-033-0003 | POC 1 | Sheridan Highland Park | N/A | 1 | 0 | NA | NA | 3 | 2 | NA | NA |
| | 56-033-1003 | POC 1 | Sheridan Meadowlark School | NA | NA | NA | 1 | 0 | NA | NA | 3 | 3 |

Appendix C
Relocation of Sheridan – Highland Park SLAMS PM₁₀ and PM_{2.5} Monitors



Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.



Matthew H. Mead, Governor

John Corra, Director

April 12, 2012

Mr. Joseph Delwiche
EPA-Air Monitoring Section
1595 Wynkoop Street
Denver, CO 80202-1129

Re: Request to move Sheridan – Highland Park SLAMS PM₁₀ and PM_{2.5} monitors

Dear Mr. Delwiche:

The Wyoming Department of Environmental Quality –Air Quality Division (AQD) is seeking to relocate the PM₁₀ and PM_{2.5} monitoring site currently located at the soon to be vacated Highland Park Elementary School in Sheridan, Wyoming. The AQD has worked in conjunction with the Sheridan County School District #2 to identify a proposed replacement site at the Meadowlark Elementary School located at 1410 DeSmet Avenue, also located in Sheridan, Wyoming

The existing Highland Park PM SLAMS (56-033-0003) site was established at 1301 Avon Street, Sheridan, Wyoming in September 2005. This site represents a neighborhood scale, population oriented station within a PM₁₀ non-attainment area. A current list of Highland Park Elementary School parameters operating at the site and a medium scale map of the site are given in Attachments 1 and 2, respectively. The AQD has determined that this site should be relocated because the school will be vacated this May and the School District has indicated that it may be demolished in the near future.

The proposed new site is located at the Meadowlark Elementary School, 1410 DeSmet Avenue, in Sheridan, Wyoming (coordinates 44°46.965 N, 106° 57.859 W). The AQD's SLAMS Project Manager, Mark Gagen, and Quality Assurance Coordinator, Steve Mugg, visited the proposed site on March 21 and 22, 2012. The investigation of the site showed that all the siting criteria can be reasonably met and initial conversations with Sheridan County School District #2 are favorable.

Based upon review of meteorological data collected at the Sheridan Police Department (the AQD's high concentration site for PM₁₀) and Sheridan County Airport (in close proximity to the proposed Meadowlark School site) the AQD has concluded that meteorological conditions are very similar with the exception of some low wind speed components that are unique to the area around the police department. The wind roses can be found in Attachments 4 and 5 to this letter.

In addition to meeting the siting criteria and acceptable meteorological conditions, the new site also gives the AQD a chance to offer AQD Technicians and local site operators a safer environment to accomplish sampling. The Highland Park location was only accessible by ladder, while the new location has indoor roof access. The School District is also offering it's assistance in preparing the site with electricity, roof mats and equipment to place the samplers on the roof.

Herschler Building · 122 West 25th Street · Cheyenne, WY 82002 · <http://deq.state.wy.us>

| | | | | | | |
|--|---|---|---|--|--|---|
| ADMIN/OUTREACH (307) 777-7758 FAX 777-7682 | ABANDONED MINES (307) 777-6145 FAX 777-6462 | AIR QUALITY (307) 777-7391 FAX 777-5616 | INDUSTRIAL SITING (307) 777-7369 FAX 777-6937 | LAND QUALITY (307) 777-7756 FAX 777-5864 | SOLID & HAZ. WASTE (307) 777-7752 FAX 777-5973 | WATER QUALITY (307) 777-7781 FAX 777-5973 |
|--|---|---|---|--|--|---|



Listed below is a summary of attachments for this application:

| | |
|---------------|---|
| Attachment 1: | Highland Park Elementary School – PM SLAMS- Parameter List |
| Attachment 2: | Map of Sheridan, Wyoming Existing and Proposed SLAMS Site |
| Attachment 3: | Views from Roof of proposed roof |
| Attachment 4: | Meteorological Data from Sheridan County Airport |
| Attachment 5: | Meteorological Data from Sheridan Police Station SLAMS Site |
| Attachment 6: | Proposed New Site at Meadowlark Elementary School |
| Attachment 7: | Region 8 Network Modification Request Form |

Since all requirements and logistical factors are favorable for this site, the AQD is seeking Region 8's approval on the Meadowlark School location for the population –based PM SLAMS site in Sheridan. As part of this process, the details of the new location will be officially requested in the 2012 Annual Network Plan. The AQD welcomes your consideration of our request and looks forward to your response. I will be on leave from April 23 through July 2, 2012. Please direct any questions to Mark Gagen (307-777-7351) or Darla Potter (307-777-7380) during this time.

