STATE OF MONTANA

AIR QUALITY MONITORING NETWORK PLAN

May 2017

Montana Department of Environmental Quality
Air Quality Bureau

1520 East 6th Ave
Helena, MT 59601

Contents

Introduction

This Air Quality Monitoring Network Plan (Plan) is developed and submitted on an annual basis in accordance with the requirements contained in Title 40 of the Code of Federal Regulations (CFR) Part 58.10. The intent of this plan is to accurately describe the monitoring sites in the Montana Department of Environmental Quality's (DEQ) network, identify each site's monitoring purpose, describe how the sites fulfill Network Design Criteria, and describe any deviations in physical characteristics or operation from regulatory requirements. The Plan also describes changes the DEQ anticipates making to the network in the next year. In turn, providing opportunity for the DEQ to solicit, evaluate, and respond to comments and input from County Agencies, the general public, and other DEQ interests regarding the network.

The Plan development process establishes the structure for DEQ to evaluate its existing ambient air monitoring network and to tailor the network based on modified data needs, changing regulatory requirements, and available resources.

DEQ monitors air quality principally by measuring concentrations of criteria air pollutants pursuant to the federal Clean Air Act (CAA) in an endeavor to meet three basic monitoring objectives:

1. Provide air pollution data to the general public in a timely manner.
2. Support compliance with ambient air quality standards and emissions strategy development.
3. Support air pollution research studies.

Criteria air pollutants are the most common air pollutants with known harmful human health effects. The six criteria pollutants are:

- carbon monoxide (CO)
- sulfur dioxide (SO_2)
- lead (Pb)
- nitrogen dioxide (NO_2)
- ozone (O_3)
- particulate matter (PM). PM includes airborne materials in two size fractions, those with an aerodynamic diameter of 10 microns and less (PM_{10}), and those with an aerodynamic diameter of 2.5 microns and less ($PM_{2.5}$).

For each criteria air pollutant, National Ambient Air Quality Standards (NAAQS) are established to protect public health and the environment. Two types of federally-mandated air quality standards may exist. Primary standards set limits to protect public health, including the health of at-risk populations such as people with pre-existing heart or lung disease (e.g. asthmatics), children, and older adults. Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to

animals, crops, vegetation, and buildings. Montana has adopted similar air quality standards known as the Montana Ambient Air Quality Standards (MAAQS).

This Plan is presented in three broad sections. The first section describes the various pollutant-specific ambient air monitoring design requirements and explains how the DEQ has implemented each as applicable. The second section describes changes to the monitoring network that the DEQ is proposing. The final section includes appendices which provide supplemental information and data in support of specific elements outlined within this Plan.

I. Ambient Air Monitoring Requirements

The term 'ambient air' is defined in 40 CFR 50.1 as "that portion of the atmosphere, external to buildings, to which the general public has access." Federal rules implemented by the United States Environmental Protection Agency (EPA) require each state to establish a network of monitors to measure concentrations of criteria pollutants in ambient air based upon population, regional air quality, and regulatory concerns. The following sections summarize the ambient air monitoring requirements for each of the criteria air pollutants, and explain the DEQ's implementation.

A. Ozone (O3) Monitoring Criteria

The minimum number of ozone monitors required by 40 CFR Part 58, Appendix D is summarized in Table 1.

Table 1 - Minimum O_3 Monitoring Requirements[1]

Metropolitan Statistical Area (MSA) population[2,3]	Number of Monitors per MSA	
	Most recent 3-year design value concentrations ≥ 85% of any O3 NAAQS[4]	Most recent 3-year design value concentrations < 85% of any O3 NAAQS[4,5]
>10 million	4	2
4 – 10 million	3	1
350,000 – <4 million	2	1
50,000 – <350,000[6]	1	0

[1] From Table D-2 of Appendix D to 40 CFR Part 58
[2] Minimum monitoring requirements apply to the metropolitan statistical area (MSA)
[3] Population based on latest available census figures.
[4] O_3 NAAQS levels and forms are defined in 40 CFR Part 50.
[5] These minimum monitoring requirements apply in the absence of a design value.
[6] An MSA must contain an urbanized area of 50,000 or more population.

As described in Appendix B to this Plan, there are three Metropolitan Statistical Areas (MSAs) in Montana, and all three fall within the 50,000 to 350,000 person population category. The three MSAs are Billings (Yellowstone, Carbon, and Golden Valley Counties), Missoula (Missoula County), and Great Falls (Cascade County). At present, O_3 monitoring is being conducted in Missoula as representative of these three areas. DEQ previously conducted O_3 monitoring in the Billings area from 2005 to 2007 (station number 30-111-0086). In Great Falls, historical monitoring data, meteorological patterns, and professional judgment indicate that monitoring in this MSA is not warranted given the low O_3 levels monitored in the two larger MSAs and the consistently windy conditions that exist in Great Falls.

Beyond monitoring efforts related to the three MSAs the DEQ has endeavored, in several cases with collaborative funding from the Bureau of Land Management (BLM), to define background levels of O_3 across Montana and to assess impacts from petroleum exploration within the eastern portion of the state. DEQ is conducting O_3 monitoring in Broadus (30-

075-0001), Birney (30-087-0001), Sidney (30-083-0001), Malta (30-071-0010), Lewistown (30-027-0006), and at the National Core Monitoring Site (NCore)—(30-049-0004). See Appendix A of this Plan for a map displaying the location of these sites. Table 2 summarizes the 8-hour rolling average O_3 values measured at monitoring sites operated by the DEQ during the designated 2016 ozone season (April – September), while Table 3 summarizes the 8-hour O_3 values measured at monitoring sites operated by the DEQ during the entire 2016 calendar year.

Table 2 – 8-Hour Rolling Monitored O_3 Values for Ozone Season 2016

Station	Concentrations (ppm)			NAAQS Design Values (ppm)[1]	
	Minimum	Maximum	Average	2016	2014 - 2016
Birney	0.002	0.062	0.031	0.057	0.056
Broadus	0.005	0.058	0.033	0.055	0.056
Lewistown	0.008	0.056	0.033	0.055	0.055
Malta	0.007	0.052	0.029	0.053	0.055
Missoula	0	0.051	0.024	0.051	0.053
NCore	0	0.055	0.033	0.055	0.057
Sidney	0.009	0.057	0.032	0.057	0.055

[1] Design Values calculated by the USEPA Air Quality System (AQS) database.

Table 3 – 8-Hour Rolling Monitored O_3 2016 Annual Values

Station	Concentrations (ppm)		
	Minimum	Maximum	Average
Birney	0.002	0.062	0.029
Broadus	0.005	0.062	0.03
Lewistown	0.008	0.058	0.033
Malta	0.007	0.055	0.029
Missoula	0	0.055	0.019
NCore	0	0.056	0.033
Sidney	0.001	0.061	0.031

As demonstrated in Tables 2 and 3, little variability has been observed in the monitored ambient O_3 concentrations across the state of Montana. The 8-hour O_3 design value of 0.059 ppm collected in the Billings area during 2005-2007 further illustrates this occurrence. The dynamic becomes particularly interesting given the spatial breadth and population diversity of these sites. Two of the seven monitoring sites (including the 2005–2007 Billings site) are located in the two largest-population communities in Montana, two are in small towns, one is in a rural oilfield, two are in very rural settings with minimal population and no industry, and one is in a pristine background location adjacent to a federal wilderness area. It appears, then, that the O_3 monitored in the ambient air across Montana is indicative of general background concentrations produced principally by natural sources or transported in from sources outside the state, with little anthropogenic source input from within Montana.

The monitoring directives in 40 CFR Appendix D, Section 5 contain specific requirements for the operation of Photochemical Assessment Monitoring Stations (PAMS) in areas

classified as serious, severe, or extreme nonattainment for O_3. Montana does not contain any O_3 nonattainment areas, therefore no PAMS monitoring is required of the DEQ.

B. Carbon Monoxide (CO) Monitoring Criteria

Per 40 CFR 58 Appendix D Section 4.2, the requirements for CO monitoring sites are closely related to the requirements for near-road NO_2 monitoring sites (see Section I.C. of this Plan). Table 4 summarizes the number of required CO monitoring sites.

Table 4 – Minimum CO Monitoring Requirements[(1)]

Criteria	Number of Near-Road CO Monitors Required
CBSA Population ≥ 1,000,000	One, collocated with an NO_2 monitor or in an alternative location approved by the EPA Regional Administrator

[(1)] From Appendix D to 40 CFR Part 58, Sec 4.2.1

As documented in Appendix B to this Plan, no Montana Core Based Statistical Areas (CBSAs) meet the listed criteria, and no CO monitors are required in Montana on this basis.

Historically, the DEQ and local county air programs have conducted CO monitoring in various larger communities in the state where motor vehicle emissions had caused ambient air concerns. However, because of the improvement of traffic patterns and the gradual renewal of the general vehicle fleet to newer, cleaner-burning engines, monitored CO concentrations in ambient air remain extremely low. As a result, DEQ discontinued its traffic-related CO monitoring with EPA approval, and no community CO monitoring is currently being conducted.

The DEQ continues to operate one trace-level CO monitor at the NCore station north of Helena to track background concentrations of this pollutant over time. Section I.H describes NCore monitoring efforts.

Table 5 summarizes the 1-hour CO values measured at the NCore monitoring site during 2016.

Table 5 – 1-Hour Monitored CO Values for 2016

Station	Concentrations (ppm)		
	Min	Max	Average
NCore	0.0	0.839	0.125

C. Nitrogen Dioxide (NO2) Monitoring Criteria

The minimum number of NO_2 monitoring sites required by 40 CFR 58 Appendix D Section 4.3 is summarized in Table 6.

Table 6 – Minimum NO_2 Monitoring Requirements[1]

Requirement Type	Criteria[2]	Minimum Number of NO_2 Monitors Required
Near Road	CBSA Population ≥ 500,000	1
	CBSA Population ≥ 2.5 million	2
	CBSA Population ≥ 500,000 and Road Segments with annual average daily traffic counts ≥250,000	2
Area-Wide	CBSA Population ≥ 1 million	1
Protection of Susceptible and Vulnerable Populations	Any area inside or outside CBSAs	As Required by EPA Regional Administrator and Appendix D Section 4.3.4(b).

[1] From Appendix D to 40 CFR Part 58, Sec 4.3.1
[2] CBSA populations based on latest available census figures

As demonstrated in Appendix B, no Montana communities meet any of the criteria listed in Table 6, and no additional NO_2 monitoring has been required of DEQ by the Regional EPA Administrator; therefore no ambient NO_2 monitors are currently required in Montana. However, the DEQ currently operates five NO_2 monitoring sites in an effort to determine NO_2 background concentrations along with potential impacts associated with the oil and gas industry in the eastern part of the state. NO_2 is monitored at Sidney (30-083-0001), Broadus (30-075-0001), and Birney (30-087-0001), as well as Malta (30-071-0010) and Lewistown (30-027-0006) which are operated in partnership with the BLM in an attempt to further define background concentrations and spatial distribution of this pollutant within the state of Montana.

Table 7 summarizes the 1-hour NO_2 values measured at monitoring sites operated by the DEQ during 2016.

Table 7 – 1-Hour Monitored NO_2 Values for 2016

Site	Concentrations (ppb)			NAAQS Design Values (ppb)[1]	
	Min	Max	Average	2016	2014 – 2016
Birney	0	17	0	6.0	6
Broadus	0	17	1	10.0	10
Lewistown	0	14	0	9.0	11
Malta	0	11	0	7.0	7
Sidney	0	13	0	9.0	10

[1] Design Values calculated by the USEPA Air Quality System database.

D. Sulfur Dioxide (SO_2) Monitoring Criteria

The minimum number of SO_2 monitoring sites required by 40 CFR 58 Appendix D Section 4.4 is summarized within Table 8.

Table 8 – Minimum SO_2 Monitoring Requirements[1]

CBSA PWEI[2][3]	Minimum Number of SO_2 Monitors Required
≥1,000,000	3
<1,000,000 - ≥100,000	2
<100,000 - ≥5,000	1

[1] From Appendix D to 40 CFR Part 58, Sec 4.4.2
[2] CBSA populations based on latest available census figures
[3] Core Based Statistical Area Population Weighted Emissions Index

This EPA criteria used to determine the numbers of required SO_2 monitors is based on two metrics: the CBSA—(a county or counties with at least one urbanized area of at least 10,000 people population), and the Population Weighted Emissions Index (PWEI -- the population in the CBSA multiplied by the annual tons of SO_2 emitted using the most recent aggregated emissions data available in the National Emissions Inventory, divided by 1,000,000). The Billings CBSA as described in Appendix B is the only CBSA in Montana that has the potential to require SO_2 monitoring based on these prescribed metrics. Table 9 summarizes the current PWEI for the Billings CBSA using the latest published National Emission Inventory (NEI) values.

