REQUEST FOR REDESIGNATION OF THE THOMPSON FALLS PM_{10} NONATTAINMENT AREA & ATTAINMENT AREA LIMITED MAINTENANCE PLAN

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DEQ Montana Department of Environmental Quality

Air Quality Bureau

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APPENDICES

LIST OF FIGURES

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ACRONYMS

AIRS	Aerometric Information Retrieval System
ARM	Administrative Rules of Montana
BER	Board of Environmental Review
CAA	Federal Clean Air Act
CDV	Critical Design Value/Concentration
CMB	Chemical Mass Balance
DEQ	Montana Department of Environmental Quality
DV	Design Value/Concentration
EPA	U.S. Environmental Protection Agency
FR	Federal Register
LMP	Limited Maintenance Plan
MDT	Montana Department of Transportation
MOS	Margin of Safety
NAA	Nonattainment area
NAAQS	National Ambient Air Quality Standard(s)
NEI	National Emission Inventory
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PM_{10}	Particulate Matter of 10 Microns or Less
PSD	Prevention of Significant Deterioration
RACM	Reasonable Available Control Method
RACT	Reasonably Available Control Technology
RFP	Reasonable Further Progress
SIP	State Implementation Plan
tpy	tons per year
VMT	Vehicle Miles Traveled
$\mu g/m^3$	micrograms per cubic meter

REQUEST FOR REDESIGNATION OF THE THOMPSON FALLS PM_{10} NONATTAINMENT AREA AND APPROVAL OF A LIMITED MAINTENANCE PLAN

1. Introduction

The purpose of this document is to formally request redesignation of the Thompson Falls nonattainment area (NAA) for particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) from 'nonattainment' to 'attainment' with a limited maintenance plan (LMP). This document supports the request by demonstrating each of the redesignation requirements set out in Sections 107, 110 and Part D of the Clean Air Act (CAA), including:

- A determination that the area has attained the PM_{10} National Ambient Air Quality Standards (NAAQS);
- An approved State Implementation Plan (SIP) for the area under Section 110(k) of the CAA;
- A determination that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP and other federal requirements;
- A fully approved maintenance plan under Section 175A of the CAA; and
- A determination that all Section 110 and Part D requirements of the CAA have been met.

This section provides detail on the history of the NAA designation, major source contributors, and control plan details. Subsequent sections provide support for each of the redesignation requirements outlined above including monitoring data, SIP provisions, emission inventory, and LMP specifics.

1.1. NAA History

The United States Environmental Protection Agency (EPA) promulgated new PM_{10} NAAQS on July 1, 1987 (52 Federal Register (FR) 24634). The primary (health-based) standards were set at 150 micrograms per cubic meter ($\mu g/m^3$), not to be exceeded more than once per year on average over a 3-year period, and 50 $\mu g/m^3$ annual arithmetic mean, averaged over 3 years. The secondary (public welfare-based) standards were set the same as the primary standard.

On December 21, 1993 in 58 FR 67334, the EPA designated Thompson Falls as a 'moderate' PM_{10} NAA for the 24-hour PM_{10} NAAQS, effective January 20, 1994. This designation resulted from multiple exceedances of the 24-hour PM_{10} NAAQS recorded between 1988 through 1991, ranging from 156 to 261 $\mu g/m^3$. Following the NAA designation, Thompson Falls has had three exceedances of the 24-hour PM_{10} NAAQS, all due to wildfire exceptional events.

On June 26, 1997, Montana's Governor Racicot submitted the initial Thompson Falls control plan to EPA for adoption into the Montana SIP. EPA subsequently requested that Montana withdraw all but the control measures and enforceability chapters of the PM_{10} control plan to align with EPA's policy to redesignate NAAs under an administrative revocation process. So, on February 28, 1999, Governor Racicot requested withdrawal of the June 26, 1997 submission except for the Board of Environmental Review (BER) adopted control strategies and enforceability chapters. Subsequently, a court decision concerning the validity of the revised NAAQS eliminated the administrative revocation process. It was then determined that Montana could request approval of the corrected Thompson Falls PM_{10} control plan and emission inventory under the Clean Data Areas Approach policy. On June 13, 2000, Governor Racicot submitted a request for approval of a revised Thompson Falls NAA control plan and emissions inventory. On January 22, 2004 (69 FR 3011), EPA approved the Thompson Falls control plan submissions of June 26, 1997 and June 13, 2000.

Thompson Falls is a small community located in Sanders County. The county is located in northwestern Montana as shown in Figure 1.1. The city sits on the north side of the Clark Fork River Valley; the Clark Fork River has been dammed at a point near the center of town to form what is called the Thompson Falls Reservoir. The valley floor is at an elevation of 763 m with mountains rising to 2,135 m on the north and south, forming canyon walls. Due to the mountain valley configuration, Thompson Falls often experiences temperature inversions during the fall and winter months. Local winds are generally from the east or from the west; however, the predominant direction is from the west.

Figure 1.2 shows the NAA and the outline of the City of Thompson Falls. The NAA attainment area is in the shape of two joined rectangles with a small fin on the northside of the east area. The City of Thompson Falls lies within the northeastern portion.

Particulate monitoring in Thompson Falls dates back to the 1980's. Total Suspended Particulate (TSP) sampling was conducted from 1983 to 1987. While there were exceedances of the federal TSP standard, Thompson Falls was not designated as nonattainment for TSP because it received fugitive dust exemptions under the terms of the 1977 CAA. Since 1985, PM_{10} monitoring data has been collected in Thompson Falls, and this data has been quality-assured to meet the requirements of 40 Code of Federal Regulations (CFR) Parts 50, 53, and 58. Thompson Falls' PM_{10} monitor was installed on the Sanders County Courthouse roof (station number 30-089-0003) in May 1985. The PM_{10} data from 1985 to 1987 was limited but did record concentrations approaching the proposed PM10 NAAQS. In February 1988, the Courthouse site recorded an exceedance of the 24-hour PM_{10} standard and by July the Department initiated daily sampling, which continued until 1992. In 1990, CMB monitors were installed at the Railroad site (30-089-0005) and at the Muster Ranch site (30-089-0006). In 1999, a decision to re-roof the courthouse forced the Department to end the site on July 8, 1999. By October 3, 1999, a new site was established (the current location) at the Thompson Falls High School (30-089-0007).

Figure 1.1 - Sanders County, Montana

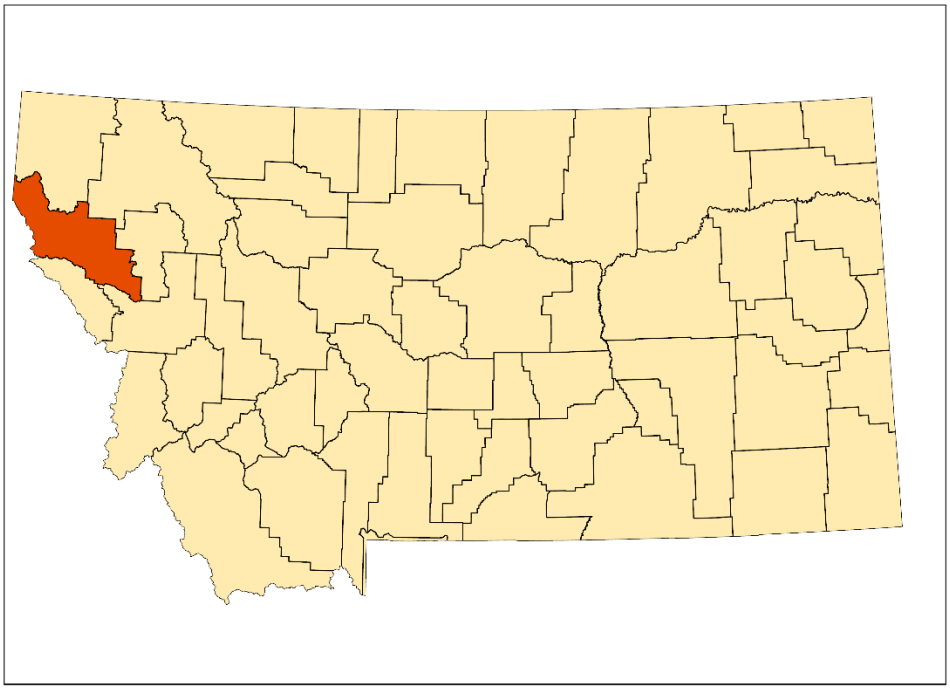
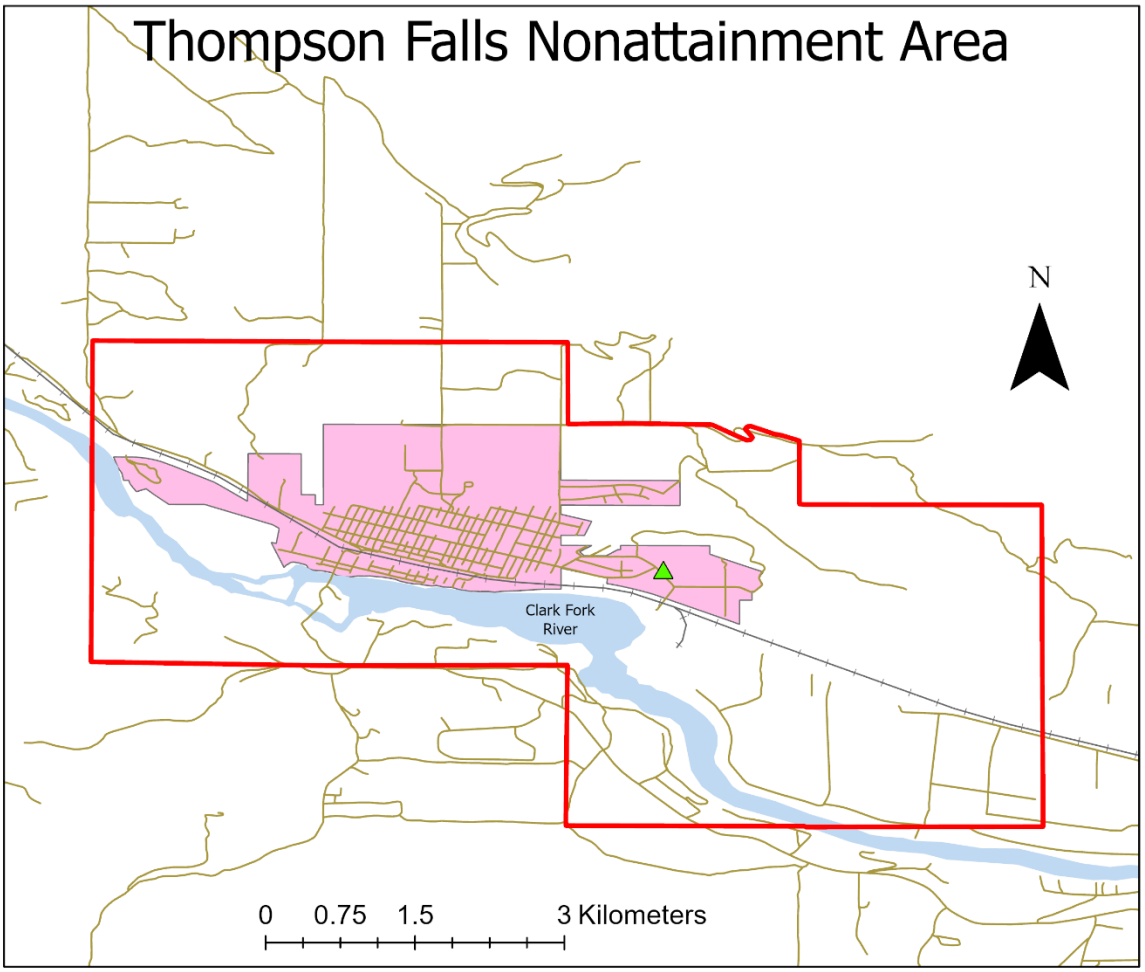
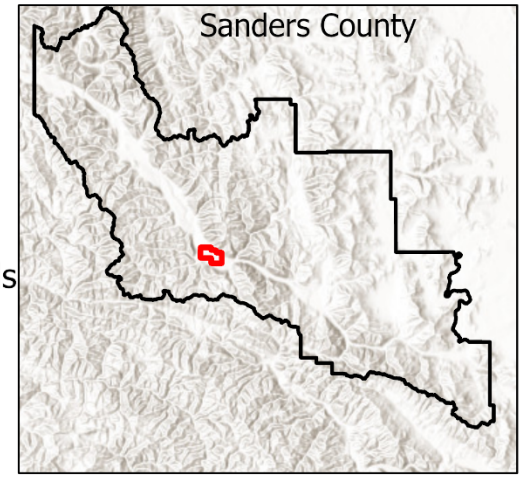


Figure 1.2 - Thompson Falls PM_{10} NAA Boundary



Legend
- PM10 Monitor
- Thompson Falls NAA
- Railroads
- Roads
- Incorporated City of Thompson Falls