Sincerely,



Cara Keslar
Monitoring Section Supervisor
Air Quality Division

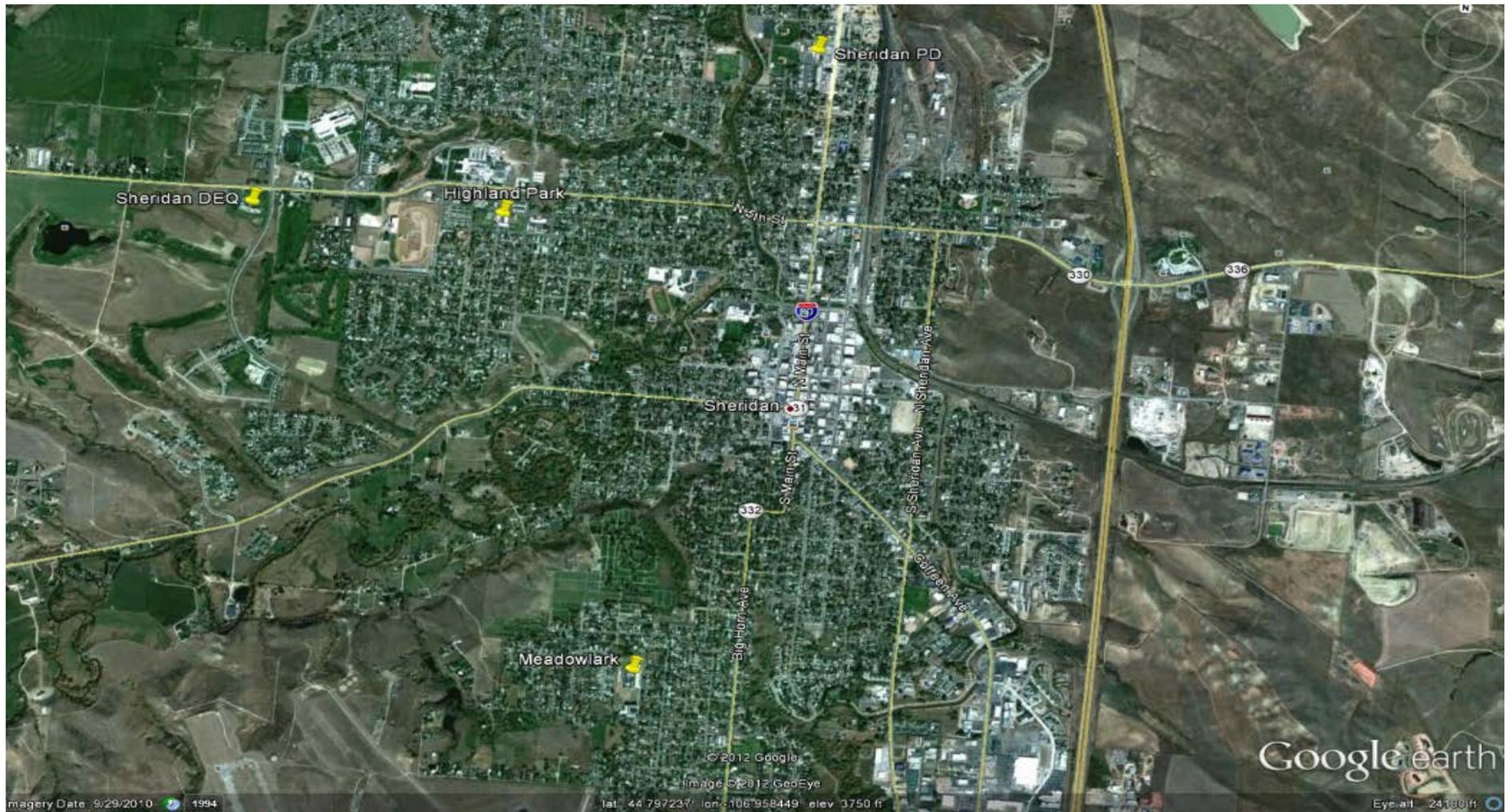
Enclosure (1)