Table 9 – Billings CBS PWEI Calculation[1]

Population[1] (a)	Reported Emission[2] (b)	PWEI[3] (c)
169,728	6227.61	1,057.0

[1] US Census Bureau Population Estimate as of July 1, 2015.
[2] 2014 National Emissions Inventory.
[3] PWEI (c) = a x b/1,000,000

SO_2 monitoring is triggered within a CBSA when the calculated WPEI value is equal to or greater than 5,000. Based on the prescribed criteria, neither Billings nor any of the other Montana CBSAs present an SO_2 PWEI that approaches or exceeds 5,000. Consequently, no DEQ SO_2 monitoring is required based on the PWEI criteria.

DEQ continues to operate one long-term SO_2 monitor at the Coburn Road site in Billings (30-111-0066) as part of the approved Maintenance Plan (81 FR 28718, Resdesignation request and associated maintain plan for Billings, MT 2010 SO_2) to provide an ongoing assessment of SO_2 compliance in the Billings area. The Coburn Road site, located within the former Yellowstone County (partial) SO_2 Nonattainment Area, has been in continuous operation since 1981 as a State or Local Air Monitoring Station (SLAMS) site for NAAQS comparison purposes.

Additionally, DEQ operates one SO_2 monitor at the Sidney site (30-083-0001) to gauge impacts from oil and gas production in eastern Montana, and one trace-level background monitor at the NCore station (30-049-0004). Section I.H describes NCore monitoring. Table 10 summarizes the 1-hour values measured at the SO_2 monitoring sites operated by the DEQ during 2016.

Table 10 – 1-Hour Monitored SO_2 Values for 2016

Site	Concentrations (ppb)			NAAQS Design Values (ppb)[1]	
	Min	Max	Average	2016	2014 - 2016
Billings - Coburn Road	0	22.0	0	18	53
NCore - Sieben's Flat	0	2.5	0	2	2
Sidney - Oil Field	0	22.0	0	13	7

[1] Design Values calculated by the USEPA Air Quality System database.

Beyond DEQ-operated monitors, ambient SO_2 is monitored by industrial sources in the communities of Great Falls and Billings. In the Great Falls area, one SO_2 monitoring location (Race Track Site, 30-013-2001) in the community of Black Eagle is operated by the Calumet Montana Refining Company, LLC (Calumet) as required by their air quality permit. Data from this site is not entered into the AQS database but is used by DEQ's air quality compliance program. In the Billings/Laurel area there is currently a single industry-operated SO_2 monitoring site (Johnson Lane, 30-111-2006), maintained by Yellowstone Electric Limited Partnership (YELP) as a condition of their air quality permit. Three additional monitors were historically operated by a consortium of local SO_2-emitting industries, known as the Billings Laurel Air Quality Technical Committee (BLAQTC). The Brickyard (30-111-2005) and Laurel (30-111-0016) sites were discontinued in June of 2015; while the third site, Lockwood (30-111-1065), failed in 2011 and was not replaced. The DEQ performed periodic quality assurance audits of these sites and has entered their data into AQS, but suspended these efforts in 2011 due to resource constraints.

Both YELP and BLAQTC performed monitoring under an approved Quality Assurance Project Plan (QAPP) as individual Primary Quality Assurance Organizations (PQAOs) independent of the DEQ. DEQ believes that the data obtained from the YELP and BLAQTC monitors met the commitments of the individual QAPPs and are therefore of regulatory quality. DEQ looks principally to the Coburn Road SLAMS monitor for NAAQS compliance determination in the Billings area, but has historically examined, and continues to examine, available data for contrast and comparison purposes.

On August 10, 2015, EPA finalized the Data Requirements Rule (DRR) for the 2010 1-hour SO_2 primary NAAQS (40 CFR 51, Subpart BB). The SO_2 DRR required that air agencies identify and characterize air quality around large sources. Talen Montana, LLC's Colstrip Steam Electric Generating Station located in Rosebud County was the sole source in Montana identified as applicable to the rule. As required in the rule for characterizing air quality for the primary 2010 SO_2 NAAQS, Montana submitted the appropriate designation of attainment for Rosebud County as demonstrated through modeling on December 20, 2016.

E. Lead (Pb) Monitoring Criteria

The lead monitoring design rule in 40 CFR 58 Appendix D Section 4.5 requires monitoring agencies to establish air quality monitoring near industrial facilities that emit more than 0.5 tons per year (tpy) of lead into the atmosphere, and at specified airports. None of the

listed airports are located in Montana, but a single facility in the state has reported annual lead emissions in excess of the 0.5 tpy emission threshold.

Talen Montana, LLC's Colstrip Steam Electric Generating Station located in Rosebud County has historically reported total lead emissions in excess of 0.5 tpy; with 1.80 tons reported for calendar 2016. This value has decreased from the total of 1.96 tons reported in 2015.

In the past DEQ has deferred lead monitoring in the Colstrip area due to resource constraints and the prioritization of those limited resources toward pollutants posing a greater risk to citizens of Montana. Section 4.5(a)(ii) of 40 CFR 58 Appendix D, provides the Regional Administrator ability to waive the requirement to monitor lead, if a monitoring agency can demonstrate the lead source will not contribute to a maximum lead concentration in ambient air in excess of 50 percent of the NAAQS. Therefore, in lieu of deferment, DEQ will seek to obtain a waiver from the requirement to monitor lead as authorized within the lead monitoring design rule. To this end, DEQ will undertake an air dispersion modeling exercise in order to demonstrate contributions of lead emissions from Talen meet the established ambient air impact criteria. DEQ anticipates completion of this modeling demonstration and submission of the waiver request by fall-2017.

F. Particulate Matter (PM10) Monitoring Criteria

The minimum number of PM_{10} monitoring sites required by 40 CFR 58 Appendix D Section 4.6 is shown in Table 11.

Table 11 - Minimum PM_{10} Monitoring Requirements[1]

	Number of Monitors per MSA[1]		
Population category	**High concentration[2]**	**Medium concentration[3]**	**Low concentration[4][5]**
>1,000,000	6–10	4–8	2–4
500,000–1,000,000	4–8	2–4	1–2
250,000–500,000	3–4	1–2	0–1
100,000–250,000	1–2	0–1	0

[1] From Table D-4 of Appendix D to 40 CFR Part 58. Selection of urban areas and actual numbers of stations per MSA within the ranges shown in this table will be jointly determined by EPA and the DEQ.
[2] High concentration areas are those for which data exceeds the PM_{10} NAAQS by 20 percent or more.
[3] Medium concentration areas are those for which data exceeds 80 percent of the PM_{10} NAAQS.
[4] Low concentration areas are those for which data is less than 80 percent of the PM_{10} NAAQS.
[5] The low concentration requirements are the minimum which apply in the absence of a design value.

As shown in Appendix B of this Plan and in Table 12 below none of the Montana MSAs currently meet the combination of population and PM_{10} concentration listed in Table 11. However, the DEQ continues to operate a network of PM_{10} monitors throughout the state serving various objectives. DEQ operates PM_{10} monitors in seven areas previously designated as nonattainment for the 24-hour PM_{10} NAAQS as required by EPA and to demonstrate the adequacy of PM_{10} control plans. Those areas include Butte (30-093-0005), Columbia Falls (30-029-0049), Kalispell (30-029-0047), Libby (30-053-0018), Missoula (30-063-0024), Thompson Falls (30-089-0007), and Whitefish (30-029-0009).

The DEQ also operates PM_{10} monitors in several areas in an attempt to further define background concentrations and spatial distribution of this pollutant within the state of Montana. These areas include Sidney (30-083-0001), Broadus (30-075-0001), Birney (30-087-0001), Malta (30-071-0010) and Lewistown (30-027-0006).

Table 12 summarizes the 24-hour values measured at the PM_{10} monitoring sites operated by the DEQ during 2016.

Table 12 – 24-Hour Monitored PM_{10} Values for 2016

	Concentration (µg/m³) [1]			NAAQS Design Values[2]	
Site	Min	Max	Average	2016	2014 - 2016
Birney[3]	0	90	15	--	--
Broadus[3]	0	110	20	--	--
Butte	3	52	16	0	0.3
Flathead Valley	1	45	11	0	0
Kalispell	8	87	23	0	0
Lewistown	0	48	8	0	0
Libby	2	45	15	0	0
Malta	1	33	7	0	0
Missoula	1	73	15	0	0
Sidney[3]	0	75	12	--	--
Thompson Falls	4	97	15	0	0
Whitefish	4	105	19	0	0

[1] Data set excludes DEQ defined exceptional events.
[2] PM_{10} Design Values are in the form of numbers of estimated exceedances as calculated by the USEPA Air Quality System database in accordance with the procedure in 40 CFR 50 Appendix K. The Design Values provided do not include data flagged for exceptional events.
[3] Designated as Special Purpose Monitor (SPM) which are non-regulatory (NAAQS excluded) as they do not meet appropriate sighting criteria for the spatial scale of representation (See Section I of this Plan).

PM_{10} monitoring is discussed further in Section II.

G. Fine Particulate Matter (PM2.5) Monitoring Criteria

The minimum number of $PM_{2.5}$ monitoring sites required by 40 CFR 58 Appendix D Section 4.7 is shown in Table 13.

Table 13 – Minimum $PM_{2.5}$ Monitoring Requirements[1]

	Number of Monitors per MSA	
MSA population[2]	Most recent 3-year design value ≥85% of any $PM_{2.5}$ NAAQS[3]	Most recent 3-year design value <85% of any $PM_{2.5}$ NAAQS[3][4]
>1,000,000	3	2
500,000 - 1,000,000	2	1
50,000 - <500,000	1	0

[1] From Table D-5 of Appendix D to 40 CFR Part 58. Minimum monitoring requirements applicable to MSAs.
[2] Population based on latest available census figures.
[3] $PM_{2.5}$ NAAQS levels and forms are defined in 40 CFR part 50.
[4] Minimum monitoring requirements apply in the absence of a design value.

As described in Appendix B of this Plan, Montana possesses three MSAs (Billings, Missoula, and Great Falls), and all three fall into the smallest population category listed in Table 13. Missoula is the only Montana MSA that has at any time demonstrated a $PM_{2.5}$ design value greater than 85 percent of the NAAQS, though it has not done so for nearly a decade. Consequently, no $PM_{2.5}$ monitors or near-road $PM_{2.5}$ monitors are required within Missoula or any community in Montana based on the current criteria

Because $PM_{2.5}$ is a pollutant of concern within Montana, the DEQ's $PM_{2.5}$ monitoring network goes well beyond the minimum requirements as specified in Table 13. DEQ, along with several county air quality programs, operate $PM_{2.5}$ monitors in various locations to demonstrate continuing NAAQS compliance, to provide information to various health departments $PM_{2.5}$ control strategies, and to inform the public of potential health impacts during both winter inversions and summer wildfire events.

DEQ continues to operate a $PM_{2.5}$ monitor in the community of Libby as required by EPA and to demonstrate the adequacy of $PM_{2.5}$ control plans resulting from the previous nonattainment designation of the 24-hour $PM_{2.5}$ NAAQS. In addition, DEQ operates $PM_{2.5}$ monitors in Sidney (30-083-0001), Broadus (30-075-0001), Birney (30-087-0001), Malta (30-071-0010) and Lewistown (30-027-0006) in an attempt to further define background concentrations and spatial distribution of this pollutant within the state of Montana. Additionally, DEQ operates multipurpose community-based monitors in Billings (30-111-0085), Bozeman (30-031-0019), Butte (30-093-0005), Columbia Falls (30-029-0049), Frenchtown (30-063-0037), Great Falls (30-013-0001), Hamilton (30-081-0007), Helena (30-049-0026), Missoula (30-063-0024), and Seeley (30-063-0038). These sites, along with the NCore site (30-049-0004) located north of Helena, meet the requirements of 40 CFR Appendix D Section 4.7.3 to install and operate at least one regional background and at least one regional transport PM2.5 monitoring site within the network.

Table 14 summarizes the 24-hour values measured at the $PM_{2.5}$ monitoring sites operated by the DEQ during 2016.