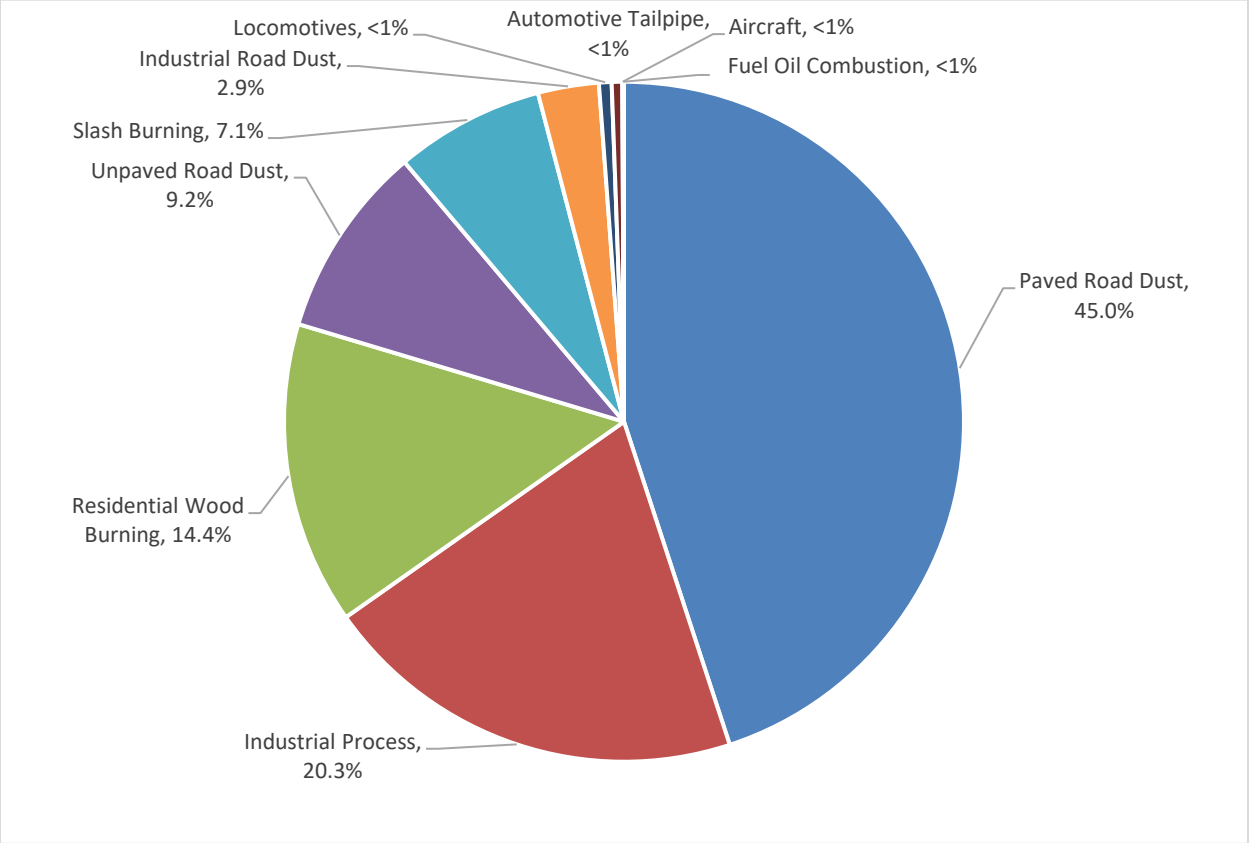
Much of the commercial development of Thompson Falls is along MT Highway 200 that bisects the NAA from a southeast to a northwest direction. Residential development is located north to the commercial area within the NAA.

1.2. Historical Sources of PM_{10}

To develop strategies to reduce PM_{10} emissions within the newly identified NAA, Montana Department of Environmental Quality (DEQ) investigated what the major emission sources were in the area during the 1991 baseline year. The Thompson Falls PM_{10} implementation plan included a gaussian dispersion modeling analysis, a chemical mass balance (CMB) analysis, an optical microscopy report, and the baseline emission inventory. The approved implementation plan consists of an emission control plan that controls fugitive dust emissions from roads and parking lots. Only one industrial source, Crown Pacific (W-I Forest Products) sawmill was identified as a moderate source contributor to PM_{10} impacts; the sawmill closed in 1995.

As shown in the June 26, 1997 SIP submittal, the majority of emissions are from area sources. Re-entrained road dust from paved and unpaved roads had the largest contribution at 54.2% of the annual emissions. Industrial sources contributed 20.3% percent of the emissions. A breakdown of 1991 baseline emission sources is shown in Figure 1.3. The 1997 submitted implementation plan also described that 79.7 percent of the PM_{10} source contribution was crustal emissions, while 20.3 percent were from combustion emissions.

Figure 1.3 - 1991 PM_{10} Emissions in Thompson Falls During Control Plan Development



1.3. Control Plan Details

As described above, the Thompson Falls PM_{10} implementation plan was initially submitted to the EPA on June 26, 1997, and revisions were submitted on June 13, 2000. EPA approved the implementation plan on January 22, 2004 (69 FR 3011). The approved control plan, as a whole, satisfied the requirements for reasonably available control measures (RACM) of area sources. The control plan focused on reducing fugitive dust emissions from roads and parking lots; the City chose not to implement a voluntary wood burning curtailment program. Since the control strategy involves only reducing re-entrained road dust, no major stationary source Reasonable Available Control Technology (RACT) analyses were performed.

MDT-Thompson Falls Maintenance Agreement to Control Re-Entrained Road Dust

The City of Thompson Falls, MDT (Montana Department of Transportation), and DEQ entered into a road maintenance agreement, adopted in 1997, as the primary PM-10 control strategy. Through the agreement, Highway 200 and a network of paved local priority roads are swept at regulated intervals. Additional provisions were made for sanding material and the paving of parking lots, alleys, and unpaved roads.

Under the agreement, MDT is responsible for the street sweeping of Highway 200 beginning at milepost 49.50 at the western limits of the NAA to the Harvest Food store east of town,

approximately 4.83 km of road. The City of Thompson Falls is responsible for sweeping approximately 5.80 km, comprised of the following priority local roads within the city limits:

- Golf from City Shop to Haley
- Haley from Golf to Ferry
- Bus Loop at Junior High
- Ferry from Junior High to Preston
- Preston from Ferry to East Crossing
- East Crossing from Preston to Main
- Preston from East Crossing to Clay
- Clay from Preston to 5th
- West Crossing from Main to Gallatin
- Washington from Preston to 4th
- Spruce from Preston to 3rd
- Gallatin from Preston to 3rd
- Jefferson from Preston to 3rd

Each agency is bound by an opacity limit which defines a "dirty" street as one that has visible emissions upon the passing of a vehicle. When roads reach this condition, the city has four business days to street sweep the local priority routes, and MDT has two business days to sweep Highway 200. A contingency measure is included in case of a PM-10 exceedance that the street sweeping schedules will be increased from four to two business days for the City and from two to one business days for MDT.

During summer months (May – October), street sweeping is performed on as-needed basis by the City for the priority routes and by MDT for Highway 200. In winter months (November – April), prioritized street sweeping is to commence on the first working day after any priority route becomes either temporarily or permanently ice-free and if temperatures are expected to remain above 35 degrees Fahrenheit for the proceeding 24-hour period. Unless interrupted by additional snowfall or temperatures dropping below 35 degrees Fahrenheit, priority routes must be swept clean within the specified timeframe (two business days for MDT, and four business days for the City of Thompson Falls). If interrupted, the prioritized street sweeping process must be re-started from the beginning.

Additional Maintenance Agreement Provisions

According to provisions in the maintenance agreement, within the Thompson Falls NAA, the City and MDT shall only apply sanding or chip seal material on paved roads and parking lots that have a durability of greater than or equal to 9 percent wear loss as defined by the Montana Modified L.A. Abrasion test. The sanding material used is to have a material content smaller a 200 mesh that does not exceed 4.0 percent oven dry weight as determined by a standard wet sieving method.

Additionally, within the Central Business District (Main, Pond, and Pearl Streets and the Clark Fork River), the City of Thompson Falls may not construct any new street or road unless it is paved. A

new street or road is defined as any street, road, drive through, or alley which is greater than 50 feet in length, has a projected average traffic volume greater than 50 vehicles per day, and on which construction commenced or will commence after January 1, 1997. Per the maintenance agreement, the City may also not construct any new parking lots with a capacity greater than 15 vehicles or more than 50 vehicles/day turnover unless the parking lot is paved.

A copy of the maintenance agreement is included in Appendix D.

2. REQUEST FOR THOMPSON FALLS NAA REDESIGNATION TO ATTAINMENT

Section 107(d)(3)(E) of the CAA establishes five requirements that must be met before a NAA can be considered for redesignation to attainment. Guidance from the September 4, 1992 Calcagni Memo for *Procedures for Processing Requests to Redesignate Areas to Attainment* and applicable provisions of the CAA, provide the basis for redesignation and maintenance of the 1987 24-hour PM_{10} NAAQS for the Thompson Falls NAA.

This section of the document addresses each of the five requirements (as listed in Section 1) and demonstrates that the area has attained and will maintain compliance with the 1987 PM_{10} NAAQS. While these conditions must be met before redesignation of an area from nonattainment to attainment may occur, the Calcagni memo allows that a state may submit both the redesignation request and maintenance plan concurrently.

2.1. CAA §107(d)(3)(E)(i) – Determination that the Area Has Attained the PM_{10} Standards

The Calcagni memo indicates that determining if an area has attained a NAAQS is based on two components. First, the area may be considered attaining the NAAQS if the number of expected exceedances per year for PM_{10} is equal to or less than 1.0. In making this PM_{10} showing, data must rely on three complete, consecutive calendar years of quality-assured air quality monitoring data, collected in accordance with 40 CFR Part 50, Appendices H and K. The second component of this demonstration relies upon supplemental, EPA-approved air quality modeling. However, when dealing with a limited number of initial PM_{10} NAAs that were designated as moderate NAAs, dispersion modeling is not required. The Thompson Falls NAA followed the federal adoption of the PM_{10} standard and received the designation of being a moderate NAA without using dispersion modeling. Therefore, no air quality modeling is required for this demonstration of attainment.

The PM_{10} 24-hour standard of 150 $\mu g/m^3$ is not to be exceeded more than once per year on average over 3 years. Since 1985, PM_{10} monitoring data has been collected in Thompson Falls and has been quality-assured to meet the requirements of 40 CFR Part 58. Table 2.1 shows the number of monitored exceedances per year for the most recent five years of quality-assured monitoring data, 2015 through 2019. Table 2.1 shows both the number of exceedances and the number of exceedances with concurred exceptional events removed. Note that three calendar quarters of data used were below the 75% reporting threshold, making the quarters incomplete according to 40 CFR Part 50, Appendix K. Data substitution in accordance with EPA guidelines was, therefore, utilized to mitigate the incomplete data; this is discussed further in Appendix E.

Table 2.2 shows the 3-year average of these exceedances along with the 5-year average. Both tables demonstrate that when concurred exceptional events are removed from the data set, the remaining data are below the 1987 PM_{10} NAAQS.

Table 2.1 - Thompson Falls' Recent 5-year 24-hour PM_{10} Exceedances

	2015	2016	2017	2018	2019
Number of Exceedances	0	0	3	0	0
Number of Exceedances Excluding Exceptional Events	0	0	0	0	0

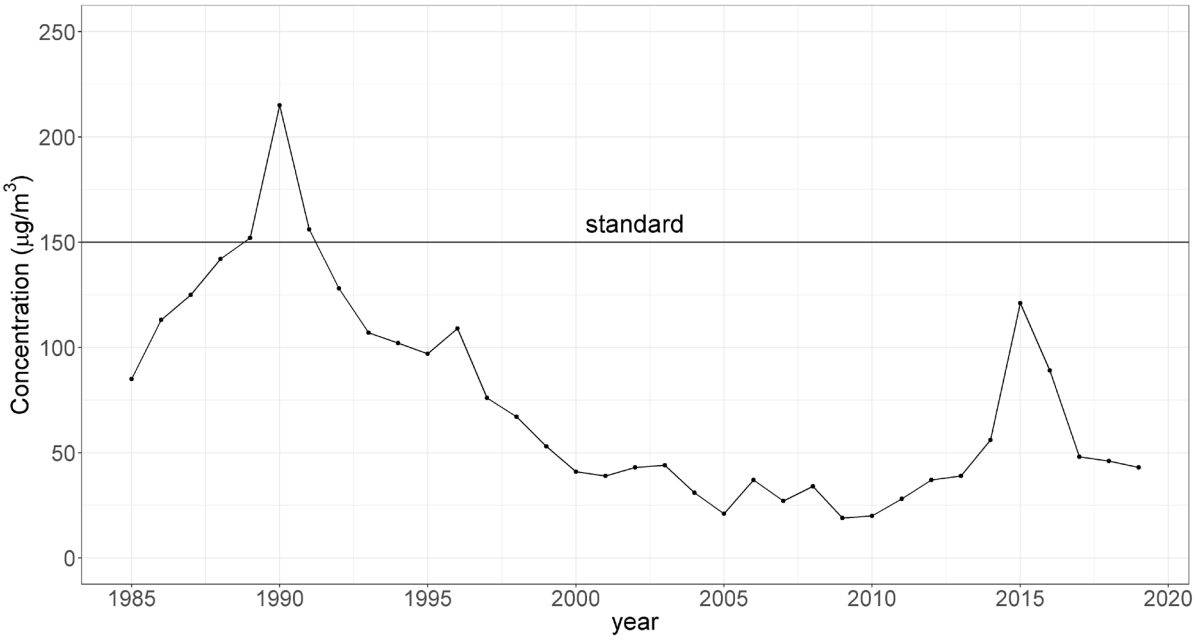
Table 2.2 - Thompson Falls' Recent 3-year Averages of the 24-Hour PM_{10} Exceedances

	2015-2017	2016-2018	2017-2019	5-year Avg.
3-year Exceedance Averages	1	1	1	1
3-year Exceedance Averages Excluding Exceptional Events	0	0	0	0

The data in Figure 2.1 has been collected and reported in accordance with the quality assurance requirements of 40 CFR Part 58, Appendix A. All flagged events have been removed both with and without EPA regional concurrence. This figure is for informational purposes only and does not represent the area's design value[1], but the second highest 24-hour value of PM_{10} recorded during each calendar year. As shown in the figure, the second highest value recorded annually that was not influenced by wildfires has consistently remained below the PM_{10} NAAQS since 1991.