cc: Mark Gagen, CEMS Coordinator
Tanner Shatto, Sheridan AQD
SLAMS File

Attachment 1- Sheridan, Wyoming Highland Park Elementary School PM SLAMS Site

| Highland Park Elementary School – Parameter List | |
|--|------------------------------|
| <u>Particulate Measurement Parameter</u> | <u>Sampler</u> |
| Particulate Matter < 10 microns (filter) | Thermo 2000 Partisol sampler |
| Particulate Matter < 2.5 microns (filter) | Thermo 2000 Partisol sampler |
| Particulate Matter < 10 microns (filter) Collocated on 1-in-12 schedule | Thermo 2000 Partisol sampler |

Attachment 2 - Map of Sheridan, Wyoming Existing and Proposed SLAMS Site



Attachment 3 - Views from Roof of proposed roof

North



West



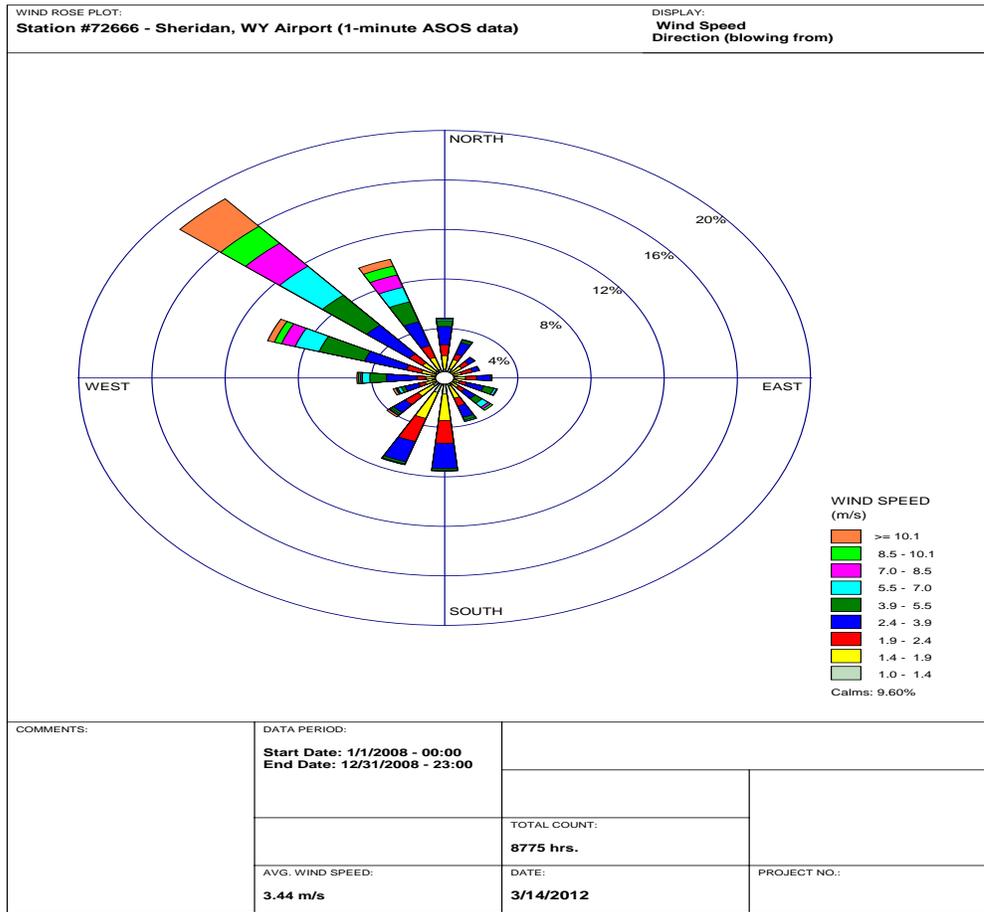
South



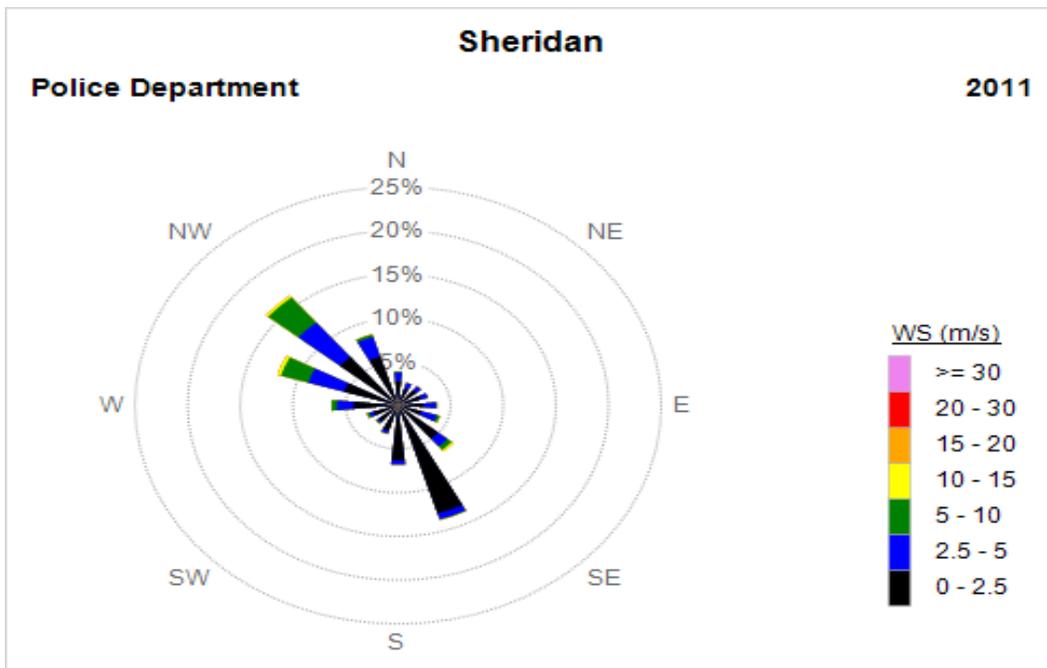
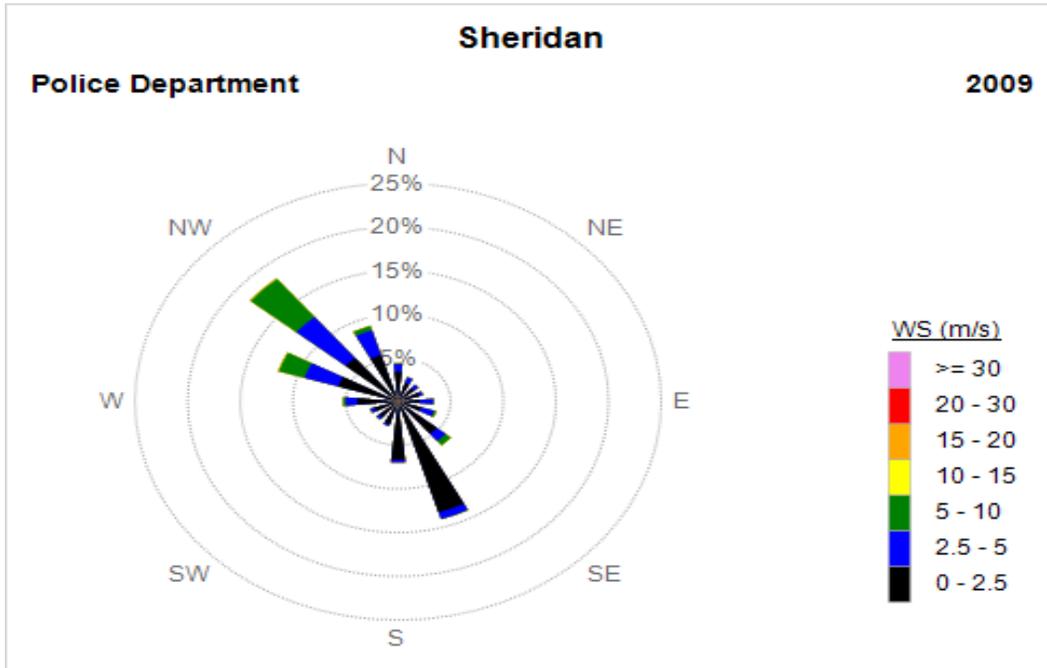
East