Table 14 – Monitored $PM_{2.5}$ Values for 2016

Site	Concentration (µg/m³)[1]			NAAQS Design Values (µg/m³)		
				2016	2014 - 2016	
	Min	Max	Average	98th Pctl.	24 hour	Annual
Billings	0.7	17	5.9	14.7	17	6.9
Birney	0	22.4	4.4	12.3	13	5.0
Bozeman[2]	0.7	34	6.4	--	--	--
Broadus	0	17.6	5.3	12.7	13	5.6
Butte	0	32.1	6.9	27.6	27	7.9
Flathead Valley	0	24.5	5.4	16.6	21	7.1
Frenchtown	2.4	43.1	8.6	27.5	24	8.7
Great Falls[2]	1.6	22	6.3	--	--	--
Hamilton	0	54.9	7.9	27	27	7.0
Helena-Rossiter	0.4	53.7	7	32.3	29	7.3
Lewistown	0	18.5	3.5	10.0	10	3.8
Libby	1.5	34.7	9.7	25.1	26	9.8
Malta	0	23	4.4	11.7	11	4.4
Missoula	1.1	41.2	7.1	23.6	21	7.1

Ncore	0	20.6	2	9.8	10	2.5
Seeley[2]	5	50.8	17.1	--	--	--
Sidney	0.4	19.6	5.1	10.7	12	5.6

[1] 24-hour monitored concentrations. Data set excludes DEQ defined exceptional events, unless otherwise noted.
[2] Monitors are non-Federal Equivalent Method (non-FEM) monitors operated for public information only. They are not certified to produce NAAQS-comparison data.

The $PM_{2.5}$ monitoring criteria in 40 CFR 58 Appendix D Section 4.7 contains two additional significant requirements. First, Section 4.7.4 requires that each state continue to conduct $PM_{2.5}$ Chemical Speciation monitoring at locations designated to be part of the national Speciation Trends Network (STN) that are operated as part of the Chemical Speciation Network (CSN). Two sites in Montana are currently included in the CSN; Butte (30-093-0005) and NCore (30-049-0004). Appendix E contains a list of the chemical components for which analysis is performed on filters collected at these stations.

Second, Section 4.7.2 requires that states operate continuous analyzers in at least one-half of the *required* $PM_{2.5}$ monitoring sites (per Table 13, above). The continuous monitors must be designated as Federal Equivalent Method (FEM) analyzers, and at least one analyzer per MSA must be collocated with an episodic Federal Reference Method (FRM) analyzer. As previously discussed, no $PM_{2.5}$ monitors are required by federal Monitoring Network Design Criteria rule to be operated in any Montana community, so the CFR Section 4.7.2 criteria does not currently have direct application in the state. However, $PM_{2.5}$ is a significant pollutant in Montana, and impacts from summer wildfires and wintertime inversions have established a strong demand for continuous, near-real time $PM_{2.5}$ data for assessing public health impacts as well as determining NAAQS compliance. To meet this need DEQ's $PM_{2.5}$ network is comprised solely of continuous monitors; with FRM monitors used only for collocation, validation, and quality assurance (QA) purposes. As a result, the national discussion regarding the accuracy and representativeness of continuous monitors is of great significance to DEQ and to the citizens of Montana.

DEQ has been very deliberate in its operation and QA of continuous particulate monitors. As a result, Montana's comparisons between FRM and FEM instruments and between collocated FEM instruments have been quite good. Data analysis tools made available in USEPA's April 20, 2013 memorandum, "Update on Use of $PM_{2.5}$ Continuous FEMS," demonstrate this reality as shown by the statistical summaries contained in Appendix F. DEQ intends to continue to make strong use of continuous FEM instruments in its $PM_{2.5}$ monitoring network.

H. National Core Monitoring Site (NCore) Monitoring Criteria

Section 3 of Appendix D to 40 CFR 58 requires that each state operate at least one NCore multipollutant monitoring site. By definition, each NCore site must include monitoring equipment to measure $PM_{2.5}$, $PM_{10-2.5}$, speciated $PM_{2.5}$, O_3, SO_2, CO, NO, NO_Y, lead, and basic meteorology. The majority of NCore sites across the nation are established in urban areas. In Montana however, the NCore site was established as a long-term trend background site in an area believed to be relatively pristine and un-impacted by human activities.

The Montana NCore site (Sieben's Flat, 30-049-0004) was installed in late 2010. All parameters, with the exception of lead, are functional and acquiring ongoing data.

The monitoring directives in 40 CFR Appendix D Section 4.8.1 contains specific requirements for the operation of monitors for $PM_{10-2.5}$ at NCore sites. These requirements are currently limited in application to NCore monitoring sites and are fully met in Montana's NCore site at Sieben's Flat.

I. General Monitoring Network Design Considerations

1. Monitors Not Meeting Siting Criteria

The DEQ designs its network and operates the air monitoring sites in compliance with EPA's requirements for ambient air monitoring sites (40 CFR Part 58, Appendices A, C, D and E). Within the DEQ's network there are three sites that do not meet all of the Appendix E siting requirements. The Hamilton (30-081-0007) $PM_{2.5}$ site is located within 15 meters of paved city streets, but is operated as a neighborhood-scale site and not intended as a "traffic corridor" monitor as discussed 40 CFR 58 Appendix E Section 6.3. The roads receive low traffic counts, and EPA has approved (granted a waiver) of the continued operation of this site as a neighborhood scale site in response to previous Annual Network Report documents submitted by the DEQ.

Two PM_{10} monitors located in eastern Montana, Broadus (30-075-0001) and Birney (3-087-0001), were established to define background concentrations of this pollutant on a neighborhood or broader scale. Each of these sites is located in a remote region, and of logistic necessity, near unpaved gravel roads traveled by ranching and agricultural equipment. As a result, the monitors are unduly influenced by that traffic and are not appropriately representing background PM_{10} concentrations in their intended scaled scope. However, DEQ desires to continue to operate these monitors as part of a suite of instruments located at these sites. Consequently, in its 2012 Network Plan the DEQ proposed to redesignate the PM_{10} monitors at Broadus and Birney as special purpose monitors producing non-regulatory (SPM-NR), or NAAQS excluded, data. EPA approved the redesignation on April 8, 2013.

2. PM2.5 Spatial Scales and Monitoring Methods

The data from $PM_{2.5}$ monitoring sites with spatial scales designated as smaller than "neighborhood" is generally not used for $PM_{2.5}$ NAAQS compliance review purposes in the DEQ's network. Currently, the only $PM_{2.5}$ sites in the Montana network of this nature is the St. Luke's station in Billings (30-111-0085) and the Overlook Park station in Great Falls. All $PM_{2.5}$ monitors designated as Federal Reference Method or equivalent (FRM/FEM) generate data suitable for determining compliance with the $PM_{2.5}$ NAAQS. DEQ has historically operated non-FEM $PM_{2.5}$ monitoring equipment for general information purposes, and will continue to do so. The tables

in Appendix C discriminate between FRM, FEM and non-FEM $PM_{2.5}$ instrumentation operated within the DEQ's network.

3. Quality Assurance Project Plan (QAPP)

Federal rules and associated guidance establish a significant grid of quality assurance requirements, and the DEQ operates its monitoring network within these requirements. Of note is the requirement in 40 CFR 58 Appendix A, Section 2 for each monitoring organization to develop and describe its quality system within a written QAPP. The DEQ's QAPP has undergone a significant edit and update which was approved on May 3, 2013 and adopted March 20, 2015.

II. Proposed Changes to the Monitoring Network

A. Introduction

DEQ regards the requirement to develop and submit an Annual Network Plan as an opportunity to review the existing air monitoring network and to plan for future needs. In the process of producing this document, DEQ reviews air pollutant trends, known and projected emission changes, and revisions to the NAAQS and monitoring rules; then attempts to balance those realities against available resources. Likewise, in 2015 the DEQ completed a periodic network assessment in accordance to 40 CFR 58.10(d). The changes proposed in this document reflect the results of both aforementioned efforts.

Immediate changes are proposed in this annual network plan, while long-term evaluation and direction of DEQ's air quality surveillance system continue to be addressed within the periodic network assessment, and the resulting system modifications. DEQ anticipates occasional changes to the focus and direction of Montana's air monitoring network in response to future federal rulemaking. The following sections outline network changes completed since submission of the 2015 Annual Monitoring Network Plan and proposed changes to Montana DEQ's air monitoring network for the 2017planning period.

B. PM-2.5 Network

Consistent with DEQ's efforts to provide informational $PM_{2.5}$ data to the public and county health officials in assessing health impacts during wildfire and wintertime inversion events, two additional monitors have been added to Montana's ambient monitoring network. Due to recent the frequent reoccurrence of summer wildfire events in the Thompson Falls area, DEQ opted to include a $PM_{2.5}$ monitor to the existing Thompson Falls site (30-89-0007). In addition, the network was further expanded to include a new monitoring site established in Dillon (30-001-0001). These monitors are non-FEM $PM_{2.5}$ equipment and are operated for general information purposes. Although not suitable for NAAQS comparison, similar to other non-FEM $PM_{2.5}$ instruments, DEQ intends on reporting the $PM_{2.5}$ data from these monitors to AQS as well as EPA's Air Quality Index.

Presently, data is collected by portable MetOne E-BAM beta attenuation monitors. As these monitors are SPM non-FEM instruments, and therefore non-regulatory (NAAQS excluded), no formal network modification documentation is provided in this Plan. See appendix A for site location information and Appendix C for details related to monitoring instrumentation and operation.

C. Sidney Station

DEQ discontinued monitoring at the Sidney-Oil Field site (30-083-0001) on April 24, 2017, and successively established a new site, Sidney 201(30-083-003), located approximately 10 miles northwest of the original Sidney site. Decision to relocate monitoring in the Sidney area was two-fold. First, access to the previous site was provided by an unimproved gravel road that receives limited maintenance. Travel was of particular concern during the winter and spring months, given; the area is sparsely populated, the county road receiving little traffic, and the distance to the nearest well-traveled road. Consequently, the former site location presented undue risk to monitoring staff. Furthermore, the site often failed to receive scheduled quality control checks or unscheduled repairs to equipment due to weather related accessibility. Second, the original site occupied a parcel of privately owned land absent a binding lease agreement, rendering access to the site subject to termination without advanced notice. Attempts to reach the land owner in order to secure a continuing agreement failed.

Due to these concerns DEQ chose to relocate monitoring in the Sidney area to a parcel of land owned by the State of Montana, managed by the Montana Department of Natural Resources and Conservation (DNRC). The newly established site bounds a state highway which offers improved access during inclement weather and DEQ has engaged DNRC in a long-term lease to ensure certainty with respect to site access.

The proposed site preserves the monitoring objective and other key attributes offered by the previous station's siting. See Appendix H of this plan for detailed siting information for the newly established site. The Sidney 201 site was effectively established May 1, 2017.

D. Ongoing Network Changes

As indicated in our previous network plans, diminishing monitoring resources necessitate a redirection of monitoring efforts toward those pollutants and geographic areas that have the greatest potential human health impacts or are of the greatest national concern. As a result, we would like to reiterate our belief that historical PM_{10} monitoring from multiple sites has served its purpose and needs to be discontinued so that the resources associated with those efforts can be redirected to areas and pollutants of a higher priority. In light of this, DEQ is working to develop the documentation required by the EPA to redesignate five areas that are currently classified as nonattainment for PM_{10}.