1. Design value = design concentration.

Figure 2.1 - Thompson Falls' Second Highest PM_{10} 24-hour Averages (µg/m^3) with Flagged Exceptional Events Removed



Using the monitored values, a local design value has been calculated for Thompson Falls which is a statistic that describes the air quality relative to the level of the NAAQS. The design value is calculated over the most recent three consecutive 3-year intervals. As shown in Table 2.3, Thompson Falls' 5-year average design value is 98 µg/m^3 using the "table lookup" method outlined in the 1987 *PM_{10} SIP Development Guidance*. The table lookup method identifies which monitored data value is to be used as the design value. This is based on the number of measurements collected by the monitor during the 3-year period. The design value calculation excludes regionally concurred exceptional events. Concurred exceptional events only include events where the NAAQS has been exceeded and that fulfill the requirements of the wildfire exceptional events rule, including being not reasonably controllable and being naturally caused. Documentation of Montana's submittal of these exceptional events to EPA for concurrence is included in Appendix A. Additional days with wildfire impact below the NAAQS are still included in the design value calculation.

Table 2.3 - Thompson Falls' Recent 5-year 24-hour PM_{10} Design Value Excluding Regionally Concurred Exceptional Events

	2015-2017	2016-2018	2017-2019	5-year Avg.
Number of Measurements	1,073	1,078	1,062	--
Data Value to Use	4th Highest	4th Highest	4th Highest	--
Design Value (µg/m³) (Table Lookup Method)	135	89	70	98

Note: Only concurred exceptional events greater than 154 µg/m³ were excluded from the data.

In addition to the monitoring results demonstrating that Thompson Falls has attained the 24-hour PM_{10} NAAQS since 1993, the EPA has determined that the Thompson Falls PM_{10} NAA has attained the PM_{10} NAAQS by January 20, 2000, per 40 CFR 52.1374 under the clean data area approach. This determination was based on air quality monitoring data from 1998, 1999, and 2000, per 66 FR 55102. Therefore, Thompson Falls meets the requirement of CAA §107(d)(3)(E)(i).

2.2. CAA §107(d)(3)(E)(ii) – Approved Implementation Plan for the Area Under Section 110(k)

On June 26, 1997, DEQ submitted the initial control plan. Revisions to the control plan were submitted on June 13, 2000. The EPA approved the Thompson Falls implementation plan on January 22, 2004 (69 FR 3011)) meeting the requirement of CAA §107(d)(3)(E)(ii).

2.3. CAA §107(d)(3)(E)(iii) – Determination that the Improvement in Air Quality is Due to Permanent and Enforceable Reductions in Emissions Resulting from Implementation of the SIP and Other Federal Requirements

This section demonstrates that emission reductions in the Thompson Falls NAA are both permanent and enforceable and are a result of SIP and other federal requirements.

SIP Provisions

The initial emission inventory was established in the *Thompson Falls PM-10 Emission Inventory* prepared by DEQ in April 1992 and used in the June 20, 1997 *Thompson Falls PM-10 Control Plan*. These 1991 emissions are shown in Table 2.4 along with the most current available emissions for the area that are from the 2017 national emission inventory (NEI) (as described in Appendix B). The emissions have decreased by 29 percent of the 1991 baseline levels. These reductions represent the effectiveness of the measures included in the maintenance agreement between the City of Thompson Falls and MDT. Road dust emissions on paved roads in 2017 were 0.57% of the baseline emissions. Unpaved roads show an increase in emissions; however, this estimate is conservative due to scaling from the county-level emission inventory. The NEI emissions were scaled based on

vehicle miles traveled (VMT) in Thompson Falls relative to VMT in Sanders County. See Appendix B for more details.

According to the 1991 emission inventory, forest slash burning was conducted in the mountains around Thompson Falls during the fall of 1990. 58 slash burns were conducted in the vicinity during the study period. For the 2017 NEI data for prescribed burns, scaling for the Thompson Falls NAA was calculated using the tons burned in the NAA vicinity divided by the tons burned in tons burned in Sanders County.

Table 2.4 - Thompson Falls, MT - PM_{10} Emission Summary

Source Categories	Actual Annual Baseline PM_{10} Emissions 1991 (tons)	2017 PM_{10} Emissions (tons)
Area Sources		
Paved Roads	366.6	2.1
Unpaved Local Roads	46.1	84.2
Residential Wood Burning	72.1	6.61
Automotive Tailpipe	2.6	0.4
Locomotives	2.8	27.9
Slash Burning	35.8	325.4
Aircraft	0.2	0.7
Fuel Oil Combustion	0.2	0.08
Industrial Process	101.8	7.29
Industrial Road Dust[1]	14.4	NA
Non-Road Mobile	NA	0.84
Total	642.6	455.5
Industrial Sources		
Crown Pacific Sawmill	76.9	NA
Thompson River Lumber[2]	33.5	5.14
IFG Kamp, LLC[2]	NA	46.60
US Antimony Mine & Mill[2]	NA	4.49

[1]Industrial Road Dust is not identified in the 2017 NEI data.

[2] 2019 data used, rather than 2017.

Emissions from the locomotives in the 2017 NEI show an increase above the 1991 emissions. This most likely represents a strong national economy, more so than a change in local population or

change in local economy because much of the rail activity is simply passing through Thompson Falls and not activity that originates in the area.

For the industrial sources, six industry sources were identified in the emission inventory area: Crown Pacific Sawmill, Thompson River Lumber, National Log Construction, R&R Industries, Thompson Falls Post & Pole, and Watter Brothers Lumber. All sources, except Watter Brothers Lumber, were included in the 1991 emission inventory modeling; Watter Brothers Lumber was excluded as it operated less than 2 percent of the time during the base year. Only Crown Pacific and Thompson River Lumber were included in the baseline emission inventory as point sources; the other three were modeled as area sources. This approach was based on the fact that the two point sources contributed 99 percent of the total annual PM_{10} emitted by industries. Crown Pacific Sawmill was the only source considered a moderate source contributor in the 1991 baseline inventory; the sawmill closed in 1995. In 2019, three industry sources were identified with emissions greater than 1 tpy, as shown in the table above.

The Thompson Falls NAA has remained protected from air quality impacts with the maintenance agreement in place and permitting regulations. DEQ has permitting rules in Administrative Rules of Montana (ARM) 17.8.901 through 17.8.906 for major stationary sources or major modifications locating within NAAs. The rules require all new sources or modifications to use the lowest achievable emission rates (LAER). The source must obtain emission reduction offsets in tpy which provide a positive net air quality benefit in the NAA using a 1 to 1 offset and be from other emission sources within the same NAA. There must be demonstrated improvement to the PM_{10} NAA with permanent, quantifiable, and federally enforceable emission reductions. A reduction of actual emissions, not potential emissions, must occur before a new source can be permitted to operate.

Montana has a federally enforceable permitting program for minor sources that emit 25 tpy or more of PM_{10} to ensure the NAAQS are protected. In April 2019, Montana began requiring registration of all sized asphalt plants, concrete plants, mineral crushers, and mineral screens. Previously, DEQ's practice for these portable sources was to require more stringent limits and conditions for their operation within a NAA or within 10 kilometers of a NAA to ensure that the portable operations do not result in additional degradation of air quality in the affected NAA. The registration program establishes conservative operational restrictions on these portable sources to prevent degradation of the air quality in NAAs.

These significant emission reductions have occurred since the baseline year. Population in the City of Thompson Falls decreased slightly from 1,319 in 1990 to 1,313 in 2010; however, population has grown in the city from 1,313 in 2010 to 1,427 in 2019 (US Census Bureau; Montana CEIC). The year-over-year population growth rate for 2018 to 2019 was 2.2% for both Thompson Falls and Sanders County (Montana CEIC). The NAA encompasses the City of Thompson Falls as well as

portions of the county, so the population change within the NAA is unpredictable, but likely to be on par with the growth within Thompson Falls and the county.

Other Federal Requirements

According to the Calcagni memo, to demonstrate the improved air quality is from permanent and enforceable emission reductions, a state shall estimate the percent reduction achieved from federal measures such as the Federal Motor Vehicle Control Program and fuel volatility rules as well as control measures that have been adopted and implemented by the state. The Federal Motor Vehicle Control Program controls tailpipe emissions and evaporative emission standards for new vehicles. Tailpipe emissions and fuel vaporization were a small fraction of the Thompson Falls NAA emissions during the baseline year of 1991. Automotive tailpipe emissions have decreased since the baseline year.

These emission changes demonstrate that the control measures adopted by the SIP and other federal requirements for fugitive area sources have effectively lowered the PM_{10} levels in Thompson through permanent and enforceable requirements meeting the requirement of CAA §107(d)(3)(E)(iii).

2.4. CAA §107(d)(3)(E)(iv) – Fully Approved Maintenance Plan Under CAA Section 175A

This request for redesignation is being submitted concurrently with a maintenance plan (Section 3.0). As described in CAA Section 175A(c), until a maintenance plan is approved, all SIP requirements for the NAA will remain applicable. Section 3.0 of this document addresses the necessary maintenance plan elements. With the EPA's concurrence, the area will have a fully approved maintenance plan providing for continued attainment of the PM_{10} NAAQS for 10 years meeting the requirement of §107(d)(3)(E)(iv).

2.5. CAA §107(d)(3)(E)(v) – Determination that the Department Has Met all Requirements Applicable to the Area Under Section 110 and Part D of the CAA

Prior to redesignation, a state containing a NAA must demonstrate compliance with all requirements applicable to the area under Section 110 and Part D of the Act. This means the state must meet all requirements that applied to the area prior to, and at the time of, the submission of a complete request for redesignation to attainment.

CAA Section 110

Section 110(a) of the CAA contains the general requirements for a SIP. Only Section 110 requirements that are linked with an area's designation are the relevant measures to consider in evaluating a redesignation request. Further, DEQ believes that the other Section 110 elements that are not connected with nonattainment plan submissions and not linked with an area's attainment status are also not applicable requirements for purposes of redesignation, as a state remains subject to these requirements after an area is redesignated to attainment. The requirements of CAA Section 110(a)(2) that are statewide requirements and that are not linked to the PM_{10} nonattainment status of the Thompson Falls NAA are therefore not applicable requirements for purposes of review of DEQ's redesignation request.

The EPA has previously approved provisions of Montana's SIP that address Section 110 requirements, including provisions addressing PM_{10}. The EPA approved the control plan for Thompson Falls on January 22, 2004 (69 FR 3011). CAA Section 110(a)(2) contains the general requirements or infrastructure elements necessary for EPA approval of the SIP. These requirements include, but are not limited to, submittal of a SIP that has been adopted by the state after reasonable notice and public hearing. The approved SIP described above met these requirements.

Part D, Plan Requirements for Nonattainment Areas (CAA Section 171, et seq.)

CAA Part D contains requirements applicable to all areas designated nonattainment. PM_{10} NAAs must meet the general provisions of Subpart 1 and the specific PM_{10} provisions in Subpart 4. The maintenance plan (see Section 3.0) associated with this request for redesignation of the Thompson Falls NAA is a SIP revision for an area designated as a NAA and the plan shall meet the applicable requirements of Part D of the CAA. The Thompson Falls PM_{10} SIP, fully-approved by EPA in 69 FR 3011 on January 22, 2004, shows that the state has satisfied all requirements under Section 110(a)(2) of the Act.

CAA Section 172

These provisions contain the general requirements to include NAA documents and revisions in the SIP. These include attainment demonstrations, RACM, reasonable further progress (RFP), inventory data, and permitting requirements. Submittal of a comprehensive PM_{10} emissions inventory is required by 40 CFR 51.1008 to meet the requirements of Section 172(c)(3) of the CAA. The Thompson Falls NAA PM_{10} baseline emissions inventory, which also serves as the attainment year inventory, is being submitted as part of the maintenance plan (Section 3.0), and therefore, is submitted concurrently with this request for redesignation.

CAA Section 173

These provisions outline the requirements related to permitting of air pollution sources in NAAs. Stationary sources of air pollution are subject to the applicable regulations of the ARM, Title 17, Chapter 8. These regulations include:

- Standards of Performance for New Stationary Sources (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPs) promulgated by the EPA (ARM 17.8.102);
- Permit, Construction, and Operation of Air Contaminant Sources (ARM, Title 17, Chapter 8, Subchapter 7);
- Prevention of Significant Deterioration of Air Quality (ARM, Title 17, Chapter 8, Subchapter 8);
- Permit Requirements for Major Stationary Sources or Major Modifications Locating Within Nonattainment Areas (ARM, Title 17, Chapter 8, Subchapter 9);
- Preconstruction Permit Requirements for Major Stationary Sources or Major Modifications Locating Within Attainment or Unclassified Areas (ARM, Title 17, Chapter 8, Subchapter 10); and
- Annual Emission Statements and required emissions reporting (ARM 17.8.505).

These requirements were adopted to implement the federally mandated requirements in Sections 110, 172, 173 and 182(a) of the CAA. The EPA has approved these regulations as SIP revisions, as indicated in Table 2.5, below.

Table 2.5 - State of Montana Federally Approved Air Quality Rules

State Rule(s)	Federal Action	Action Reference
ARM 17.8.101 et seq.	approved	60 FR 36715
ARM 17.8.701 et seq.	approved	60 FR 36715
ARM 17.8.801 et seq.	approved	60 FR 36715
ARM 17.8.901 et seq.	approved	60 FR 36715
ARM 17.8.1001 et seq.	approved	60 FR 36715

CAA Section 176(c)

These provisions prohibit federal financing of projects or activities that do not conform to an approved SIP. DEQ adopted and incorporated EPA's transportation conformity rule (40 CFR Part 93, Subpart A) on June 13, 2004, at ARM 17.8.1302. The general conformity regulation describes procedures to determine if federally financed, non-transportation projects are in conformity with air quality plans. The EPA and the U.S. Department of Transportation have issued regulations regarding criteria and procedures for demonstrating and assuring conformity of transportation improvement programs, long range plans, and individual transportation projects with the requirements of the CAA and the SIP for the specific NAA.