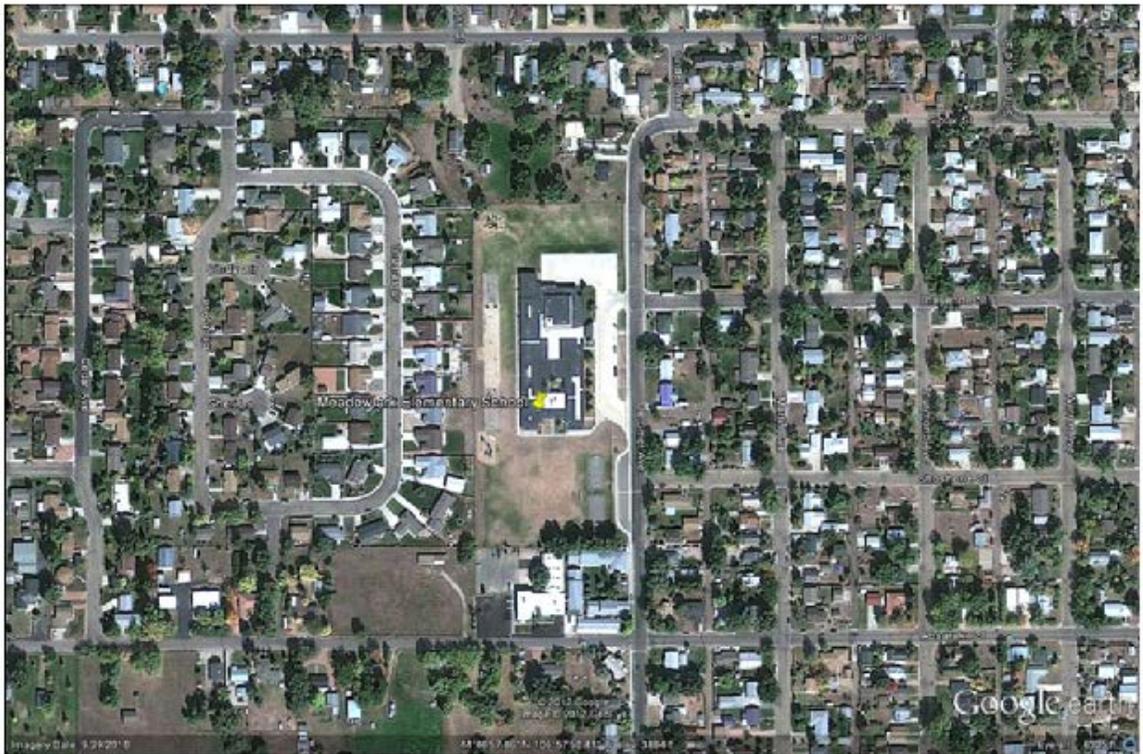
Attachment 4 - Meteorological Data from Sheridan County Airport



Attachment - 5 - Meteorological Data from Sheridan Police Station SLAMS Site



Attachment 6 – Proposed New Site at Meadowlark Elementary School



Attachment 7 - Region 8 Network Modification Request Form



Mark Gagen <mark.gagen@wyo.gov>

In re network modification - Highland Park school, Sheridan, Wyo.