III. Appendices

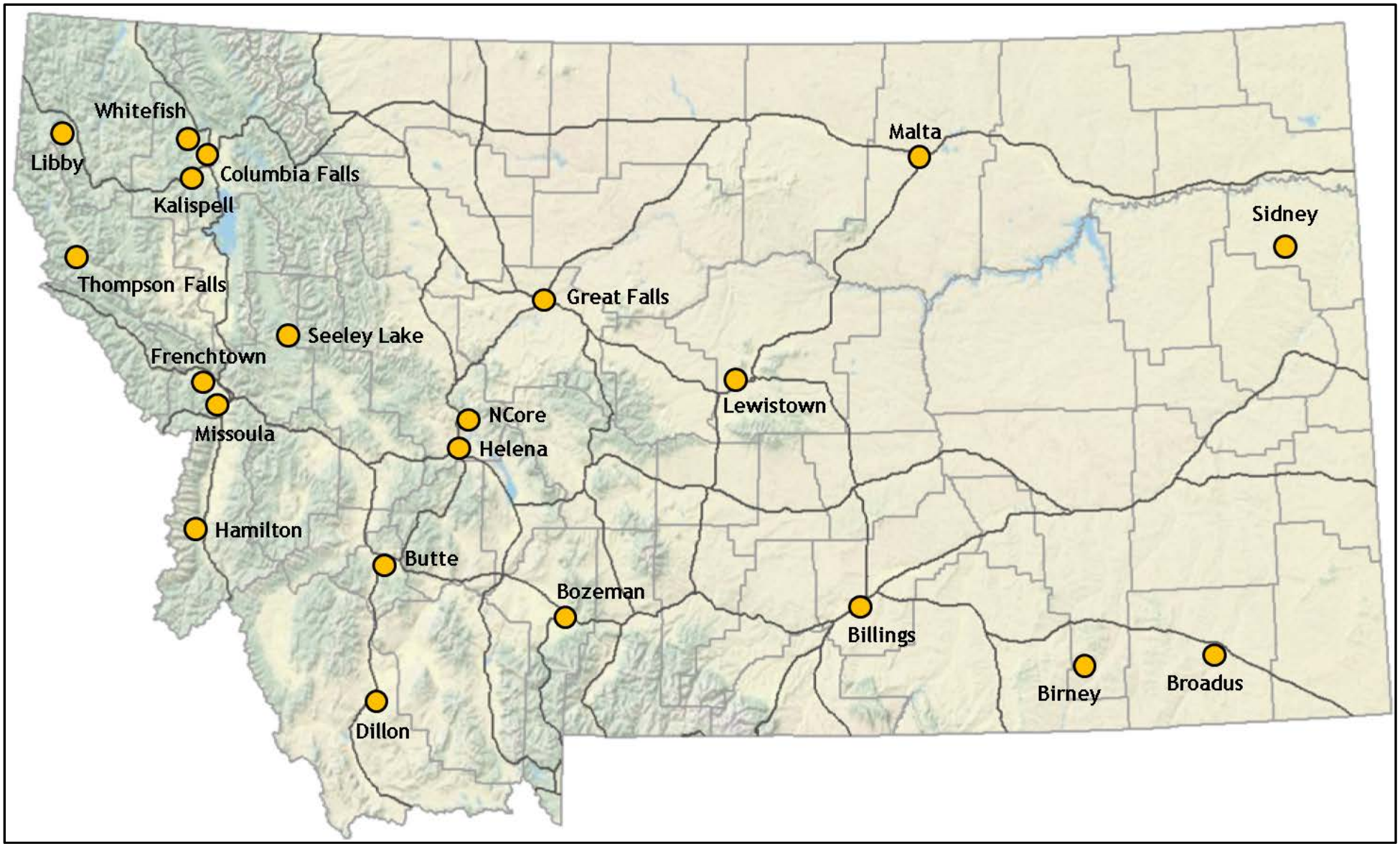
Appendix A
Monitoring Site Location Information

Montana Department of Environmental Quality

Ambient Air Monitoring Site Location Summary

AQS No.	City - Site Name	Montana Address	Longitude	Latitude	CBSA	
30-111-0066	Billings Coburn Road	Coburn Hill Rd.	-108.458780	45.786579	Metro	Billings, 13740
30-111-0085	Billings St Luke's	2nd Ave. N. and N. 32nd St.	-108.511542	45.780400	Metro	Billings, 13740
30-087-0001	Birney Tongue River	SR 566, 3 Miles N of Birney	-106.489820	45.366151	--	--
30-031-0019	Bozeman High School	N 15th Avenue, H.S. Parking Lot	-111.056282	45.683765	Micro	Bozeman, Gallatin County, 14580
30-075-0001	Broadus Powder River	Big Powder River Road East	-105.370283	45.440295	--	--
30-093-0005	Butte Greeley School	Alley Btwn N. Park Pl. and S. Park Pl.	-112.501247	46.002602	Micro	Butte, Silver Bow County, 15580
30-001-0003	Dillon	State Hwy 91 S. and Barrett St.	-112.642516	45.206442	--	--
30-029-0049	Flathead Valley	610 13th St West	-114.189272	48.363694	Micro	Flathead County, 28060
30-063-0037	Frenchtown Beckwith	16134 Beckwith Street	-114.224273	47.012907	Metro	Missoula, Missoula County, 33540
30-013-0001	Great Falls Overlook Park	10th Ave. S. and 2nd St. E.	-111.303317	47.494318	Metro	Great Falls, Cascade County, 24500
30-081-0007	Hamilton PS#46	Madison and 3rd St. S.	-114.158889	46.243621	--	--
30-049-0026	Helena Rossiter Pump House	1497 Sierra Rd. East	-112.013089	46.658762	Micro	Helena, 25740
30-029-0047	Kalispell Flathead Electric	E Center St. and Woodland Ave.	-114.305334	48.200540	Micro	Kalispell Area, Flathead County, 28060
30-027-0006	Lewistown	303 East Aztec Drive	-109.455315	47.048537	--	--
30-053-0018	Libby Courthouse Annex	418 Mineral Ave.	-115.552280	48.391672	--	--
30-071-0010	Malta	2309 Short Oil Road	-107.862471	48.317507	--	--
30-063-0024	Missoula Boyd Park	3100 Washburn Rd.	-114.020549	46.842297	Metro	Missoula, Missoula County, 33540
30-063-0038	Seeley Lake Elem. School	School Lane	-113.476182	47.175630	Metro	Missoula, Missoula County, 33540
30-083-0002	Sidney 201	Intersection of Hwy 201 and Cnty R 326	-104.676864	47.867900	--	--
30-049-0004	Sieben's Flat NCore	I-15 Exit 209, then Sperry Dr.	-111.987164	46.850500	Micro	Helena, 25740
30-089-0007	Thompson Falls High School	Golf and Haley	-115.323746	47.594395	--	--
30-029-0009	Whitefish Dead End	End of 10th St.	-114.335973	48.400523	Micro	Flathead County, 28060

Montana Ambient Air Quality Monitoring Sites



Appendix B
Montana Core Based Statistical Areas (CBSAs)

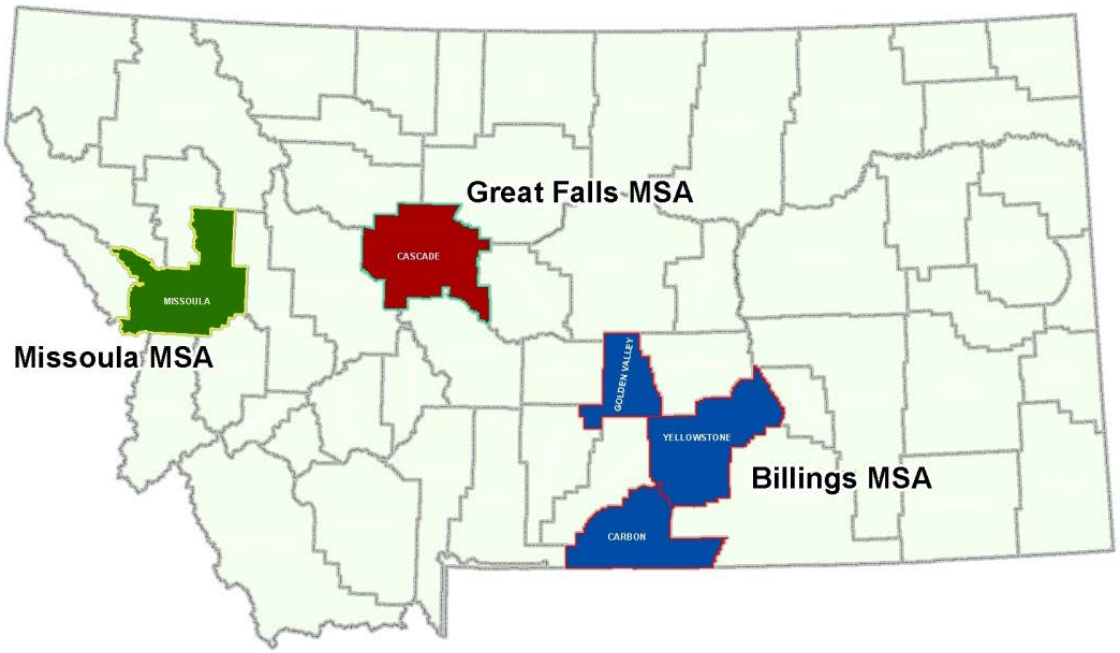
CBSA definition per 40 CFR 58.1: "*Core-based statistical area (CBSA)* is defined by the U.S. Office of Management and Budget, as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration. Metropolitan Statistical Areas and Micropolitan Statistical Areas (MSAs) are the two categories of CBSA (metropolitan areas have populations greater than 50,000; and Micropolitan areas have populations between 10,000 and 50,000). In the case of very large cities where two or more CBSAs are combined, these larger areas are referred to as combined statistical areas (CSAs).

Montana Core Based Statistical Areas[1]

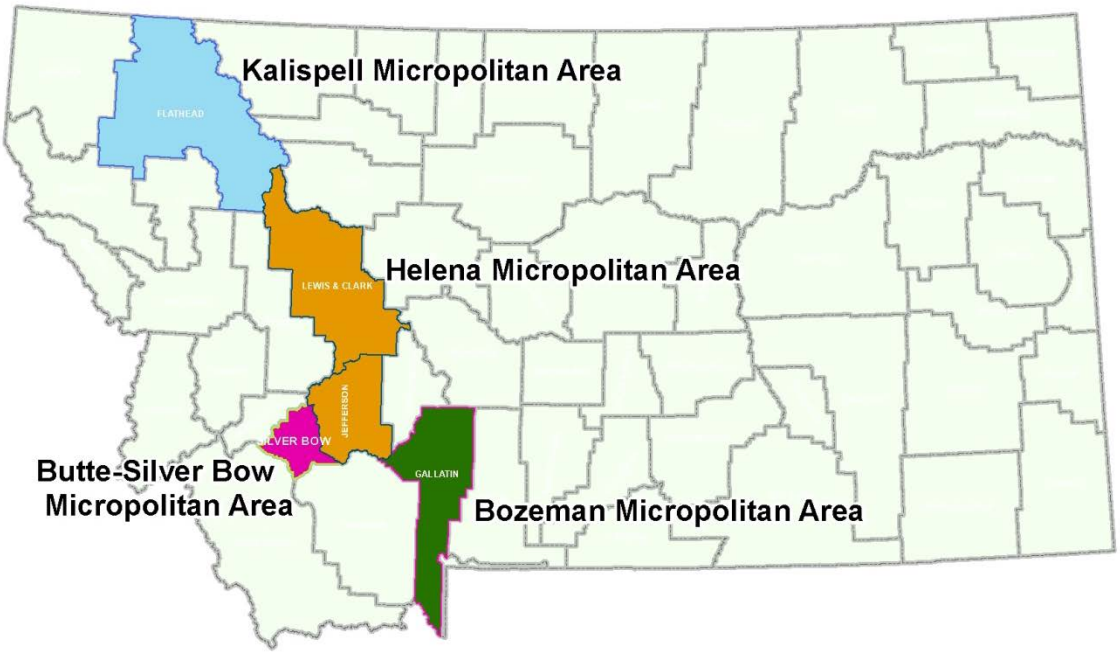
CBSA Code	CBSA Title	Metropolitan or Micropolitan Statistical Area	2016 Estimated Total Population	County/County Equivalent	2016[2] Estimated County Population	FIPS State Code	FIPS County Code	Central or Outlying County
13740	Billings, MT	Metro	169,728	Golden Valley County	831	30	37	Outlying
				Carbon County	10,460	30	9	Outlying
				Yellowstone County	158,437	30	111	Central
33540	Missoula, MT	Metro	116,130	Missoula County	116,130	30	63	Central
24500	Great Falls, MT	Metro	82,278	Cascade County	82,278	30	13	Central
14580	Bozeman, MT	Micro	104,502	Gallatin County	104,502	30	31	Central
28060	Kalispell, MT	Micro	98,082	Flathead County	98,082	30	29	Central
25740	Helena, MT	Micro	79,135	Jefferson County	11,853	30	43	Outlying
				Lewis and Clark County	67,282	30	49	Central
15580	Butte-Silver Bow, MT	Micro	34,553	Silver Bow County	34,553	30	93	Central

(1) U.S. Census Bureau, Population Division; Office of Management and Budget, Metropolitan and Micropolitan Statistical Areas.
(2) US Census Bureau Population Estimate as of July 1, 2016.