Subpart 4, Additional Provisions for Particulate Matter Nonattainment Areas:

Thompson Falls has an approved control plan as required by CAA section 191(a) for the PM_{10} NAA. This plan controlled PM_{10} emissions from area sources. Therefore, DEQ has met the requirements of Subpart 4 of the CAA. Further, as required under section 191(b) of the CAA, DEQ

has a fully approved New Source Review (NSR), Prevention of Significant Deterioration (PSD), and Part D permitting programs (60 FR 36715).

2.6. Redesignation Request

DEQ requests redesignation of the Thompson Falls PM_{10} NAA to attainment. The criteria applicable to redesignation are addressed in Section 2.0 of this document, above. Concurrent with the request for redesignation, DEQ is providing for maintenance of the PM_{10} NAAQS according to the applicable provisions of section 175A of the CAA (Section 3.0).

3. Thompson Falls NAA PM_{10} LMP

On December 21, 1993 in 58 FR 67334, the EPA codified the designation and classification of Thompson Falls as a 'moderate' NAA for the PM_{10} 24-hour NAAQS, effective January 20, 1994. The Thompson Falls area has achieved the annual PM_{10} NAAQS. EPA determined Thompson Falls had attained the PM_{10} NAAQS based on air quality monitoring data from 1998, 1999, and 2000, per 40 CFR 52.1374. As shown above, Thompson Falls has continued to demonstrate attainment based on quality assured monitoring data collected from PM_{10} monitoring in the area from 2015 through 2019.

Section 2.0 of this document includes DEQ's formal request for redesignation according to the requirements of Section 107(d)(3)(E) of the CAA. For the Thompson Falls NAA to be formally redesignated to attainment, DEQ must submit, and the EPA must approve, a SIP revision providing for maintenance of the PM_{10} NAAQS within the affected area for at least 10 years after redesignation. This maintenance plan has been developed in support of DEQ's request for redesignation according to the EPA's September 4, 1992 Calcagni Memo for *Procedures for Processing Requests to Redesignate Areas to Attainment*, EPA's August 9, 2001 memo for *Limited Maintenance Plan Option for Moderate PM10 Nonattainment Areas*, applicable provisions of the CAA, additional guidance received from the EPA's Region 8 Air Quality Planning Unit, and the requirements of Section 175A of the CAA.

This maintenance plan addresses the following elements:

- attainment inventory,
- maintenance demonstration,
- control plan,
- monitoring network,
- verification of continued attainment, and
- contingency plan.

3.1. Attainment Inventory

According to the requirements of Sections 107(d)(1)(A)(i), and 107(d)(1)(B)(i) and (ii) of the CAA, in establishing the final NAA boundary the EPA determined that the fugitive area sources listed in Table 2.4 of the previous section are the major contributing emission sources relevant to the Thompson Falls NAA. Table 3.1 below shows the approved emission categories from the attainment plan. Emissions associated with the attainment inventory are based on the 2017 NEI emissions for area sources. The methodology for calculating the 2017 NEI emissions from within the Thompson Falls NAA of Sanders County can be found in Appendix B. Overall, PM_{10} emissions are lower than the approved 1991 maintenance plan baseline values shown in Table 2.4.

Table 3.1 - Thompson Falls Attainment Sources and 2017 NEI PM_{10} Emissions

Source Category	2017 NEI Emissions (tons)
Paved Road Dust	2.1
Unpaved Road Dust	84.2
Residential Wood Burning	6.6
Automotive Tailpipe	0.4
Locomotives	27.9
Slash Burning	325.4
Aircraft	0.7
Fuel Oil Combustion	0.1
Industrial Process	7.3
Industrial Road Dust	NA
Non-Road Mobile	0.8
Total	455.5

3.2. Maintenance Demonstration

For this redesignation request to be complete and approvable, the CAA requires that the maintenance plan provide for maintenance of the PM_{10} NAAQS for at least 10 years following EPA's approval of the plan. As stated earlier in this document, attainment of the PM_{10} NAAQS has been demonstrated in the Thompson Falls area, and this maintenance demonstration shows continued attainment, or "maintenance" of the PM_{10} NAAQS through the year 2032. The maintenance plan will continue to implement the controls of the attainment plan. The following are the criteria that must be met to demonstrate maintenance and meet the LMP requirements.

Design Value

To qualify for the LMP option, an area must have an average design value below 98 $\mu g/m^3$ or the site-specific critical design value. The average design value is calculated using the most recent 5 years of data (2015-2019) by averaging the three consecutive 3-year design values.

Using the monitored values, a local design value has been calculated for Thompson Falls which is a statistic that describes the air quality relative to the level of the NAAQS. The local design value calculation excludes regionally concurred exceptional events and regionally concurred values from 2015 and 2017. Concurred exceptional events include events where the NAAQS has been exceeded and that fulfill the requirements of the wildfire exceptional events rule, including being not reasonably controllable and being naturally caused. Documentation of Montana's submittal of these exceptional events to EPA for concurrence is included in Appendix A.

The concurred exceptional events are monitored values above the NAAQS impacted by wildfires. The excluded regionally concurred values are values between 98 μg/m^3 and 154 μg/m^3 impacted by wildfires. Data substitution was necessary due to three quarters of PM10 data in Thompson Falls that were below the 75% reporting threshold, making the quarters incomplete. The data substitution process is described in Appendix E.

The design value is calculated over the most recent three consecutive 3-year intervals. As shown in Table 3.2, the Thompson Falls design value uses the "table lookup" method outlined in the 1987 PM10 SIP Development Guidance. The table lookup method identifies which monitored data value is to be used as the design value. This is based on the number of measurements collected by the monitor during the 3-year period.

Table 3.2 - Thompson Falls' Average 24-hour PM_{10} Design Value Using the Most Recent 5 Years of Data (Excluding Regionally Concurred Exceptional Events and Regionally Concurred Values)

	2015-2017	2016-2018	2017-2019	5-year Avg.
Number of Measurements	1,073	1,078	1,062	--
Data Value to Use	4th Highest	4th Highest	4th Highest	--
Design Value (μg/m^3) (Table Lookup Method)	97	74	68	80

The 5-year average design value from 2015-2019 is 80 μg/m^3, as shown above.

Critical Design Value

The EPA has determined that some PM_{10} NAAs have little inter-annual variation. This has led the EPA to develop a 'Critical Design Value' (CDV) that is an indication of the 'likelihood of future violations of the NAAQS given the current average design value and its variability. The process for developing a CDV is outlined in Attachment A of the EPA guidance titled "Limited Maintenance Plan Option for Moderate PM10 Nonattainment Areas." In this guidance, the EPA states that an area "may still be able to qualify for the LMP option if the average design values of the site are less than their respective site-specific CDV."

The equation to calculate a CDV is as followed:

$CDV = NAAQS/(1+t_c*CV)$

Where:

CDV	=	Critical Design Value
NAAQS	=	National Ambient Air Quality Standard
t_c	=	Critical t-value corresponding to a probability of exceeding the NAAQS in the future and the degree of freedom in the estimate of the coefficient of variation (CV).
CV	=	Coefficient of variation (CV) of the annual design value, calculated as the ratio of the standard deviation and average design values in the past.

DEQ has defined 'the past' as eleven 3-year periods of design values, beginning with the 2007-2009 design value and ending with the 2017-2019 design value. The table lookup method, described in Section 2.1, was used to calculate design values for each of these three-year periods. Table 3.3 below provides the number of measurements, lookup ranking, and design value for each period. The design value calculation excludes regionally concurred exceptional events, regionally concurred values, and those proposed for concurrence including values from 2015-2017 that have not been acted upon. EPA's letters of concurrence are in Appendix A. The exceptional events and values exclude all wildfire impacts events above 98 µg/m^3.

Table 3.3 - Design Values from the Past Eleven 3-years Periods (µg/m^3)

3-year Period	Count	Lookup Ranking	Design Value
2007-2009	184	1	72
2008-2010	172	1	72
2009-2011	170	1	57
2010-2012	165	1	57
2011-2013	225	1	57
2012-2014	537	2	97
2013-2015	844	3	100
2014-2016	1086	4	97
2015-2017	1073	4	97
2016-2018	1078	4	74
2017-2019	1062	4	68

The coefficient of variation is calculated as the standard deviation of the eleven design values divided by the mean of the 11 design values. The critical t-value was derived by assuming a one-

tailed distribution with a tolerable risk factor of 10% probability of a NAAQS violation, which matches the method used by EPA to demonstrate a CDV.

The parameter values used for the calculations are as follows:

NAAQS	= 150 µg/m^3
t_c	= 1.372
Standard deviation of design values (2007-2019)	= 17.5 µg/m^3
Mean of design values (2007-2019)	= 77.1 µg/m^3
Coefficient of Variation [CV= StDev/Mean]	= 0.227
CDV [NAAQS/(1+t_c*CV)]	**= 114.3 µg/m^3**

A CDV of 114.3 µg/m^3 will be used to determine if the Thompson Falls area qualifies for an LMP.

Regional Motor Vehicle Analysis

To qualify for the LMP option, an area must expect only limited growth in on-road motor vehicle PM_{10} emissions (including fugitive dust) as described in the EPA guidance titled *Limited Maintenance Plan Option for Moderate PM_{10} Nonattainment Areas*. Limited growth is demonstrated when the regional motor vehicle growth value is below the CDV for the area. When adjusted for future on-road mobile emissions, Thompson Falls has a motor vehicle regional emissions analysis test design value of 83.8 µg/m^3. These results are less than the CDV of 114.3 µg/m^3 used as the margin of safety in the LMP guidance. The equation used to determine eligibility of Thompson Falls for the LMP is based on the regional motor vehicle analysis equation set forth in the guidance:

$$DV + (VMT_{pi} * DV_{mv}) \leq MOS$$

Where:

DV	=	5-year PM_{10} design value (2015-2019), (µg/m^3)
VMT_{pi}	=	Projected increase in vehicle miles traveled (VMT) over the next 10 years (2022-2032), (%)
DV_{mv}	=	Product of the design value and the fraction of the inventory represented by on-road mobile sources in the attainment year (µg/m^3); and
MOS	=	Margin of safety for PM_{10} or CDV, which is 114.3 µg/m^3 for the 24-hour standard, as calculated above.

DEQ has assumed the attainment year to be 2019, the year for which the most recent Thompson Falls NAA emissions inventory was prepared. The Montana Department of Transportation projected VMT_{pi} for the next 10 years following projected EPA approval in 2021 (2022-2032) and provided that data to DEQ. The design value was derived from the PM_{10} monitoring data collected at the Thompson Falls High School site near the intersection of Golf St. and Haley Ave. for the most recent 5 years (2015-2019). PM_{10} values that were greater than 98 µg/m^3 due to exceptional

events (e.g., wildfires) were excluded from the design value analysis based on EPA guidance. Based on the criteria given above, Thompson Falls qualifies for the LMP option for the 24-hour standard for all considered cases. Details of the calculations are described above, and the parameter values used for the calculations are as follows:

Table 3.4 - Regional Motor Vehicle Analysis Parameters

Parameter	Value
DV ($\mu g/m^3$)	80
VMT_{pi} (2022-2032)	25.41%
% of the 2017 EI from on-road mobile sources in 2017	19.03%
DV_{mv} ($\mu g/m^3$)	15.2
Calculated [DV + (VMT_{pi} * DV_{mv})] ($\mu g/m^3$)	**83.8**

As shown, the calculated regional motor vehicle analysis value is less than the CDV of 114.3 $\mu g/m^3$, and therefore the area passes the regional analysis criteria.

Based on the analyses above, the local design value and the regional motor vehicle analysis values are both below the CDV. The Thompson Falls NAA qualifies for the LMP option from these analyses according to the *Limited Maintenance Plan Option for Moderate PM_{10} Nonattainment Areas* memo.

3.3. Control Plan

The Thompson Falls area has a control plan, based on the City's maintenance agreement with MDT. A discussion of the agreement provisions is included above in Section 1.3.

DEQ has long-standing, SIP-approved major NSR and minor source permitting programs (ARM Title 17, Chapter 8, Subchapters 7, 8, 9, and 10). These administrative rules include provisions for PSD, approved in 60 FR 36715. In conjunction with all SIP-approved requirements of DEQ's PSD permitting program, the Source Impact Analysis (ARM 17.8.820), requires that "(1) The owner or operator of the proposed source or modification shall demonstrate that allowable emission increases from the proposed source or modification, in conjunction with all other applicable emissions increases or reductions (including secondary emissions), *would not cause or contribute to air pollution in violation of any national ambient air quality standard in any air quality control region or any applicable maximum allowable increase over the baseline concentration in any area.*" (Emphasis added.)

Further, in conjunction with all SIP-approved requirements of DEQ's minor source permitting program, ARM 17.8.749, Conditions For Issuance or Denial of Permit, requires that "(3) A Montana air quality permit may not be issued for a new or modified facility or emitting unit unless the applicant demonstrates that the facility or emitting unit can be expected to operate in compliance with the Clean Air Act of Montana and rules adopted under that Act, the Federal Clean Air Act and rules promulgated under that Act (as incorporated by reference in ARM 17.8.767), and any applicable requirement contained in the Montana SIP (as incorporated by reference in ARM

17.8.767), *and that it will not cause or contribute to a violation of any Montana or national ambient air quality standard.*" (Emphasis added.)