1 message

Joseph Delwiche <Delwiche.Joseph@epamail.epa.gov>

Fri, Apr 27, 2012 at 4:02 PM

To: Mark Gagen <mark.gagen@wyo.gov>

Cc: Darla Potter <darla.potter@wyo.gov>, Deirdre Rothery <Rothery.Deirdre@epamail.epa.gov>, Steven Mugg <steve.mugg@wyo.gov>, Monica Morales <Morales.Monica@epamail.epa.gov>, Catherine Roberts <Roberts.Catherine@epamail.epa.gov>

Mark,

Thank you for the follow-up message, and Region 8 also thanks the AQD for the network modification request form that we received by mail on April 12, 2012 and for the associated telephone conversations. Region 8 concurs with the change to be made in the air monitoring network at Sheridan, specifically closing the Highland Park station (AQS identification #56-033-0003) and establishing a new station at Meadowlark Elementary. We understand that a replacement site had to be found for this station due to the planned closure of the Highland Park school. In addition, while the Highland Park station has served as a population-oriented site, the Police Station (56-033-0002) has tended to see higher particulate concentrations, both short- and long-term and as PM-10 and PM-2.5. This is documented in the AQD's network plan and is illustrated in the attached AQS retrieval.

Please submit the final versions of the network modification request forms when you have information such as photographs, diagrams and measurements of the Meadowlark Elementary station. The type of network modification request form that was sent on April 12 or its counterpart developed by Region 8 and the associated guidance or "hints" (attached) may assist in documenting the new site of this particulate monitoring station in Sheridan.

Thank you,

-- Joe Delwiche
303 312-6448

(See attached file: network modification hints.docx)(See attached file: Network Modification Request Form.doc)(See attached file: Sheridan PM QL 07-11.pdf)

☐ Mark Gagen —04/27/2012 09:54:40 AM—Dee /Joe —

From: Mark Gagen <mark.gagen@wyo.gov>

To: Deirdre Rothery/R8/USEPA/US@EPA

Cc: Darla Potter <darla.potter@wyo.gov>, Joseph Delwiche/R8/USEPA/US@EPA, Steven Mugg <steve.mugg@wyo.gov>

Date: 04/27/2012 09:54 AM

Subject: Re: Request to move Sheridan - Highland Park PM monitoring

Dee /Joe —

I just wanted to follow up on Wyoming Department of Environmental Quality – Air Quality Division (AQD) request to move Sheridan's Highland Park SLAMS PM₁₀ and PM_{2.5} monitors. Cara Keslar AQD Monitoring Supervisor submitted a packet which included the new site information, requesting EPA's Region 8 approval on April 12, 2012, to move the SLAM PM site from Highland Park Elementary School to the new proposed Meadowlark Elementary School location. Mr. Jeff Wells with the Sheridan County School District #2 approach the AQD and informed AQD that the Highland Park school was going to be vacated. I have been working with Mr. Well who has been a big asset to me with the new proposed location. Mr. Well is in the end of the construction phase of the new school and has offered to assist the AQD with moving the sampling equipment onto the roof and has provided quotes for the walking path, matting for the equipment and electrical work required for the samplers. Everything is in place for AQD to move the new site but the window for Mr. Well's ability to help AQD out is closing. Looking forward to your response as soon as possible so that AQD can capitalize on this opportunity.

Thanks

Mark

On Thu, Apr 12, 2012 at 4:01 PM, Deirdre Rothery <Rothery.Deirdre@epamail.epa.gov> wrote:

Hi Cara,

Thanks for your email and attached documentation. Joe and I will work together to process this request. We will contact Mark or Darla if we have any questions.

Take care,
Dee

Deirdre Rothery
Air Permitting, Monitoring and Modeling Unit Chief
Office of Partnerships and Regulatory Assistance
US Environmental Protection Agency Region VIII
1595 Wynkoop Street
Mail Code 8P-AR
Denver, Colorado 80202
[\(303\)-312-6431](tel:(303)312-6431)

"The purpose of life is to be useful, to be honorable, to be compassionate, to have it make some difference that you have lived and lived well." Emerson

☺ Cara Keslar —04/12/2012 03:16:46 PM—Dee, As per earlier conversations with Joe Delwiche, I am writing to request

From: Cara Keslar <cara.keslar@wyo.gov>
To: Deirdre Rothery/R8/USEPA/US@EPA
Cc: Joseph Delwiche/R8/USEPA/US@EPA, Darla Potter <darla.potter@wyo.gov>, Mark Gagen <mark.gagen@wyo.gov>, Steven Mugg <steve.mugg@wyo.gov>