Montana Metropolitan Statistical Areas (MSAs)



Montana Micropolitan Statistical Areas



Appendix C
Existing and Proposed Air Monitoring Network Summary

Ambient Air Quality Monitoring Network By Location With Proposed Change

AQS Number	Site Name	Pollutant	Parameter - POC	Method			Frequency	Type[3]	Spatial Scale	Monitoring Objective[4]	2017 Change
				Code	Note[1]	PM[2]					
30-111-0066	Billings-Coburn	SO_2	42401-1	600	7		Continuous	SLAMS	Neigh.	H,S	
		SO_2 - 5 min	42406-1	600	7		Continuous	SLAMS	Neigh.	H,S	
30-111-0085	Billings-St. Luke's	$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SPM	Micro.	P	
30-087-0001	Birney	NO	42601-1	574	11		Continuous	SLAMS	Regional	B	
		NO_2	42602-1	574	11		Continuous	SLAMS	Regional	B	
		NO_X	42603-1	574	11		Continuous	SLAMS	Regional	B	
		O_3	44201-1	047	9		Continuous	SLAMS	Regional	B	
		PM_{10}	81102-1	150	15	FEM	Continuous	SPM NR	Neigh.	B	
		$PM_{2.5}$	88101-3	183	16	FEM	Continuous	SLAMS	Regional	B	
30-031-0019	Bozeman	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM NR	Neigh.	P	
30-075-0001	Broadus	NO	42601-1	574	11		Continuous	SLAMS	Regional	B	
		NO_2	42602-1	574	11		Continuous	SLAMS	Regional	B	
		NO_X	42603-1	574	11		Continuous	SLAMS	Regional	B	
		O_3	44201-1	047	9		Continuous	SLAMS	Regional	B	
		PM_{10}	81102-1	150	15	FEM	Continuous	SPM NR	Neigh.	B	
		$PM_{2.5}$	88101-3	183	16	FEM	Continuous	SLAMS	Regional	B	
30-093-0005	Butte-Greeley	PM_{10}	81102-4	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-2	116	2	FRM	1 in 6	SLAMS		QA Coll[5]	
		$PM_{2.5}$ Spc'n	Various		6		1 in 6	SLAMS[7]	Neigh.	H,P	
30-001-0003	Dillon	$PM_{2.5}$	88502-1	734	17	Non	Continuous	SPM NR	Neigh.	P	✓
30-029-0049	Flathead Valley	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh	P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh	P	
30-063-0037	Frenchtown	$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	P	
30-013-0001	Great Falls-OP	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM NR	Middle	H,P	
30-081-0007	Hamilton	$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
30-049-0026	Helena-Rossiter	$PM_{2.5}$	88101-3	183	16	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-2	116	2	FRM	1 in 6 coll[5]	SLAMS		QA Coll[5]	
		$PM_{2.5}$	88101-4	170	8	FEM	Continuous	SPM		QA Coll[6]	
30-029-0047	Kalispell-FEC	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
30-053-0018	Libby	PM_{10}	81102-1	150	15	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	183	16	FEM	Continuous	SLAMS	Neigh.	H,P	
30-027-0006	Lewistown	NO	42601-1	599	10		Continuous	SPM	Regional	B	
		NO_2	42602-1	599	10		Continuous	SPM	Regional	B	
		NO_X	42603-1	599	10		Continuous	SPM	Regional	B	
		O_3	44201-1	047	9		Continuous	SPM	Regional	B	
		PM_{10}	81102-1	150	15	FEM	Continuous	SPM NR	Neigh.	B	
		$PM_{2.5}$	88101-3	183	15	FEM	Continuous	SPM	Regional	B	
30-071-0010	Malta	NO	42601-1	599	10		Continuous	SPM	Regional	B	
		NO_2	42602-1	599	10		Continuous	SPM	Regional	B	
		NO_X	42603-1	599	10		Continuous	SPM	Regional	B	
		O_3	44201-1	047	9		Continuous	SPM	Regional	B	
		PM_{10}	81102-1	150	15	FEM	Continuous	SPM NR	Neigh.	B	
		$PM_{2.5}$	88101-3	183	16	FEM	Continuous	SPM	Regional	B	
30-063-0024	Missoula-Boyd	O_3	44201-1	047	9		Continuous	SLAMS	Neigh.	P	
		PM_{10}	81102-6	122	4	FEM	Continuous	SLAMS	Neigh.	H,P	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	SLAMS	Neigh.	H,P	
30-049-0004	NCore-Sieben Flats	CO	42101-1	554	13		Continuous	NCore	Region	B	
		NO	42601-1	674	14		Continuous	NCore	Region	B	
		NOy	42600-1	674	14		Continuous	NCore	Region	B	
		O_3	44201-1	047	9		Continuous	NCore	Region	B	
		SO_2	42401-1	600	14		Continuous	NCore	Region	B	
		$PM_{2.5}$	88101-3	170	8	FEM	Continuous	NCore	Region	B	
		$PM_{2.5}$	88101-1	116	2	FRM	1 in 3	NCore	Region	B	
		$PM_{2.5}$ Spc'n	Various		6		1 in 3	SLAMS[7]	Region	B	
		PM_{coarse}	86101-1	185	12	FEM	Continuous	SLAMS	Region	B	

Continued...

Ambient Air Quality Monitoring Network By Location With Proposed Changes (continued)

AQS Number	Site Name	Pollutant	Parameter - POC	Method			Frequency	Type[3]	Spatial Scale	Monitoring Objective[4]	2017 Change
				Code	Note[1]	PM[2]					
30-063-0038	**Seeley Lake**	$PM_{2.5}$	88502-3	731	5	Non	Continuous	SPM NR	Neigh.	H,P	
30-083-0001	**Sidney Oil Field**	NO	42601-1	599	10		Continuous	SLAMS	Neigh.	S	✓
		NO2	42602-1	599	10		Continuous	SLAMS	Neigh.	S	
		NOX	42603-1	599	10		Continuous	SLAMS	Neigh.	S	
		O3	44201-1	047	9		Continuous	SLAMS	Neigh.	S	
		SO2	42401-1	600	7		Continuous	SLAMS	Neigh.	S	
		SO2 - 5 min	42406-1	600	7		Continuous	SLAMS	Neigh.	S	
		PM10	81102-1	150	15	FEM	Continuous	SPM NR	Neigh.	S	
		PM2.5	88101-3	183	16	FEM	Continuous	SLAMS	Neigh.	S	
30-083-0002	**Sidney 201**	NO	42601-1	599	10		Continuous	SLAMS	Neigh.	S	✓
		NO2	42602-1	599	10		Continuous	SLAMS	Neigh.	S	
		NOX	42603-1	599	10		Continuous	SLAMS	Neigh.	S	
		O3	44201-1	047	9		Continuous	SLAMS	Neigh.	S	
		SO2	42401-1	600	7		Continuous	SLAMS	Neigh.	S	
		SO2 - 5 min	42406-1	600	7		Continuous	SLAMS	Neigh.	S	
		PM10	81102-1	150	15	FEM	Continuous	SLAMS	Neigh.	S	
		PM2.5	88101-3	183	16	FEM	Continuous	SLAMS	Neigh.	S	
30-089-0007	**Thompson Falls**	PM_{10}	81102-3	122	4	FEM	Continuous	SLAMS	Neigh.	H, P	
		$PM_{2.5}$	88502-1	734	17	Non	Continuous	SPM NR	Neigh.	P	✓
30-029-0009	**Whitefish**	PM_{10}	81102-1	122	4	FEM	Continuous	SLAMS	Neigh.	P	

[1] **Method Notes**

1 Teledyne-API Model 300 Nondispersive infrared CO analyzer (FEM)
2 BGI-PQ200 with very sharp cut cyclone (FEM)
4 MetOne BAM 1020 Beta Attenuation Monitor (PM_{10} FEM)
5 MetOne BAM 1020 Beta Attenuation Monitor with $PM_{2.5}$ sharp cut cyclone (SCC)
6 MetOne / URG Speciation Air Sampling System
7 Teledyne-API Model T100U Ultraviolet SO_2 fluorescence (FEM)
8 MetOne FEM-BAM 1020 with $PM_{2.5}$ very sharp cut cyclone Beta attenuation monitor ($PM_{2.5}$ FEM)
9 Thermo Model 49i UV Photometric O_3 analyzer (FEM)
10 Teledyne-API Model T200U Chemiluminescence analyzer $NO/NO_x/NO_2$ (FRM)
11 Thermo Model 42i TL Chemiluminescence $NO/NO_x/NO_2$ analyzer (FRM)
12 MetOne BAM1020 $PM_{10\text{-}2.5}$ measurement system -- Paired beta attenuation monitors (FEM)
13 Thermo Model 48i-TLE enhanced trace level CO analyzer
14 Thermo Model 42i-TLE. NO-DIF-NOy chemiluminescent specialty trace level gas analyzer
15 Thermo Scientific 5014i Beta Attenuation Monitor for PM_{10} (FEM)
16 Thermo Scientific, 5014i Beta Attenuation Monitor for $PM_{2.5}$ (FEM)
17 MetOne E-BAM Beta Attenuation Monitor with $PM_{2.5}$ sharp cut cyclone (SCC)

[2] **Method PM Monitor Type:** FEM = Federal Equivalent Method, FRM = Federal Reference Method, Non = Not FEM or FRM method

[3] **Monitor Site Type:**

SLAMS : State or Local Air Monitoring Station
SPM : Special Purpose Monitor
QA Col: Quality Assurance, Co-located Monitor
ID : Industrial Monitor
NR : Non-Regulatory Data
CSN : Chemical Speciation Network

[4] **Monitoring Objective Descriptions:** B = Background, H = Highest Concentration, P = Population Exposure, S = Source Impact

[5] **"Coll"** = collocated sampler

[6] **"Continuous - Coll"** = collocated continuous (BAM) sampler

[7] **Network Affiliation: CSN-STN**

Summary of Proposed Changes to the Existing Ambient Air Quality Monitoring Network

AQS Number	Site Name	Pollutant	2016 Change Summary	Network Plan Reference
30-001-0003	**Dillon**	$PM_{2.5}$	Establish new station to provide informational monitoring data.	Section II.C
30-083-0001	**Sidney- Oil Field**	NO	Discontinuation of Monitoring.	Section II.D
		NO_2		
		NO_X		
		O_3		
		SO_2		
		SO_2 - 5 min		
		PM_{10}		
		$PM_{2.5}$		
30-083-0002	**Sidney 201**	NO	Establish new site to monitor impacts from oil and gas production.	Section II.D
		NO_2		
		NO_X		
		O_3		
		SO_2		
		SO_2 - 5 min		
		PM_{10}		
		$PM_{2.5}$		
30-089-0007	**Thompson Falls**	$PM_{2.5}$	Add parameter to existing site to provide informational monitoring data.	Section II.C