DEQ will continue to implement its SIP-approved major and minor source permitting programs in the Thompson Falls maintenance area to ensure that any new or modified (or reopened) industrial source of PM_{10} emissions will not cause or contribute to a subsequent PM_{10} NAAQS violation in the area. Further, any appropriate changes to the ARM will be submitted to the EPA for approval as a SIP revision.

3.4. Monitoring Network

As mentioned above, particulate monitoring has been conducted in Thompson Falls since the mid 1980's. Initial monitoring for PM_{10} was conducted at the Sanders County Courthouse (30-089-0003) from May 1985 through July 1999 and then monitoring was resumed October 1999 to present at the Thompson Falls High School (30-089-0007).

3.5. Verification of Continued Attainment

DEQ intends to continue operating the Thompson Falls monitor (30-089-0007) or an approved alternatively located monitor until such a time that an approved alternative monitoring method is agreed upon. DEQ will request approval of an alternative monitoring methodology in a separate request.

3.6. Contingency Plan

As required by Section 175A(b) of the CAA, DEQ will submit to the EPA, eight years after redesignation, a revision of this maintenance plan. This revision will contain DEQ's plan for maintaining the 1987 24-hour PM_{10} NAAQS for 10 years beyond the first 10-year maintenance period following redesignation.

As discussed in Section 3.2 of this document, any new source planning to locate within the maintenance area or existing source proposing a significant increase in PM_{10} emissions would be subject to Montana's SIP-approved major NSR and minor source permitting programs promulgated under ARM Title 17, Chapter 8, Subchapters 7, 8, 9, and 10. These permitting programs require a demonstration of NAAQS compliance prior to construction and operation of the source.

Section 175(A)(d) of the CAA requires that the maintenance plan contains contingency provisions to assure that the state will promptly correct any violation of the PM_{10} NAAQS that may occur after the redesignation of the area to attainment. The EPA's redesignation guidance notes that the state is not required to have fully adopted contingency measures that will take effect without further action by the state. As such, the contingency plan should ensure that the state has the capacity to adopt the contingency measures expediently if the need were triggered. Therefore, the primary elements of this

contingency plan involve the tracking and triggering mechanisms to determine when contingency measures would be necessary and a process for implementing appropriate control measures.

Tracking

The tracking plan for the Thompson Falls maintenance area will consist of monitoring and analyzing PM_{10} concentrations. In accordance with 40 CFR Part 58, DEQ will continue to operate the Thompson Falls monitor (30-089-0007).

Trigger and Response

Triggering of the contingency plan does not automatically require a revision of the SIP, nor is the area necessarily redesignated once again to nonattainment if a PM_{10} exceedance occurs. Instead, DEQ will have an appropriate timeframe to correct the violation with implementation of one or more adopted contingency measures. If violations continue to occur, additional contingency measures will be adopted until the violations are corrected.

Upon notification of a PM_{10} exceedance, DEQ and Thompson Falls' local government will develop appropriate contingency measure(s) intended to prevent or correct a violation of the PM_{10} standard. Information about historical exceedances of the standard, the meteorological conditions related to the recent exceedance(s), and the most recent estimates of growth and emissions will be reviewed. The possibility that an exceptional event occurred will also be evaluated. Under the 2016 revisions to the Treatment of Data Influenced by Exceptional Events Rule (81 FR 68216), DEQ would confer with EPA Region 8 regarding whether the flagged event would meet the criteria of a regulatory decision, and if so, a determination would be made on whether to move forward with producing a demonstration.

This process will be completed within twelve months of the exceedance notification. If a violation of the PM_{10} NAAQS has occurred, DEQ and the local government will review the current control plan. If it is determined that the implementation of current local contingency measures will prevent further exceedances or violations, no changes to the control plan will be made. If, however, DEQ and the local government finds adopted control measures to be inadequate, DEQ and the local government will adopt state-enforceable measures as deemed necessary by DEQ to prevent additional exceedances or violations.

3.7. Conformity for PM_{10} Limited Maintenance Plan Areas

The Federal Transportation Conformity Rule (40 CFR Parts 51 and 93, subpart A) and General Conformity Rule (40 CFR Part 93, subpart B) apply to nonattainment and maintenance areas. Typically, under either rule, an acceptable method of demonstrating that a federal action conforms to the applicable SIP is to demonstrate that expected emissions from the planned action are consistent with the emissions budget for the area. The Thompson Falls area does not have a Metropolitan Planning Organization (MPO); transportation conformity by default goes to MDT in

consultation with DEQ. As per the EPA's PM_{10} Limited Maintenance Plan policy, the area does not require a motor vehicle emissions budget (MVEB).

Regional transportation conformity is presumed due to the limited potential for vehicle emission growth in the area during the maintenance plan period. A regional emissions analysis and associated regional conformity requirements (40 CFR 93.118) are not required. Similarly, federal actions subject to the General Conformity Rule would automatically satisfy the "budget test" specified in 40 CFR 93.158(a)(5)(i)(A) for the same reasons. However, since Thompson Falls will still be a maintenance area after redesignation, transportation conformity determinations are still required for transportation plans, programs and projects.

Transportation plans and the programs should still be made available for public review. The portions of the conformity rule that still apply are found in 40 CFR 93.112 and 93.113. In addition, transportation projects would still need to meet the criteria for PM_{10} hot spots (40 CFR 93.116 and 93.123) and for PM_{10} control measures (40 CFR 93.117). DEQ will continue to work with the affected jurisdictions and interested parties to develop an evaluation criteria and process to meet these transportation conformity requirements.

4. Public Participation

According to the applicable requirements of 40 CFR 51.102, Public Hearings, DEQ must provide the affected public with notice, opportunity for comment, and the opportunity to request a hearing regarding DEQ's request for redesignation and associated maintenance plan for the Thompson Falls PM_{10} NAA.

On October 1, 2021, the DEQ posted a Public Notice and the Thompson Falls PM_{10} Redesignation Request. DEQ notified interested parties that the public comment period was beginning and that all comments must be received on or before November 1, 2021. No comments were received, and no requests were made for a public hearing. Appendix F contains copies of the public notice, DEQ posting, and the email sent to interested parties.

5. Conclusion

The Thompson Falls NAA has attained the 1987 24-hour PM_{10} NAAQS for 28 years. Attainment is demonstrated by the monitoring data from 1991 through 2019 which shows compliance with the standards. The current emissions are expected to increase at a rate no greater than the population growth rate or annual average VMT increases, as appropriate. Because of improved vehicle fleet emissions and the City of Thompson Falls-MDT maintenance agreement that restricts road emissions, compliance with the PM_{10} NAAQS will be maintained.

Further, DEQ has demonstrated compliance with all applicable provisions of the CAA for the redesignation and maintenance of the 1987 PM_{10} NAAQS in the Thompson Falls NAA. Documentation to that effect is contained herein.

Therefore, DEQ requests formal redesignation of the Thompson Falls PM_{10} NAA to attainment (Section 2.0) concurrent with EPA approval of the associated maintenance plan (Section 3.0) ensuring ongoing PM_{10} NAAQS compliance in the area.

6. References

EPA, 1987, *PM_{10} SIP Development Guideline*, June 1987 (EPA-450/2-86-001).

EPA, 1992, *Memorandum: Procedures for Processing Requests to Redesignate Areas to Attainment,* by John Calcagni, September 4, 1992.

EPA, 2001, *Limited Maintenance Plan Option for Moderate PM_{10} Nonattainment Areas*, by Lydia Wegman, August 9, 2001.

Montana Census and Economic Information Center (MT CEIC), *2019 - Thompson Falls/Sanders County Population Data*, https://ceic.mt.gov/People-and-Housing/Population

U.S. Department of Commerce, Economic and Statistics Administration, Bureau of the Census, *1990 Census of Population, General Population Characteristics, Montana*, https://www2.census.gov/library/publications/decennial/1990/cp-1/cp-1-28.pdf. (1990 CP-1-28)

APPENDIX A

EPA REGION 8 LETTERS CONCURRING SPECIFIC WILDFIRE EXCEPTIONAL EVENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region8

FEB - 8 2019

Ref: 8P-AR

Mr. Dave Klemp, Bureau Chief
Air Resources Management Bureau
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

Re: Exceptional Event Requests Regarding Exceedances of the 24-hour PM_{10} NAAQS and the LMP Eligibility Threshold at Montana Monitoring Sites within PM_{10} Nonattainment Areas

Dear Mr. Klemp:

This letter is in response to your letter of June 1, 2018, requesting the U.S. Environmental Protection Agency's (EPA) concurrence with the Montana Department of Environmental Quality's (DEQ) request to exclude PM_{10} data impacted by wildfires in 2017 as exceptional events. The DEQ determined that regional wildfire smoke events caused exceedances of the 24-hour PM_{10} National Ambient Air Quality Standard (NAAQS) at monitoring sites across Montana in 2017. In addition, the DEQ determined that the smoke events caused multiple sites to exceed 98 $\mu g/m^3$, an eligibility threshold for EPA's Limited Maintenance Plan Option for Moderate PM_{10} Nonattainment Areas (the LMP Policy),[1] and the DEQ flagged these data as exceptional events to support future plans to redesignate PM_{10} nonattainment areas using the LMP Policy.

In 2016, the EPA revised sections of the Exceptional Events Rule (EER) found in 40 CFR 50.14 and 51.930. After careful consideration of the information provided, the EPA concurs, based on the weight of evidence, that the state has made the demonstrations referred to in 40 CFR 50.14(a)(2), (b)(1) and (b)(4) of the EER. In addition, the state has met the schedule and procedural requirements in section 50.14(c) with respect to the same information. The EPA has reviewed the documentation provided by the DEQ to demonstrate that the exceedances identified in the submitted demonstration meet the criteria for an exceptional event in the EER. The basis for this concurrence is set forth in the enclosed technical support document. Concurrence flags have been entered for these data in the EPA's Air Quality System (AQS) database. For those values included in the DEQ's demonstration that exceeded the LMP eligibility threshold of 98 $\mu g/m^3$ but were under 155 $\mu g/m^3$, the EPA concurs that the elevated PM_{10} concentrations were caused by wildfire smoke, and that these data may be excluded when considering whether the areas are eligible for use of the LMP Policy.

[1] https://www.epa.gov/sites/production/files/2016-06/documents/2001lmp-pm10.pdf.

The determination conveyed in this letter does not constitute final action regarding any matter on which the EPA is required to provide an opportunity for public comment. In particular, this applies to EPA determinations regarding PM_{10} attainment status or classification. Final actions will take place only after the EPA completes notice and comment rulemaking on those determinations.

If you have any questions on this matter, you may contact me at (303) 312-6776 or your staff may contact Ethan Brown, at (303) 312-6403.

Sincerely,

Martin Hestmark
Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

Enclosure

cc: Annette Williams, Montana DEQ

DEQ
Montana Department
of Environmental Quality

June 1, 2018

Ms. Monica Morales
Air Program Director
USEPA, Region VIII (8P-AR)
1595 Wynkoop St.
Denver, Colorado 80202-1129

Dear Ms. Morales:

To fulfill the applicable requirements of 40 Code of Federal Regulations (CFR) 50.14, Montana hereby submits:

(1) flagged PM_{10} monitoring data for calendar year 2017; and

(2) flagged data exclusion demonstration for calendar year 2017.

This submittal contains one electronic copy. The enclosed document contains information regarding PM_{10} ambient air data "flagged" in EPA's AQS database to indicate values affected by smoke from wildfires. Inclusion of flagged data in the computation of average ambient pollutant concentrations could result in inappropriate estimates for determining attainment status, and other air quality planning activities. These documents were approved by the Department of Environmental Quality (Department) following the required public notice and comment period.

It should be noted, that flagged PM_{10} data representing exceptional events included with this submission are only for data that shows an exceedance or violation of a NAAQS, per §50.14(a)(i) within an existing PM_{10} Nonattainment Area. Although the PM_{10} 24-hour NAAQS standard is 150 $\mu g/m^3$, values above 98 $\mu g/m^3$ were flagged to support current plans to re-designate PM_{10} nonattainment areas with Limited Maintenance Plans. Montana reserves the right to submit additional exceptional events documentation in the future if PM_{10} design values are significantly impacted by wildfire events at lower concentrations and/or at other locations.

If you have any questions concerning the contents of this submittal, please direct them to the State of Montana's Air Quality Meteorologist, Kristen Martin, at KMartin@mt.gov or (406) 444-0283.

Sincerely,

David L. Klemp, Bureau Chief
Air Quality Bureau
(406) 444-0286
(406) 444-1499 – fax
DKlemp@mt.gov

Enclosures

1. Summary

Montana DEQ is requesting the following wildfire exceptional events dates be considered for concurrence. This request is due to an effort to redesignate PM_{10} nonattainment areas in the state. Wildfire impacts leading to 24-hour values above 98 µg/m^3 are included in this package to allow for the submission of a limited maintenance plan (LMP) if all other criteria are met. The LMP policy memo states that data greater than 98 µg/m^3 that has been impacted by exceptional or natural events could be discounted in design value calculations consistent with policies in place in 2001[1]. With the promulgation of the exceptional events rule in 2001, a subsequent policy memo[2] stated that

> "In determining eligibility for the limited maintenance plan option EPA will treat 24-hour average air quality data between 98 µg/m^3 and 155 µg/m^3 in a manner analogous to the treatment of exceedance data under the exceptional events rule, provided the impacted data meet the general definition and criteria for exceptional events (natural event, or exceptional event that is not reasonably controllable or expected to recur)."