Date: 04/12/2012 03:16 PM

Subject: Request to move Sheridan - Highland Park PM monitoring

Dee,

As per earlier conversations with Joe Delwiche, I am writing to request approval for AQD to move the Sheridan - Highland Park (AQS ID 56-033-0003) PM10 and PM2.5 monitors to a new location called the Meadowlark Elementary School, also in Sheridan. The reasoning behind this move is due to the current location, Highland Park Elementary School, being vacated and possibly torn down at the end of the school year. A more detailed request and analysis are in the attached letter. We have also provided a draft network modification form for review. We understand the official process takes place in the Annual Network Plan forum but, as discussed with Joe, we are hoping to get a preliminary approval from EPA to take advantage of some logistical benefits that the Sheridan School District would provide if we act soon (prior to the end of construction at the new Meadowlark School).

Please let me know if you have any further questions. Also, I will be out on maternity leave beginning April 23, so you may contact Mark Gagen ([307-777-7351](tel:307-777-7351)) or Darla Potter ([307-777-7380](tel:307-777-7380)) if you need more information.

We look forward to hearing from you soon.

Thank you,

Cara

Cara Keslar
Monitoring Section Supervisor
Wyoming DEQ - Air Quality Division
[307-777-8684](tel:307-777-8684) (office)
[307-286-2383](tel:307-286-2383) (cell)
cara.keslar@wyo.gov

E-Mail to and from me, in connection with the transaction of public business, is subject to the Wyoming Public Records Act and may be disclosed to third parties.

[attachment "Relocation of Highland Park Letter-EPA (1).pdf" deleted by Deirdre Rothery/R8/USEPA/US] [attachment "Sheridan_Meadowlark_Network_Mod_Form1.pdf" deleted by Deirdre Rothery/R8/USEPA/US]

--

Mark Gagen

CEMS Coordinator
State Of Wyoming
DEQ/AQD
122 West 25th Street
Cheyenne, WY 82002
Phone: (307) 777-7351
mark.gagen@wyo.gov

E-Mail to and from me, in connection with the transaction of public business, is subject to the Wyoming Public Records Act and may be disclosed to third parties.

3 attachments



network modification hints.docx
16K



Network Modification Request Form.doc
105K



Sheridan PM QL 07-11.pdf
86K



Department of Environmental Quality

*To protect, conserve and enhance the quality of Wyoming's
environment for the benefit of current and future generations.*



Matthew H. Mead, Governor

Todd Parfitt, Director

August 2, 2012

Mr. Joseph Delwiche
EPA-Air Monitoring Section
1595 Wynkoop Street
Denver, CO 80202-1129

Re: State of Wyoming Ambient Air Monitoring Site Modification Form- Meadowlark
Elementary School Site

Dear Mr. Delwiche:

The Wyoming Department Of Environmental Quality – Air Quality Division (AQD) has completed the installation of the new SLAMS PM monitoring site at the Meadowlark Elementary School, located at 1410 DeSmet in Sheridan, Wyoming. The Meadowlark Elementary School site (56-033-0004) represent a neighborhood scale, population oriented station within a PM₁₀ nonattainment area.

Upon receiving approval from Region 8, the Highland Park Elementary site (56-033-0003) located at 1301 Avon Street in Sheridan, Wyoming was shut down on May 23, 2012. The Meadowlark Elementary School site became operational in the 3rd quarter of 2012. Attached for you review is the State of Wyoming Ambient Air Monitoring Site Modification Form for the Meadowlark Elementary School site.

I would like to thank you for all your guidance during the relocation of the air monitoring network in Sheridan, Wyoming. If you have any questions or comments, please feel free to contact me at (307)777-7351.

Sincerely,

Mark Gagen

CEMS Coordinator

Enclosure (1)

cc: Darla Potter, Air Quality Resource Management
Cara Keslar, Monitoring Section Supervisor
Steven Mugg, Monitoring QA Coordinator
Meadowlark Elementary School site SLAMS File