Appendix D

Ambient Air Quality Summary, Calendar Year 2016

Site	Parameter	Units	Annual Values[1]			Data Capt. %	NAAQS Comparison[2]		NAAQS[3]		NAAQS Design Value[4]	
			Min	Max	Ave		# >	# > 80%	Short-term	Extended	Short-term	Extended
Billings - Coburn Road	SO_2	ppb	0	22	0	90	0	0	75	0.5	53	0[5]
Billings - St. Luke's	$PM_{2.5}$	ug/m^3	0.7	17	5.9	87	0	0	35	12	17	6.9
Birney - Tongue River	NO_2	ppb	0	17	0	95	0	0	100	53	6	0.5[6]
	OZONE	ppm	0	0.067	0.029	99	0	9	0.070	--	0.056	--
	PM_{10} STD	ug/m^3	0	90	15	97	0	0	150	--	0[5]	--
	$PM_{2.5}$	ug/m^3	-0.2	22.4	4.4	91	0	0	35	12	13	5.0
Bozeman High School	$PM_{2.5}$	ug/m^3	0.7	34	6.4	91	0	3	35	12	--[7]	--[7]
Broadus - Powder River	NO_2	ppb	0	17	1	60	0	0	100	53	10	1.1[6]
	OZONE	ppm	0	0.069	0.03	98	0	3	0.070	--	0.055	--
	PM_{10} STD	ug/m^3	0	110	20	83	0	0	150	--	0[5]	--
	$PM_{2.5}$	ug/m^3	-0.9	17.6	5.3	90	0	0	35	12	13	5.6
Butte - Greeley School	PM_{10} STD	ug/m^3	3	52	16	96	0	0	150	--	0[5]	--
	$PM_{2.5}$	ug/m^3	-0.1	32.1	6.9	95	0	4	35	12	27	7.9
Flathead Valley	PM_{10} STD	ug/m^3	1	45	11	97	0	0	150	--	0[5]	--
	$PM_{2.5}$	ug/m^3	-0.7	24.5	5.4	98	0	0	35	12	21	7.1
Frenchtown – Beckwith	$PM_{2.5}$	ug/m^3	2.4	43.1	8.6	98	2	4	35	12	24	8.7
Great Falls - Overlook Park	$PM_{2.5}$	ug/m^3	1.6	22	6.3	97	0	0	35	12	--[7]	--[7]
Hamilton	$PM_{2.5}$	ug/m^3	0	54.9	7.9	89	5	6	35	12	27	7.0
Helena - Rossiter	$PM_{2.5}$	ug/m^3	0.4	53.7	7	98	6	9	35	12	29	7.3
	$PM_{2.5}$ COL	ug/m^3	-0.1	51.4	6.4	96	7	9	35	12	--[8]	--[8]
Kalispell - Flathead Electric	PM_{10} STD	ug/m^3	8	87	23	99	0	0	150	--	0[5]	--
Lewistown - Lewistown	NO_2	ppb	0	14	0	78	0	0	100	53	11	0.5[6]
	OZONE	ppm	0.007	0.061	0.033	98	0	0	0.070	--	0.055	--
	PM_{10} STD	ug/m^3	0	48	8	87	0	0	150	--	0[5]	--
	$PM_{2.5}$	ug/m^3	-0.6	18.5	3.5	99	0	0	35	12	10	3.8
Libby - Courthouse Annex	PM_{10} STD	ug/m^3	2	45	15	99	0	0	150	--	0[5]	--
	$PM_{2.5}$	ug/m^3	1.5	34.7	9.7	99	0	5	35	12	26	9.8
Malta - Malta	NO_2	ppb	0	11	0	95	0	0	100	53	7	0.5[6]
	OZONE	ppm	0.003	0.057	0.029	97	0	0	0.070	--	0.055	--
	PM_{10} STD	ug/m^3	1	33	7	98	0	0	150	--	0[5]	--
	$PM_{2.5}$	ug/m^3	-0.5	23	4.4	97	0	0	35	12	11	4.4
Missoula - Boyd Park	OZONE	ppm	0	0.119	0.02	99	1	1	0.070	--	0.053	--
	PM_{10} STD	ug/m^3	1	73	15	98	0	0	150	--	0[5]	--
	$PM_{2.5}$	ug/m^3	1.1	41.2	7.1	98	1	3	35	12	21	7.1
NCore - Sieben's Flat	CO TRACE	ppb	0	839	125	89	0	0	35000	9000	0	0
	NOY	ppb	0	15.6	1.1	94	--	--	--	--	--	--
	OZONE	ppm	0	0.06	0.033	99	0	0	0.070	--	0.057	--
	PM_{10} STD	ug/m^3	0	49	5	96	0	0	150	--	0[5]	--
	$PM_{2.5}$	ug/m^3	-2.7	20.6	2	97	0	0	35	12	10	2.5
	PM_{COARSE}	ug/m^3	0	15	3	97	--	--	--	--	--	--
	SO_2	ppb	0	2.5	0	84	0	0	75	500	2	0
Seeley - Elementary School	$PM_{2.5}$	ug/m^3	5	50.8	17.1	98	28	56	35	12	--[7]	--[7]
Sidney - Oil Field	NO_2	ppb	0	13	0	76	0	0	100	53	10	0.6[6]
	OZONE	ppm	0	0.065	0.032	97	0	2	0.070	--	0.055	--
	PM_{10} STD	ug/m^3	0	75	12	92	0	0	150	--	0	--
	$PM_{2.5}$	ug/m^3	0.4	19.6	5.1	98	0	0	35	12	12	5.6
	SO_2	ppb	0	22	0	83	0	0	75	53	7	0
Thompson Falls High School	PM_{10} STD	ug/m^3	4	97	15	88	0	0	150	--	0.3	--
Whitefish - Dead End	PM_{10} STD	ug/m^3	4	105	19	96	0	0	150	--	0	--

[1] Based on 1-hour average values for gaseous parameters and 24-hour average for particulate. Data set excludes DEQ defined flagged exceptional events.

[2] Short-Term NAAQS standard comparison only. Comparison based on 8-hour rolling average for ozone, 1-hour average values for all other gaseous pollutants, and 24-hour average values for particulates. Comparisons based on highest values observed and does not account for the calculated form of the standard (See Appendix G for actual NAAQS standard). Count of values above the given NAAQS does not necessarily indicate an exceedance occurred.

[3] NAAQS averaging times:

Averaging Time	CO	NO_2	$PM_{2.5}$	SO_2
Short-term	1-hour	1-hour	24-hour	1-hour
Extended	8-hour	Annual	Annual	3-hour

[4] Design Values calculated by the AQS database; unless otherwise noted. '--' Indicates no NAAQS Comparison or Design Value designated or available

[5] Value provided is the number of exceedance as determined by form of the standard.

[6] Not regulatory calculated Design Value. Internally calculated arithmetic mean provided for reference only.

[7] Monitors are non-Federal Equivalent Method (non-FEM) monitors operated for public information only. They are not certified to produce NAAQS-comparison data.

[8] Continuous co-located monitor operated for quality assurance means.

Appendix E
PM2.5 Speciation Analytes

PM2.5 Speciation Analytes

	Parameter	Method
Mass - PM2.5		
PM 2.5u Gravimetric	88502	810
Trace elements (33)		
Aluminum	88104	811
Antimony	88102	811
Arsenic	88103	811
Barium	88107	811
Bromine	88109	811
Cadmium	88110	811
Calcium	88111	811
Cerium	88117	811
Cesium	88118	811
Chlorine	88115	811
Chromium	88112	811
Cobalt	88113	811
Copper	88114	811
Indium	88131	811
Iron	88126	811
Lead	88128	811
Magnesium	88140	811
Manganese	88132	811
Nickel	88136	811
Phosphorus	88152	811
Potassium	88180	811
Rubidium	88176	811
Selenium	88154	811
Silicon	88165	811
Silver	88166	811
Sodium	88154	811
Strontium	88168	811
Sulfur	88169	811
Tin	88160	811
Titanium	88161	811
Vanadium	88164	811
Zinc	88167	811
Zirconium	88185	811
Cations - PM2.5 (NH4, Na, K)		
Ammonium	88301	812
Potassium	88303	812
Sodium	88302	812
Nitrate - PM2.5		
Nitrate (Total)	88306	812
Sulfate - PM2.5		
Sulfate	88403	812
Organic and elemental carbon IMPROVE_A		
E1 IMPROVE	88383	841
E2 IMPROVE	88384	841
E3 IMPROVE	88385	841
EC IMPROVE TOR	88380	831
EC IMPROVE TOT	88357	840
O1 IMPROVE	88374	841
O2 IMPROVE	88375	841
O3 IMPROVE	88376	841
O4 IMPROVE	88377	841
OC IMPROVE TOR	88370	838
OC IMPROVE TOT	88355	839
OP IMPROVE TOR	88378	842
OP IMPROVE TOT	88388	826

Appendix F
PM2.5 FRM / FEM Comparisons

2016 Helena Rossiter School (30-049-0026) FEM/FRM Comparability using FRM samples > 3 µg/m^3: FEM (Met One) (88101-4: 170) - FRM (BGI) (88101-2: 116)

	2016	
FEM/FRM Paired Samples	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES
WINTER(D,J,F)	12	14
SPRING (M,A,M)	7	15
SUMMER(J,J,A)	10	12
FALL (S,O,N)	8	13
TOTAL VALID SETS	37	54

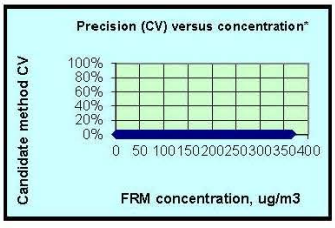
POC 4 Met One BAM installed 01/01/2016

Summary - Candidate ARM Comparability

Applicant:	MT DEQ
Candidate method:	MetOne BAM 1020 FEM for PM2.5 (MC 170) - Class
Test site:	Helena-Rossiter: FEM (MetOne 1020)(88101-4: 170) - FRM (BGI PQ200)(88101-2: 116) - (Site location 30-049

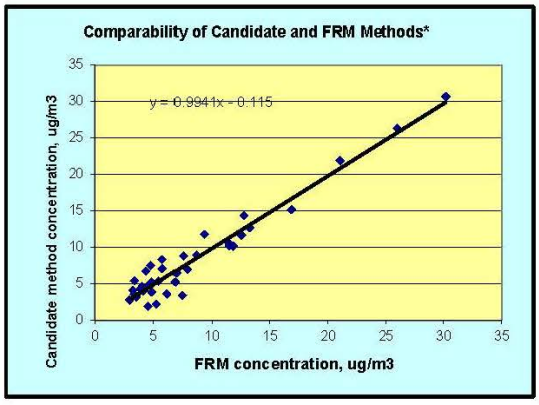
Data sets	Number
Valid data sets available:	37
Number of valid data sets required for ARM Comparison:	90
Number of valid data sets for this test is:	Insufficient
Additional data sets needed:	53

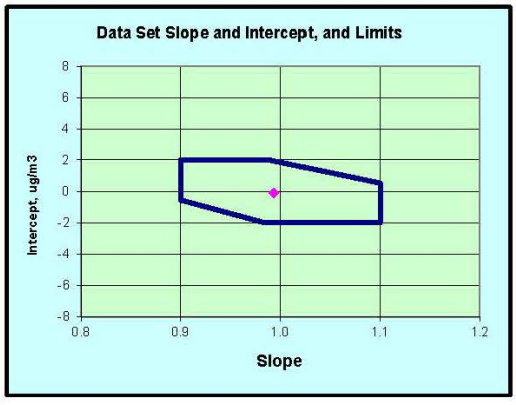
Precision (if data are available)	Data set mean, µg/m^3		Data set precision, µg/m^3		Relative precision (CV)	
	FRM	Candidate	FRM	Candidate	FRM	Candidate
Mean:						
Maximum:	0.0	0.0				
Minimum:	0.0	0.0				
Candidate / FRM Ratio:						
RMS Relative Precision for this site:						
Test requirements - Class III:					10.0%	15.0%
Precision Test Results for site:						



Regression statistics		Slope[1]	Intercept[2]	Correlation (r)
Statistics for this test site:		0.994	-0.115	0.96915
Limits for	Upper:	1.100	1.927	
Class III	Lower:	0.900	-2.000	0.95000
Test Results (Pass/Fail):		PASS	PASS	PASS

[1]Multiplicative bias [2]Additive bias





2014-16 Helena Rossiter School (30-049-0026) FEM/FRM Comparability using FRM samples > 3 µg/m^3: FEM (Thermo) (88101-3: 183) - FRM (BGI) (88101-2: 116)

	2014		2015		2016		2014-16	
FEM/FRM Paired Samples	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES
WINTER(D,J,F)	13	16	10	12	12	14	35	42
SPRING (M,A,M)	7	15	10	16	7	15	24	46
SUMMER(J,J,A)	11	14	13	14	10	12	34	40
FALL (S,O,N)	12	14	9	11	8	13	29	38
TOTAL VALID SETS	43	59	42	53	37	54	122	166

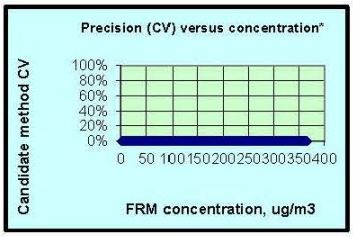
POC 3 Thermo BAM Installed 10/12/2012

Summary - Candidate ARM Comparability

Applicant:	MT DEQ
Candidate method:	Thermo Scientific, 5014i Beta continuous particulate monitor for PM2.5 (MC 183) - Class
Test site:	Helena-Rossiter: FEM (Thermo)(88101-3: 183) - FRM (BGI)(88101-2: 116) - (Site location 30-049-0026)

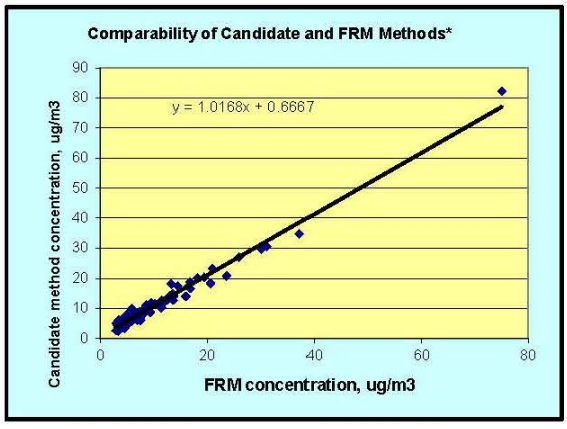
Data sets	Number
Valid data sets available:	122
Number of valid data sets required for ARM Comparison:	90
Number of valid data sets for this test is:	OK
Additional data sets needed:	--