Table 1 summarized the PM_{10} data that DEQ would like EPA to evaluate for the exclusion from design value calculations in Montana PM_{10} nonattainment areas for the purposes of determining eligibility for the PM_{10} LMP option.

Table 1. 2017 PM_{10} Summary of Data to be Evaluated.

Date	Site	AQS #	24-hour PM_{10} (µg/m^3)
12-Aug	Missoula	30-063-0024	105
23-Aug	Missoula	30-063-0024	129
29-Aug	Missoula	30-063-0024	105
30-Aug	Missoula	30-063-0024	108
2-Sep	Butte	30-093-0005	111
3-Sep	Butte	30-093-0005	144
4-Sep	**Missoula**	**30-063-0024**	**233**

[1] Limited Maintenance Plan Option for Moderate PM10 Nonattainment Areas, US EPA, US EPA, Lydia Wegman, Director, AQSSD, OAQPS, August 21, 2001, https://www.epa.gov/sites/production/files/2016-06/documents/2001lmp-pm10.pdf

[2] Update on Application of the Exceptional Events Rule to the PM10 Limited Maintenance Plan Option, US EPA, William Harnett, Director, AQPD, OAQPS, May 9, 2009, https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/20090507_harnett_lmp_pm10_update_exc_event.pdf

Date	Site	AQS #	24-hour PM_{10} ($\mu g/m^3$)
	Whitefish	**30-029-0009**	**153**
5-Sep	Kalispell	30-029-0047	131
	Libby	30-053-0018	104
	Missoula	30-063-0024	107
	Whitefish	30-029-0009	122
6-Sep	**Columbia Falls**	**30-029-0049**	**182**
	Kalispell	**30-029-0047**	**171**
	Libby	30-053-0018	101
	Missoula	**30-063-0024**	**158**
	Thompson Falls	**30-089-0007**	**251**
	Whitefish	30-029-0009	143
7-Sep	**Columbia Falls**	**30-029-0049**	**228**
	Kalispell	**30-029-0047**	**194**
	Libby	30-053-0018	134
	Missoula	**30-063-0024**	**201**
	Thompson Falls	**30-089-0007**	**231**
	Whitefish	**30-029-0009**	**212**
8-Sep	**Columbia Falls**	**30-029-0049**	**225**
	Kalispell	**30-029-0047**	**228**
	Libby	**30-053-0018**	**158**
	Missoula	**30-063-0024**	**193**
	Thompson Falls	**30-089-0007**	**249**
	Whitefish	**30-029-0009**	**215**
9-Sep	Columbia Falls	30-029-0049	126
	Kalispell	**30-029-0047**	**154**
	Missoula	30-063-0024	103
	Thompson Falls	30-089-0007	100
	Whitefish	30-029-0009	130
13-Sep	Columbia Falls	30-029-0049	102
	Kalispell	**30-029-0047**	**158**

All of the locations included in this submission are located in western Montana valleys. Three monitors (Whitefish, Columbia Falls, and Kalispell) are in the Flathead Valley. All three locations are roughly 3,000 ft above seas level, with steep mountains to the east (Glacier National Park and the Swan Mountain Range) and the Salish Mountain Range to the west. The large Flathead lake sits at the southern end of the valley. Libby sits in a small valley surrounded by mountains in the northwest corner of the state. The elevation in Libby is 2,100 feet above sea level. Thompson Falls sits along the Highway 200 corridor with tall mountains to the north and south.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region8

NOV - 1 2018

Ref: 8P-AR

Mr. Dave Klemp, Bureau Chief
Air Resources Management Bureau
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

Dear Mr. Klemp:

This letter is in response to your letter of April 24, 2017, requesting the U.S. Environmental Protection Agency's concurrence on exceptional event claims for fine ($PM_{2.5}$) and course (PM_{10}) particulate matter data impacted by wildfires in 2015 and 2016. The Montana Department of Environmental Quality (DEQ) determined that regional wildfire smoke events caused exceedances of the 24-hour $PM_{2.5}$ and PM_{10} National Ambient Air Quality Standards (NAAQS) at monitoring sites across Montana in 2015 and 2016. In addition, the DEQ determined that the smoke events caused multiple sites to exceed 98 $\mu g/m^3$, which is the eligibly threshold for the use of a limited maintenance plan (LMP) for a nonattainment area redesignation. The DEQ has flagged these data to support future plans to redesignate PM_{10} nonattainment areas using the LMP Policy.

The EPA concurs with the Montana DEQ's determination that the 24-hour PM_{10} exceedance at the Libby monitoring site on August 24, 2015, and the PM_{10} exceedances at the Missoula monitoring site on August 28 and August 29, 2015, meet the criteria for an exceptional event in the Exceptional Events Rule (EER). The basis for this concurrence is set forth in the enclosed technical support document. Concurrence flags have been entered for these data in the EPA's Air Quality System (AQS) database. For those PM_{10} values in August 2015 and the one value in August 2016 that exceeded the LMP Policy eligibility threshold, (98 $\mu g/m^3$)but were under the minimum value that is determined to be an exceedance of the PM_{10} NAAQS (155 $\mu g/m^3$), the EPA concurs that the elevated PM_{10} concentrations meet the general definition and criteria for exceptional events, and thus in accordance with EPA guidance, those values may be excluded when considering whether the areas are eligible for use under the LMP Policy for PM_{10}.

The EPA, at this time, has not reviewed the $PM_{2.5}$ exceptional event requests. 40 CFR 51.14(a)(1)(i) limits the applicability of the EER to data concerning NAAQS exceedances or violations that are relevant to regulatory determinations by the EPA. Data in AQS flagged as exceptional events that are not relevant to regulatory determinations will not be reviewed by the EPA for concurrence. The EPA has determined that the $PM_{2.5}$ data do not have any regulatory significance. In the event that any of the data on which the EPA is deferring action become significant for a future regulatory action, the EPA will retain the demonstration for potential

future consideration.

The determination conveyed in this letter does not constitute final action regarding any matter on which the EPA is required to provide an opportunity for public comment. In particular, this applies to determinations regarding the attainment status or classification of this area. Final actions will take place only after the EPA completes notice and comment rulemaking on those determinations.

If you have any questions on this matter, you may contact me at (303) 312-6776 or your staff may contact Ethan Brown, of my staff, at (303) 312-6403.

Sincerely,

Martin Hestmark

Martin Hestmark
Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

Enclosure

cc: Annette Williams, Montana DEQ

DEQ
Montana Department
of Environmental Quality

April 24, 2017

Ms. Monica Morales
Acting Director
USEPA, Region VIII (8P-AR)
1595 Wynkoop St.
Denver, Colorado 80202-1129

Dear Ms. Morales:

To fulfill the applicable requirements of 40 Code of Federal Regulations (CFR) 50.14; 40 CFR Part 50, Appendix K; and 40 CFR Part 50, Appendix N, Montana hereby submits:

(1) flagged $PM_{2.5}$ monitoring data for calendar years 2015 and 2016;

(2) flagged PM_{10} monitoring data for calendar years 2015 and 2016; and

(3) flagged data exclusion demonstrations for calendar years 2015 and 2016.

This submittal contains one hardcopy and one electronic copy. The enclosed documents contain information regarding $PM_{2.5}$ and PM_{10} ambient air data "flagged" in EPA's AQS database to indicate values affected by smoke from wildfires. Inclusion of flagged data in the computation of average ambient pollutant concentrations could result in inappropriate estimates for determining attainment status, and other air quality planning activities. These documents were approved by the Department of Environmental Quality (Department) following the required public notice and comment period. This submittal also contains the Department's demonstration and proof of public notice.

It should be noted, that flagged $PM_{2.5}$ and PM_{10} data representing exceptional events included with this submission is only for data that shows an exceedance or violation of a NAAQS, per §50.14(a)(i). The 24-hour NAAQS standard for $PM_{2.5}$ is 35 micrograms per cubic meter ($\mu g/m^3$). Values above this standard that were impacted by wildfires have been flagged. Although the PM_{10} 24-hour NAAQS standard is 150 µg/m3, values above 98 $\mu g/m^3$ were flagged to support future plans to re-designate PM_{10} nonattainment areas with Limited Maintenance Plans. Please note that Montana also has $PM_{2.5}$ data below the 24-hour NAAQS standard with documented influence from wildfires. Montana reserves the right to submit additional exceptional events documentation in the future if the $PM_{2.5}$ annual design value is significantly impacted by these events.

If you have any questions concerning the contents of this submittal, please direct them to the state of Montana's Air Quality Meteorologist, Kristen Martin, at KMartin@mt.gov or (406) 444-0283.

Sincerely,

David L. Klemp, Bureau Chief
Air Quality Bureau
(406) 444-0286
(406) 444-1499 – fax
DKlemp@mt.gov

Enclosures

Excerpt from Section 6 of Exceptional Events Demonstration Package:

Summary of 2015-2016 Exceptional Events in PM_{10} Non-attainment areas (NAA) of Montana.

The following dates and locations are being submitted to the Environmental Protection Agency as exceptional events for 2015 and 2016 for PM_{10}. The associated wildfire smoke update for each date is provided as a hyperlink in the date column. For all dates where a wildfire smoke update is available a brief reason is provided for the exceptional event. All of the online documentation is also available in a Word document with additional supporting information. This document will be submitted with the exceptional events final package. Please contact the Montana Department of Environmental Quality at 406-444-3490 if you have any questions or concerns.

Date	Site	24 Hour PM_{10} $\mu g/m^3$	Reason
8/14/2015 And PM Update	Thompson Falls	105	Eight fires larger than 100 acres burned in Montana along with numerous other small fires throughout the western part of the state. Smoke was clearly visible on satellite imagery throughout the day. Satellite imagery indicated numerous smoke plumes in northwest Montana and Idaho and widespread smoke over eastern Montana.
8/15/2015 And PM Update	Butte Missoula	100 133	New fires ignited throughout central Idaho and western Montana due to strong winds and frequent lightning after a week of hot, dry weather. Nine new large fires were reported in the Northern Rockies and eight new large fires were reported in the Pacific Northwest. The largest new fire in Montana was the Eustice Fire north of Three Forks. Other large new fires in Montana include the Melton Fire near Dillion, the Scotchmans Gulch Fire near Philipsburg, the Trail Creek Fire near Swan Lake, and the Klatawa Fire near Libby at 156 acres. Fire activity also increased significantly on existing fires in Montana including the Sucker Creek Fire near Lincoln, the Marston Fire near Eureka, and the Weigel Fire near Libby. Fires in Idaho also contributed to the widespread smoke impacts.
8/20/2015 And PM Update	Butte Columbia Falls Kalispell Libby Whitefish Missoula	103 140 125 113 128 101	Satellite imagery showed a river of smoke from eastern Washington moving up into Canada and then down along western Montana in the morning, moving to the east throughout the day. Westerly winds and generally dry conditions caused smoke to impact the region throughout the day.
8/21/2015 And PM Update	Columbia Falls Kalispell Whitefish Missoula	112 103 131 116	Active fires in Washington, Idaho, and Montana continued to cause elevated smoke levels across Montana.

Date	Site	24 Hour PM_{10} $\mu g/m^3$	Reason
8/23/2015	Columbia Falls	112	Smoke continued to move into western Montana from fire activity in Washington, Idaho, and Montana. Conditions worsened throughout the day.
8/24/2015 And PM Update	Columbia Falls Kalispell Libby Thompson Falls Whitefish Missoula	138 139 180 117 122 104	Prolonged smoke impacts expected due to a large ridge of high pressure over the western U.S. and significant fire activity in Montana and neighboring states.
8/25/2015 And PM Update	Columbia Falls Libby Whitefish Missoula	109 102 106 120	Satellite imagery shows a large amount of smoke over almost all of Montana. This smoke is being trapped under a ridge of high pressure that impacted the area until August 30, 2015. Westerly winds aloft continue to carry smoke into the region from the numerous fires burning in western Montana, Idaho, and eastern Washington.
8/26/2015 And PM Update	Columbia Falls Kalispell Thompson Falls Missoula	112 125 135 104	
8/27/2015 And PM Update	Columbia Falls Kalispell Libby Thompson Falls Whitefish Missoula	136 123 109 122 118 119	
8/28/2015 And PM Update	Butte10 Columbia Falls Kalispell Whitefish Missoula	115 135 133 110 181	
8/29/2015	Butte Columbia Falls Kalispell Libby Thompson Falls Whitefish Missoula	118 138 146 143 143 104 276	
8/30/2016	Thompson Falls	135	The Copper King Fire, located next to Thompson Falls, MT created significant air quality impacts in town.

APPENDIX B

THOMPSON FALLS EMISSION INVENTORY

Emission Inventory Calculations

DEQ has developed an emission inventory for the Thompson Falls nonattainment area (NAA). The emission inventory data is from the 2017 National Emission Inventory (NEI). The NEI catalogs emissions from 60 various sources for Criteria pollutants and HAPs. However, the NEI only reports to county level resolution. The emissions listed in the table below are for all of Sanders County. This list is limited to only those sectors used in the attainment plan for Thompson Falls as well as diesel emissions from mobile sources.