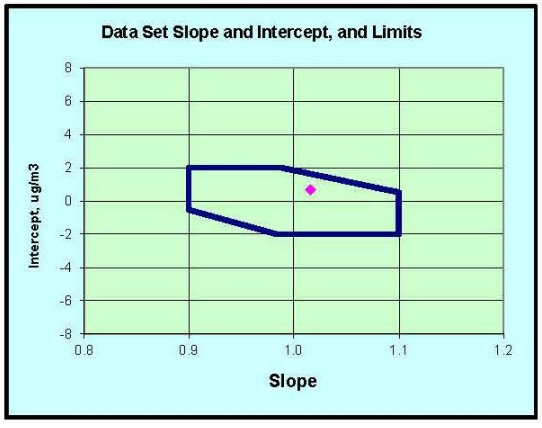
Precision (if data are available)	Data set mean, µg/m^3		Data set precision, µg/m^3		Relative precision (CV)	
	FRM	Candidate	FRM	Candidate	FRM	Candidate
Mean:						
Maximum:	0.0	0.0				
Minimum:	0.0	0.0				
Candidate / FRM Ratio:						
RMS Relative Precision for this site:						
Test requirements - Class III:					10.0%	15.0%
Precision Test Results for site:						



Regression statistics		Slope[1]	Intercept[2]	Correlation (r)
Statistics for this test site:		1.017	0.667	0.98843
Limits for Class III	Upper:	1.100	1.629	
	Lower:	0.900	-2.000	0.95000
Test Results (Pass/Fail):		PASS	PASS	PASS

[1]Multiplicative bias [2]Additive bias





2014-16 Butte Greely School (30-093-0005) FEM/FRM Comparability using FRM samples > 3 µg/m^3: FEM (MetOne) (88101-3: 170) - FRM (BGI) (88101-2: 116)

	2014		2015		2016		2014-16	
FEM/FRM Paired Samples	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES
WINTER(D,J,F)	14	15	12	13	14	15	40	43
SPRING (M,A,M)	10	12	10	15	11	16	31	43
SUMMER(J,J,A)	13	15	10	11	12	15	35	41
FALL (S,O,N)	10	13	13	14	10	14	33	41
TOTAL VALID SETS	47	55	45	53	47	60	139	168

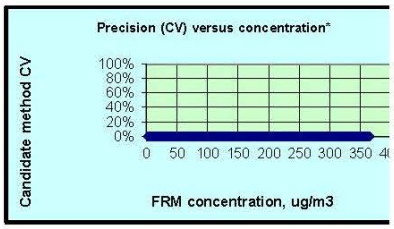
Collocated BGI Installed 10/06/2012

Summary - Candidate ARM Comparability

Applicant:	MT DEQ
Candidate method:	FEM (MetOne BAM 1020) (MC: 170) - Class
Test site:	Butte Greely School:FEM (MetOne)(88101-3: 170) - FRM (BGI)(88101-2: 116) - (Site location 30-093-0005)

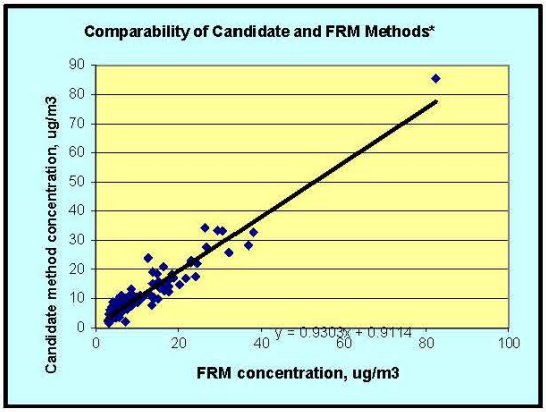
Data sets	Number
Valid data sets available:	139
Number of valid data sets required for ARM Comparison:	90
Number of valid data sets for this test is:	OK
Additional data sets needed:	--

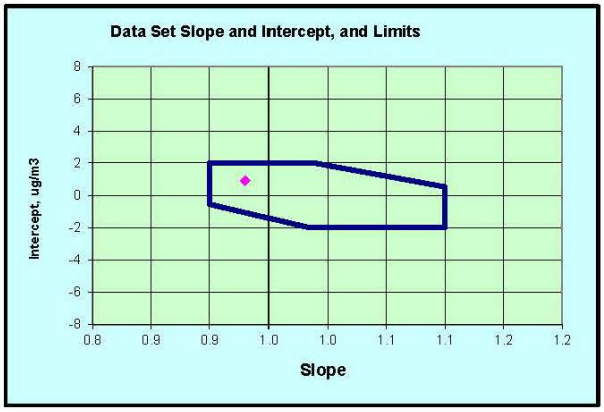
Precision (if data are available)	Data set mean, µg/m^3		Data set precision, µg/m^3		Relative precision (CV)	
	FRM	Candidate	FRM	Candidate	FRM	Candidate
Mean:						
Maximum:	0.0	0.0				
Minimum:	0.0	0.0				
Candidate / FRM Ratio:						
RMS Relative Precision for this site:						
Test requirements - Class III:					10.0%	15.0%
Precision Test Results for site:						



Regression statistics		Slope[1]	Intercept[2]	Correlation (r)
Statistics for this test site:		0.930	0.911	0.95629
Limits for	Upper:	1.100	2.000	
Class III	Lower:	0.900	-1.064	0.95000
Test Results (Pass/Fail):		PASS	PASS	PASS

[1]Multiplicative bias [2]Additive bias





2014-16 NCore - Sieben's Flats (30-049-0004) FEM/FRM Comparability using FRM samples > 3 µg/m^3: FEM (MetOne) (88101-3: 170) - FRM (BGI) (88101-1 & -2: 116)

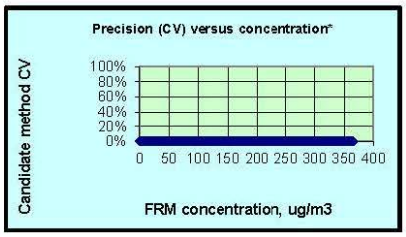
	2014		2015		2016		2014-16	
FEM/FRM Paired Samples	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES	FRM SAMPLES ≥ 3	TOTAL VALID SAMPLES
WINTER(D,J,F)	7	28	5	26	8	30	20	84
SPRING (M,A,M)	10	27	8	30	11	30	29	87
SUMMER(J,J,A)	22	30	23	31	16	31	61	92
FALL (S,O,N)	12	29	14	29	6	29	32	87
TOTAL VALID SETS	51	114	50	116	41	120	142	350

Summary - Candidate ARM Comparability

Applicant:	MT DEQ
Candidate method:	FEM (MetOne BAM 1020) (MC: 170) - Class
Test site:	NCore:FEM (MetOne)(88101-3: 170) - FRM (BGI)(88101-1,2: 116) - (Site location 30-049-0004)

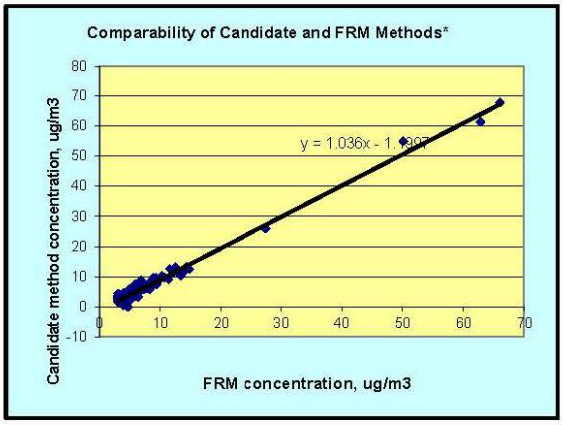
Data sets	Number
Valid data sets available:	142
Number of valid data sets required for ARM Comparison:	90
Number of valid data sets for this test is:	OK
Additional data sets needed:	--

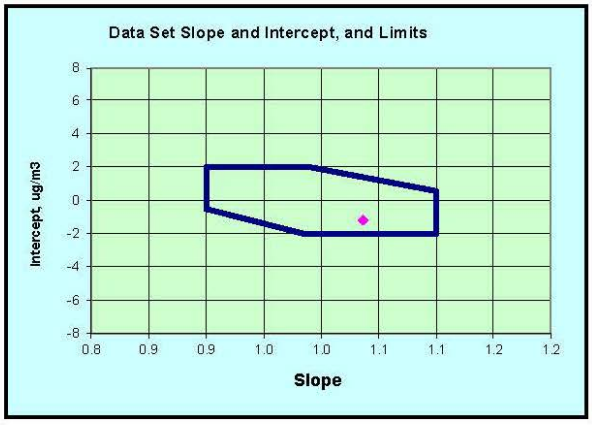
Precision (if data are available)	Data set mean, µg/m^3		Data set precision, µg/m^3		Relative precision (CV)	
	FRM	Candidate	FRM	Candidate	FRM	Candidate
Mean:						
Maximum:	0.0	0.0				
Minimum:	0.0	0.0				
Candidate / FRM Ratio:						
RMS Relative Precision for this site:						
Test requirements - Class III:					10.0%	15.0%
Precision Test Results for site:						



Regression statistics		Slope[1]	Intercept[2]	Correlation (r)
Statistics for this test site:		1.036	-1.200	0.99034
Limits for Class III	Upper:	1.100	1.374	
	Lower:	0.900	-2.000	0.95000
Test Results (Pass/Fail):		PASS	PASS	PASS

[1]Multiplicative bias [2]Additive bias





Appendix G
National and Montana Ambient Air Quality Standards

FEDERAL & STATE AIR QUALITY STANDARDS

Pollutant	Averaging Period	Federal (NAAQS)	State(MAAQS)	NAAQS Standard Type
Carbon Monoxide (CO)	1-Hour	35 ppm [a]	23 ppm [b]	Primary
	8-Hour	9 ppm [a]	9 ppm [b]	Primary
Fluoride in Forage	Monthly	NA	50 µg/g [c]	NA
	Grazing Season	NA	35 µg/g [c]	NA
Hydrogen Sulfide (H_2S)	1-Hour	NA	0.05 ppm [b]	NA
Lead (Pb)	Quarterly	1.5 µg/m^3 [c, o]	1.5 µg/m^3 [c]	NA
	Rolling 3-Month	0.15 µg/m^3 [c]	NA	Primary & Secondary
Nitrogen Dioxide (NO_2)	1-Hour	100 ppb [d]	0.30 ppm [b]	Primary
	Annual	53 ppb [e]	0.05 ppm [f]	Primary & Secondary
Ozone (O_3)	1-Hour	NA [g]	0.10 ppm [b]	Primary & Secondary
	8-Hour	0.070 ppm [h]	NA	Primary & Secondary
Particulate Matter ≤ 10 µm (PM_{10})	24-Hour	150 µg/m^3 [j]	150 µg/m^3 [j]	Primary & Secondary
	Annual	NA	50 µg/m^3 [k]	Primary & Secondary
Particulate Matter ≤ 2.5 µm ($PM_{2.5}$)	24-Hour	35 µg/m^3 [l]	NA	Primary & Secondary
	Annual	12.0 µg/m^3 [m]	NA	Primary
	Annual	15.0 µg/m^3 [m]	NA	Secondary
Settleable PM	30-Day	NA	10 g/m^2 [c]	NA
Sulfur Dioxide (SO_2)	1-Hour	75 ppb [n]	0.50 ppm [p]	Primary
	3-Hour	0.5 ppm [a]	NA	Secondary
	24-Hour	0.14 ppm [a, q]	0.10 ppm [b]	Primary
	Annual	0.030 ppm [e,q]	0.02 ppm [f]	Primary
Visibility	Annual	NA	3 x 10^{-5}/m [f]	NA

[a] Federal violation when exceeded more than once per calendar year.
[b] State violation when exceeded more than once over any 12-consecutive months.
[c] Not to be exceeded (ever) for the averaging time period as described in either state or federal regulation. Pb is a 3-year assessment period for attainment.
[d] Federal violation when 3-year average of the 98th percentile of the daily maximum 1-hr average at each monitoring site exceeds the standard.
[e] Federal violation when the annual arithmetic mean concentration for a calendar year exceeds the standard.
[f] State violation when the arithmetic average over any four consecutive quarters exceeds the standard.
[g] Applies only to NA areas designated before the 8-hour standard was approved in July, 1997. MT has none.
[h] Federal violation when 3-year average of the annual 4th-highest daily max. 8-hour concentration exceeds standard.
[i] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm. (3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
[j] State and federal violation when more than one expected exceedance per calendar year, averaged over 3-years.
[k] State violation when the 3-year average of the arithmetic means over a calendar year at each monitoring site exceed the standard.
[l] Federal violation when 3-year average of the 98th percentile 24-hour concentrations at each monitoring site exceed the standard.
[m] Federal violation when 3-year average of the annual mean at each monitoring site exceeds the standard.
[n] Federal violation when 3-year average of the 99th percentile of the daily maximum 1-hr average at each monitoring site exceeds the standard. Final rule June 22, 2010.
[o] The 1978 Pb NAAQS will remain effective until one year after designations are effective for the October 15, 2008, revised Pb NAAQS (0.15 µg/m^3), except in existing Pb nonattainment areas (East Helena, MT). In East Helena, EPA will retain the 1978 Pb NAAQS until EPA approves attainment and/or maintenance demonstrations for the revised Pb NAAQS.
[p] State violation when exceeded more than eighteen times in any 12 consecutive months.
[q] The 1971 SO_2 NAAQS will remain effective until one year after designations are effective for the June 2, 2010, revised SO_2 NAAQS (75 ppb), except in existing SO_2 nonattainment areas (Laurel and East Helena, MT). In Laurel and East Helena, EPA will retain the 1971 SO_2 NAAQS until EPA approves attainment and/or maintenance demonstrations for the revised SO_2 NAAQS.