Table B.1 - 2017 NEI Data for Sanders County by Sector

PM_{10} Emissions		
Source Categories	**2017 NEI Emissions (Tons)**	**Percent**
Paved Road Dust	107.7	1.95%
Unpaved Road Dust	4,272.6	77.49%
Residential Wood Burning	46.2	0.84%
Automotive Tailpipe	19.2	0.35%
Locomotives	27.9	0.51%
Slash Burning	981.6	17.80%
Aircraft	0.7	0.01%
Fuel Oil Combustion	0.6	0.01%
Industrial Process	51.0	0.93%
Mobile Non-Road	5.9	0.01%
Total Area	5513.5	100.00%

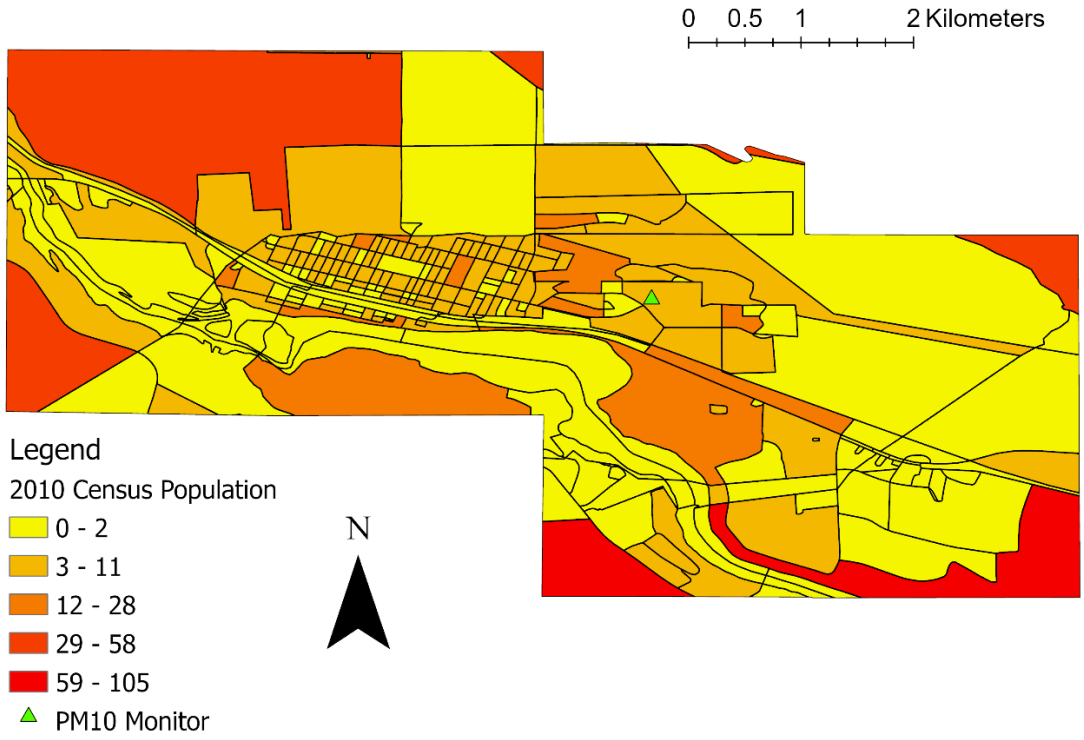
This document will outline the methodology for scaling the county level emissions to the NAA. These methods vary by sector.

Fuel Combustion and Non-road Emission Calculations

Fuel combustion source emissions, including commercial and institutional natural gas, residential natural gas, and residential wood, are available at the county level. There are no direct emissions available that are specific to the smaller NAA. Since this emission sector is linked to population, the 2010 census tract data was used to estimate an appropriate scaling factor.

The NAA includes some densely populated regions, as shown below in the census track data.

Figure B.1 - Population Densities within Thompson Falls NAA



The table below shows the 2010 population totals of the county and the NAA. This shows that the Thompson Falls PM_{10} NAA makes up 14.3 percent of the county population. The fuel combustion and non-road emissions were scaled by the percentage of county population within the NAA.

Table B.2 - Fuel Combustion and Non-Road Emissions Estimates

	2010 Pop.	% of County	Emissions (tons/year)				
			Combustion	Residential Wood Combustion	Mobile - Non-Road Equipment - Gasoline	Mobile - Non-Road Equipment - Diesel	Industrial Sources
Total County	11,413	100.00%	0.56	46.24	1.42	4.45	50.97
Thompson Falls NAA	1,637	14.3%	0.08	6.6	0.2	0.6	7.3

Road Dust and Vehicle Emission Calculations

A reasonable emission estimate from paved and unpaved road dust, mobile on-road gasoline light and heavy-duty vehicles, and mobile on-road diesel light and heavy-duty emissions, would scale the NEI emissions to the ratio of vehicle miles traveled (VMT) within the county to the VMT in the NAA. This produces a conservative estimate of the unpaved road dust contributions, as the unpaved roads only take up a small fraction of the roads in the NAA, with the majority of the county's unpaved road dust occurring outside the urban areas.

2019 daily VMT data is available through the Montana Department of Transportation (MDT) for Sanders County and the city of Thompson Falls. County level data is provided through the MDT website, while the city estimate was provided to DEQ in August 2018 via email. The table below shows the total daily VMT in the county compared to Thompson Falls in 2019 and the percentage of these VMT.

Table B.3 - 2019 VMT Data by County and Urban Area

	2019 Daily VMT	Percent of County
Sanders County	452,059	100%
Thompson Falls Urban Area	8,901	1.97%

The following table shows the proposed NAA emissions for unpaved and paved road dust, and on-road mobile emissions based on the percent VMT in Thompson Falls compared to the county.

Table B.4 - 2017 Roadway Emission Estimates Based on VMT Scaling

Source	Sanders County (2017 NEI) (tons)	Thompson Falls (tons)
Paved Road Dust	107.74	2.12
Unpaved Road Dust	4,272.63	84.17
Road Dust (paved & unpaved) Sub-total	**4,380.37**	**86.29**
Mobile – On-road Gasoline Light Duty Vehicles	10.09	0.20
Mobile – On-Road Non-diesel Heavy Duty Vehicles	0.12	0.00
Tailpipe (on-road non-diesel) Sub-total	**10.21**	**0.20**
Mobile – On-road Diesel Heavy Duty Vehicles	7.08	0.14
Mobile – On-road Diesel Light Duty Vehicles	2.07	0.04
Tailpipe (on-road diesel) Sub-total	**9.15**	**0.18**
Tailpipe (on-road diesel & non-diesel) Sub-total	**19.36**	**0.38**
Road (Road Dust & Tailpipe) Emissions Total	**4,399.73**	**86.67**

Prescribed Fires/Slash Burning

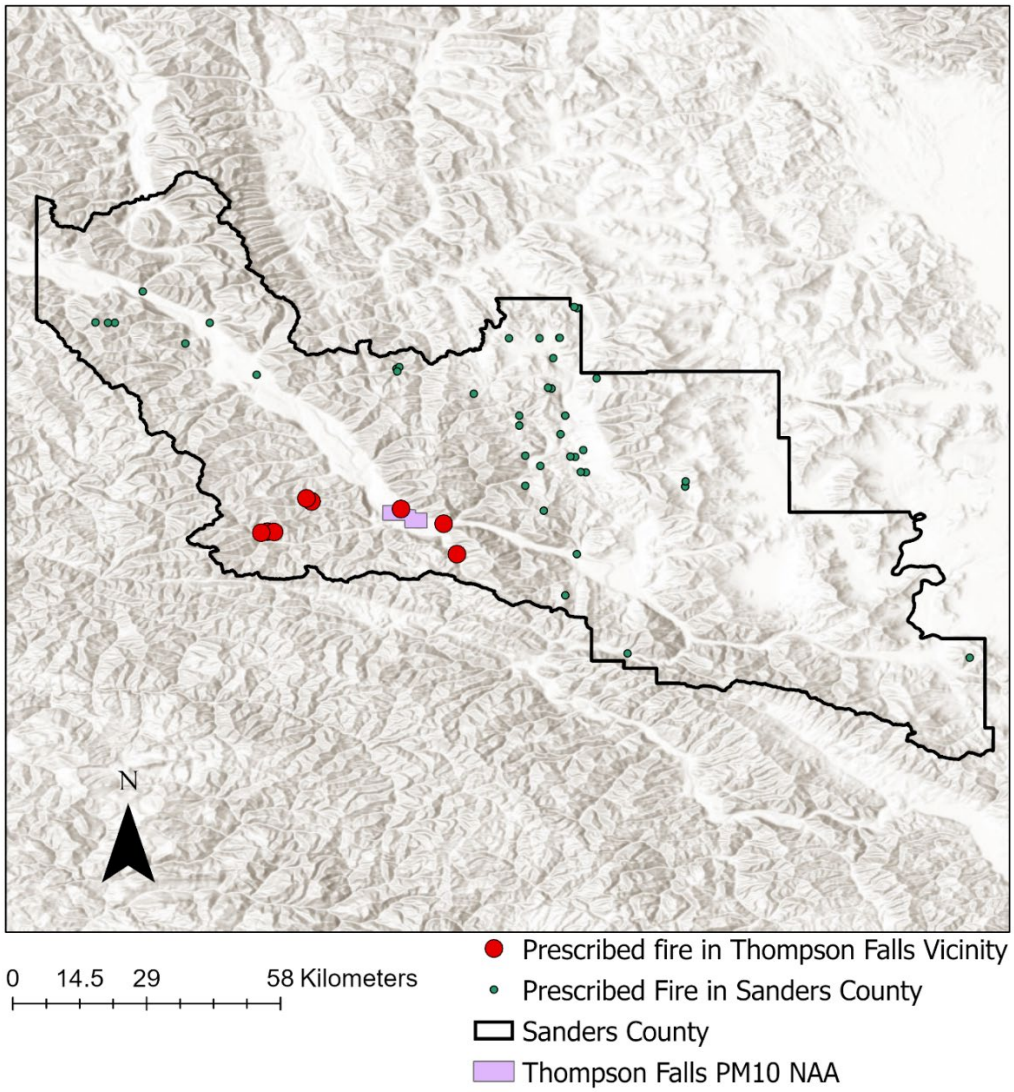
Slash burning was included in the baseline emission inventory, measured at 35.8 tons in the baseline year. Per the inventory, forest slash burning was conducted in the mountains around Thompson Falls during the fall of 1990; 58 slash burns were conducted in the Thompson Falls vicinity during the study period.

In the 2017 NEI data, prescribed fires are the equivalent category of slash burning. The emissions data is for Sanders County, not specifically the Thompson Falls NAA. To scale the emissions, the prescribed burns from the Montana-Idaho Airshed database were narrowed to those in Sanders County, and then those burns specifically identified in the Thompson Falls impact zone were retained, as shown in the following figure.

Although the emissions from prescribed fire increased from the baseline emissions year, there are protocols in place to minimize the impact of smoke from prescribed burning on nearby communities. The Montana-Idaho airshed group works together with major burners to plan ignition on days with adequate ventilation. Major Open Burning permits include a requirement to follow

Best Available Control Technology, which includes choosing to burn on days with adequate ventilation.

Figure B.2 – 2017 Sanders County Prescribed Burns



To approximate the prescribed fire emissions that affected the Thompson Falls NAA, the biomass tons burned near the NAA were divided by the tons burned in Sanders county, as reported by the Montana-Idaho Airshed database. The PM10 emissions were assumed to scale by the same ratio.

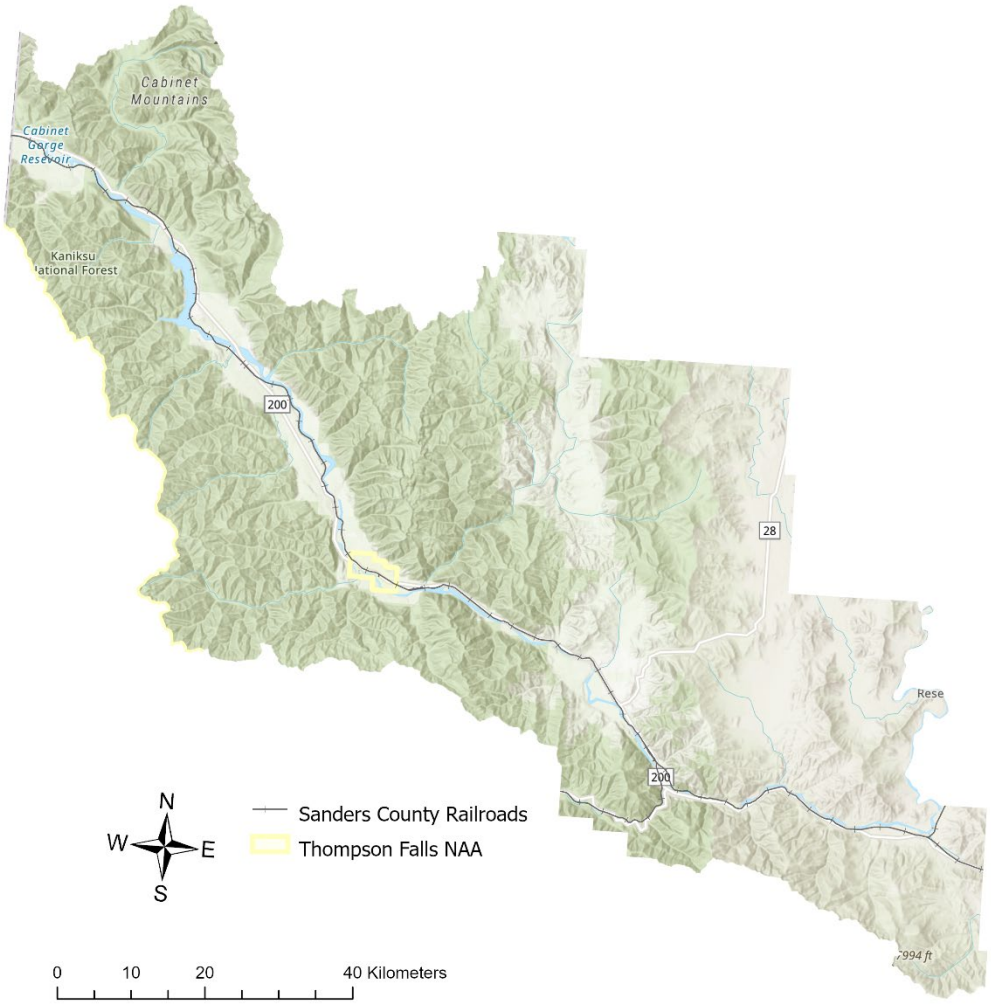
$$\frac{tons\ burned\ in\ NAA\ vicinity}{tons\ burned\ in\ Sanders\ Coutny} = \frac{11652.3\ tons}{35151.75\ tons} = 33.148\%$$

$$PM_{10} tons\ in\ NAA\ vicinity = scaling\ factor\ \times NEI2017_{Rx_{Sanders}} = 33.148\% \times 981.588\ tons$$
$$= 325.4\ tons\ PM_{10}$$

Locomotive Emission Calculation

A railroad runs through Sanders County, including all the NAA. The location of the railroad tracks is shown below.