Appendix H
Sidney Area Monitoring Station Modification

Sidney Area Station Modification

This Modification notice reflects relocation of monitoring in Sidney area to ensure a greater degree of certainty with respect to site access and to minimize risk to DEQ personnel attempting to reach the station during inclement weather. Monitoring at the former Sidney-Oil Field Site (30-083-0001) was discontinued and a new station representing the Sidney area was established approximately ten miles to the northwest of the existing station.

Detailed siting information for the newly established station and each sampler is relayed within the following tables.

Site Information:

Site Name:	Sidney 201		
AQS Site ID:	30-083-0002		
Physical Location:	**Address**	**County**	**Geographical Coordinates**
	Intersection of State Highway 201 and County Road 326	Richland	47°52”04.44” N / 104°40”36.71” W
Site Elevation:	713 meters		
Topography/Terrain:	Rolling with no significant topographical features near the vicinity of the site.		
Ground Cover:	Agricultural grazing land/vegetation		

Obstructions/Interferents:

Obstructions ►	**Tree Dripline**	**Tree**	**Building**	**Support Structure**	**Other:**	3-Pole Electrical Transmission line
Distance:	NA	NA	NA	NA	14. meters	
Height Above Probe:	NA	NA	NA	NA	9.0 meters	
Direction:	NA	NA	NA	NA	240°	
Airflow:	unrestricted					

	Roadway	**Distance**	**Direction**	**Daily Traffic Count**	**Type of Roadway**
Roadway Influence	CR 137	1.58 kilometers	North	Unknown	Unimproved
	CR 326	32 meters	East	Unknown	Improved single lane
	State Hwy 201	32 meters	South	200 [2015 data]	Improved – 2-lane
	CR 324	3.19 kilometers	West	Unknown	Unimproved

Source Influence	**Distance to nearest**	**Direction**	**Type**
Point Source ►	5.41 km	135°	Compressor Station
Area Sources ►	0.13 km	180°	Oil & Gas Well Pad and Product Storage Tanks
Flues/Incinerators ►	0.13 km	180°	Flare from vapor recovery unit on O&G well pad

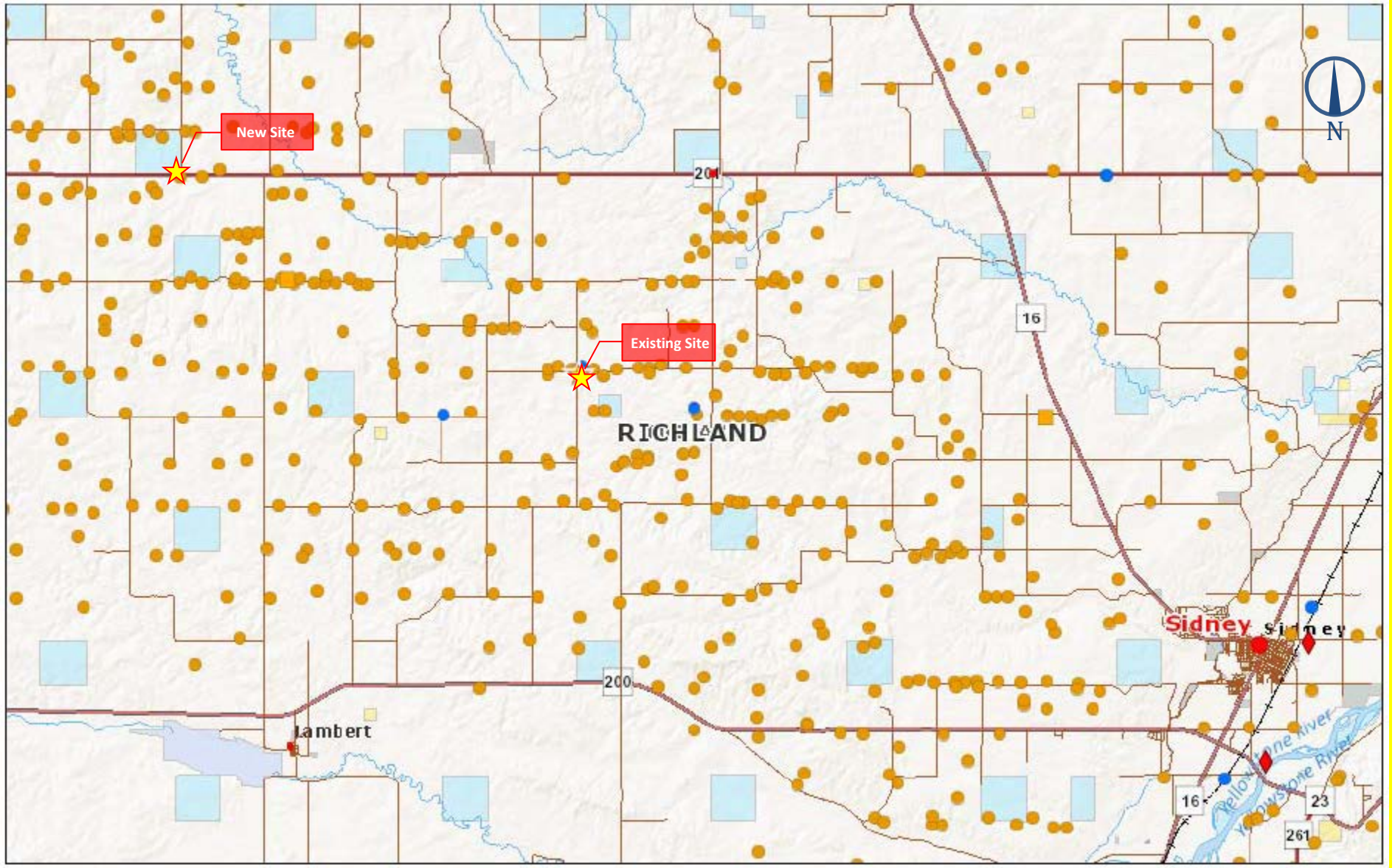
Monitored Pollutant Parameter Detail:

Parameter ►	**PM-10**	**PM2.5**	**NO/NOx/NO2**	**Ozone**	**SO2/SO2-5 min.**
Monitor Objective	Source Impact	Source Impact	Source Impact	Source Impact	Source Impact
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Spatial Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Method Code	150	183	599	047	600
Probe Height	4.7 meters	4.7 meters	4.0 meters	4.0 meters	4.0 meters

Meteorological Parameter Detail:

Parameter▼	**Equipment**	**Sensor Height**
Wind Speed	Climatronics Sonic Anemometer	4.7 meters
Wind Direction		4.7 meters
Sigma Theta		4.7 meters
Temperature	Thermo Fisher 5014i Temperature Probe	4.7 meters

Regional Map (5-30 miles)



- AQB Registered Oil & Gas Well Pads [ARM 17.8.1703]
- AQB Minor Source Permitted Facility [ARM 17.8.743]
- AQB Synthetic Minor Permitted Facility [ARM17.8.1204]
- AQB Major Source Permitted Facilities Pads [ARM 17.8.1204]

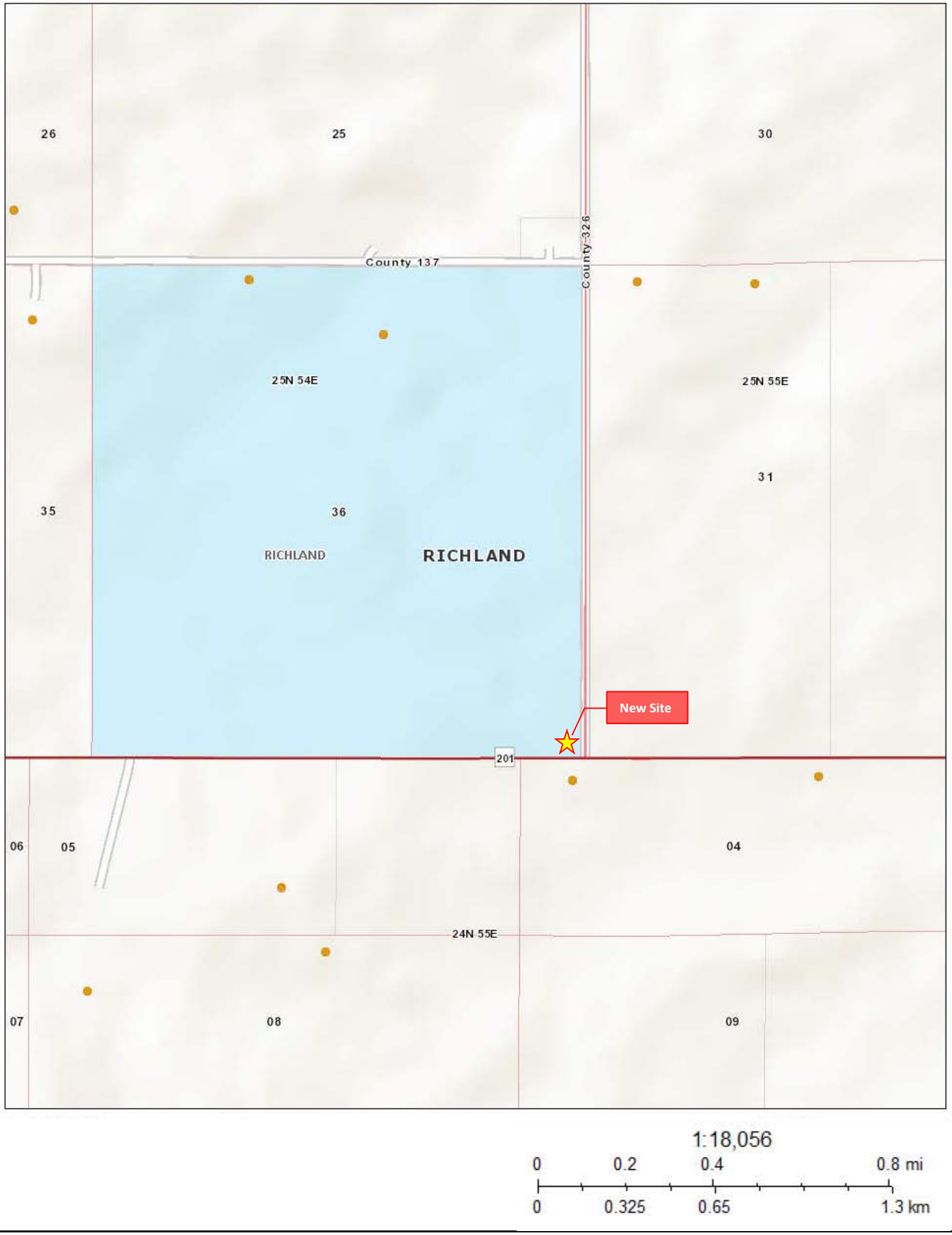
1:288,895

0 2.5 5 10 mi

0 4 8 16 km

Montana State Library
MTDEQ

Site Map (1/4 - 1 mile)



Site Photographs

North

South

East

West

Appendix I
Public Inspection & Comment

The DEQ Air Quality Monitoring Network Plan was made available for public inspection as required by 40 CFR 58.10(a)(1) on May 30, 2017. No comments were received.