Figure B.3 – Sanders County Railroad Trackage



The locomotive emissions are available at the county level. Emission data within the NAAs are not available. DEQ assumed all the locomotive emissions from Sanders county were within the NAA.

Sanders County 2017 NEI Mobile Emissions – Locomotives = 27.91 tons/year

Aircraft Emission Calculation

Due to the low PM_{10} emissions generated from airports as reported in the NEI, it was assumed that 100% of the airport emissions were attributable to the county-owned Thompson Falls Airport, which totaled 0.73 tons PM_{10}.

2017 NEI Data

Below are the 2017 NEI search results for the Sanders County source sectors used in developing the emission inventory for this redesignation request. In some cases, multiple sectors of emissions represent source categories above.

Table B.5 - 2017 NEI Data and Scaling Summary

Sector	2017 NEI Emissions (tons)	Scaling Type	Scaling Factor	Thompson Falls NAA Emissions 2017 (tons)
Dust - Unpaved Road Dust	4,272.63	VMT	1.97%	84.17
Dust - Paved Road Dust	107.74	VMT	1.97%	2.12
Fuel Comb - Residential - Wood	46.24	Population	14.3%	6.61
Mobile - On-Road non-Diesel Light Duty Vehicles	10.09	VMT	1.97%	0.20
Mobile – Locomotives	27.91	Total	100%	27.91
Mobile - On-Road Diesel Heavy Duty Vehicles	7.08	VMT	1.97%	0.14
Mobile - Non-Road Equipment - Diesel	4.45	Population	14.3%	0.64
Mobile - Non-Road Equipment – Gasoline	1.42	Population	14.3%	0.20
Mobile - On-Road Diesel Light Duty Vehicles	2.07	VMT	1.97%	0.04
Mobile - On-Road non-Diesel Heavy Duty Vehicles	0.12	VMT	1.97%	0.00
Industrial Sources	50.97	Population	14.3%	7.29
Mobile - Aircraft	0.73	Total	100%	0.73
Fuel Comb - Industrial Boilers, ICEs - Fuel Oil	0.34	Population	14.3%	0.05
Fuel Comb - Residential - Fuel Oil	0.22	Population	14.3%	0.03
Fuel Comb - Comm/Institutional - Fuel Oil	0.002	Population	14.3%	0.00
Prescribed Fires	981.59	Rx Burns	33.15%	325.4
Total	**5,513.5**			**455.53**
			Total On-road	**86.67**
			Percent On-road	**19.02**

APPENDIX C

Montana Department of Transportation Future VMT Projections

The Montana Department of Transportation (MDT) sent Department of Environmental Quality (DEQ) projected vehicle miles traveled (VMT) increases in all PM10 Nonattainment areas (NAA) on September 25, 2018 (Email from Marie Stump). MDT used the following methodology to determine future VMT growth:

- Calculated annual growth from 2011-2017
- Calculated annual growth from 2013-2017
- MDT recommended that DEQ use the highlighted growth rates.
- Applied that highlighted growth factor annually from 2018 to 2032.

Below shows the data provided by MDT to DEQ.

Daily VMT by City Limits						
Year	Columbia Falls	Kalispell	Whitefish	Libby	Butte	Thompson Falls
2017	72,345	382,949	153,510	20,745	451,252	8,507
2016	72,475	365,650	151,610	19,907	458,463	8,065
2015	70,308	358,976	150,395	19,079	459,827	8,085
2014	68,593	343,178	154,860	19,381	440,741	7,675
2013	64,926	345,902	141,166	19,860	432,981	7,710
2012	43,005	348,169	149,803	20,839	454,499	7,410
2011	40,936	341,663	130,768	20,967	461,215	7,428
Compound Annual Growth Rate						
2013-2017	2.74%	2.58%	2.12%	1.10%	1.04%	2.49%
2011-2017	9.96%	1.92%	2.71%	-0.18%	-0.36%	2.29%
Projected Growth						
2017	72,345	382,949	153,510	20,745	451,252	8,507
2018	74,327	392,829	156,765	20,974	455,945	8,702
2019	76,364	402,964	160,088	21,204	460,687	8,901
2020	78,456	413,360	163,482	21,438	465,478	9,105
2021	80,606	424,025	166,948	21,673	470,319	9,313
2022	82,815	434,965	170,487	21,912	475,210	9,527
2023	85,084	446,187	174,101	22,153	480,152	9,745
2024	87,415	457,699	177,792	22,397	485,146	9,968
2025	89,810	469,507	181,561	22,643	490,191	10,196
2026	92,271	481,620	185,411	22,892	495,289	10,430
2027	94,799	494,046	189,341	23,144	500,440	10,668
2028	97,397	506,793	193,355	23,398	505,645	10,913
2029	100,065	519,868	197,454	23,656	510,904	11,163
2030	102,807	533,281	201,640	23,916	516,217	11,418

2031	105,624	547,039	205,915	24,179	521,586	11,680
2032	108,518	561,153	210,281	24,445	527,010	11,947
10-Year Growth						
2022-2032	31.04%	29.01%	23.34%	11.56%	10.90%	25.41%

APPENDIX D

1997 Maintenance Agreement – City of Thompson Falls, MDT, and DEQ

MAINTENANCE AGREEMENT BETWEEN THE CITY OF THOMPSON FALLS, MONTANA DEPARTMENT OF TRANSPORTATION, AND MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

This Agreement is made and entered into by and between the city of Thompson Falls ("City"), the Montana Department of Transportation ("MDT"), and the Montana Department of Environmental Quality ("DEQ"), hereinafter collectively referred to as the "Parties".

The U.S. Environmental Protection Agency has designated the City and its nearby area as a nonattainment area for the PM-10 National Ambient Air Quality Standards (NAAQS). In order to achieve and maintain the PM-10 NAAQS, a reduction in suspended particulate matter from re-entrained road dust is required.

The purpose of this Agreement is to outline the type of sanding material to be used on paved roads, determine what unpaved roads, alleys, and parking lots are to be paved, and to regulate street sweeping activities on selected routes within the Thompson Falls PM-10 nonattainment area. Activities performed under this Agreement are intended to reduce suspended particulate matter from re-entrained road dust, which will assist the City in attaining and maintaining the PM-10 NAAQS.

SECTION I: ROADS SUBJECT TO AGREEMENT

The roads covered by this Agreement are Highway 200 under the jurisdiction of MDT within the Thompson Falls PM-10 nonattainment area and the priority routes under the jurisdiction of the City as listed below:

CITY STREET SWEEPING PRIORITY ROUTES:

	Approximate Length
- Golf from City Shop to Haley	(0.20)
- Haley from Golf to Ferry	(0.85)
- Bus Loop at Jr. High	(0.20)
- Ferry from Jr. High to Preston	(0.25)
- Preston from Ferry to East Crossing	(0.15)
- East Crossing from Preston to Main	(w/above)
- Preston from East Crossing to Clay	(0.20)
- Clay from Preston to 5th	(0.40)
- West Crossing from Main to Gallatin	(0.15)
- Washington from Preston to 4th	(0.35)
- Spruce from Preston to 3rd	(0.35)

- Gallatin from Preston to 3rd	(0.25)
- Jefferson from Preston to 3rd	(0.25)
TOTAL ->	3.60 miles (5.80 km)

MDT STREET SWEEPING ROUTE

MDT's street sweeping route will be on Highway 200 beginning at milepost 49.5 at the west end of the bridge, east through town to the Harvest Food store parking lot. This route is approximately three (3) miles (4.83 km) long

CITY COMPENSATION FOR STREET SWEEPING

MDT agrees to compensate the City for street sweeping activities that the City performs on Highway 200 inside the city limits. Compensation must be agreed upon by the City and MDT to be determined on or before September 1 of each year.

SECTION II: STANDARD AGREEMENT

A. For the purpose of this Section, the following definitions will apply:

(1) "Central business district" means the area defined by Main, Pond, and Pearl streets and the Clark Fork River.

(2) "Clean " means that a road surface does not create visible emissions upon the passing of a vehicle.

(3) "New parking lot" means any parking lot on which construction commenced after January 1, 1997.

(4) "New street or road" means any street, road, drive through, or alley which is greater than 50 feet in length, has a projected average traffic volume greater than 50 vehicles per day, and on which construction commenced or will commence after January 1, 1997.

(5) "Parking lot" means a parcel of land located off the public right-of-way which is primarily used for the temporary storage of motor vehicles.

(6) "Prioritized street sweeping" means a schedule of street sweeping which gives attention to streets with the highest traffic volumes first and proceeds in descending order of traffic volume to streets with the lowest traffic volume. In the event that streets become iced or snow-packed and sanding material is re-applied, this process will start over with the highest volume streets receiving priority attention.

(7) "Summer months" means the months of May, June, July, August, September, and October.

(8) "Winter months" means the months of November, December, January, February, March, and April.

B. City Requirements:

(1) Within the Thompson Falls PM-10 nonattainment area, the City may not allow the operation, use, or maintenance of any prioritized routes listed in Section I unless the following RACT procedures are applied:

"Reasonably Available Control Technology" or "RACT" means:

(a) During summer months, street sweeping shall be performed on an as-needed basis to the priority routes listed in Section I.

(b) During winter months, prioritized street sweeping shall commence on the first working day after any priority route listed in Section I becomes either temporarily or permanently ice-free and temperatures are expected to remain above 35 °F for the next 24-hour period. Unless interrupted by additional snowfall or temperatures below 35 °F, all priority routes shall be swept clean within four (4) business days. If interrupted, the City shall begin the prioritized street sweeping process from the beginning.

(2) Within the Thompson Falls PM-10 nonattainment area, the City shall only apply sanding or chip seal material on paved roads and parking lots that has a durability of greater than or equal to 9 as defined by the Montana Modified L.A. Abrasion test. The sanding or chip seal material shall have a material content smaller than a 200 mesh that does not exceed 4.0 percent oven dry weight as determined by a standard wet sieving method.

(3) The City shall identify the sanding material percent silt content upon request by the DEQ to ensure against increases that may occur within or between gravel pits.

(4) Within the central business district, the City may not construct any new street or road as defined in Section II A (4) unless it is paved. The City may not construct any new parking lot with a capacity greater than 15 vehicles or more than 50 vehicles/day turnover unless the parking lot is paved.

(5) The City shall maintain a record of maintenance activities concerning the exact day and route of completed street sweeping and paving projects within the Thompson Falls PM-10 nonattainment area. This record of maintenance activities will be made available to DEQ upon request.

(6) The City will provide street sweeping service on Highway 200 within the City limits as described in Section III below.

C. MDT Requirements:

(1) Within the Thompson Falls PM-10 nonattainment area, MDT may not allow the operation, use, or maintenance of Highway 200 as listed in Section II unless the following RACT procedures are applied:

"Reasonably Available Control Technology" or "RACT" means:

(a) During summer months, street sweeping shall be performed on an as-needed basis to Highway 200 as described in Section I with priority given to the section of Highway 200 located within the central business district.

(b) During winter months, street sweeping shall commence on the first working day after Highway 200, as listed in Section I, becomes either temporarily or permanently ice-free and temperatures are expected to remain above 35 °F for a 24-hour period. Unless interrupted by additional snowfall or temperatures below 35 °F, Highway 200 will be swept clean within two (2) business days. If interrupted, MDT will begin the street sweeping process from the beginning.

(2) Within the Thompson Falls PM-10 nonattainment area, MDT shall only apply sanding or chip seal material on Highway 200 that has a durability of greater than or equal to 9.0 percent wear loss as defined by the Montana Modified L.A. Abrasion test. The sanding or chip seal material shall have a material content smaller than a 200 mesh that does not exceed 4.0 percent oven dry weight as determined by a standard wet sieving method.

(3) MDT shall identify the existing material percent silt content upon request by the DEQ to ensure against increases that may occur within or between gravel pits. Paved road silt-loading samples will continue to be collected annually by a DEQ representative and analyzed for silt content percent.

(4) MDT shall maintain a record of maintenance activities concerning the street sweeping on Highway 200 within the Thompson Falls PM-10 nonattainment area. This record of maintenance activities will be made available to DEQ upon request.

(5) As described in Section III below, MDT shall authorize the City to sweep Highway 200 within the city limits during conditions which do not allow for the use of the MDT street sweeping equipment.

SECTION III: SEASONAL AGREEMENT

MDT owns and operates a 1994 Elgin Crosswinds vacuum sweeper which is operated in and around the City for purposes of road cleaning activities on Highway 200. The City owns and operates a Vanguard 4000 mechanical brush sweeper. In order to provide for road cleaning activities on Highway 200 during times when the MDT sweeper is not available, the Parties agree as follows:

A. City Requirements:

1) Only upon MDT's request, the City shall provide street sweeping service on Highway 200 inside the city limits with their Vanguard 4000. Based upon the equipment, weather conditions, and personnel available to the City, the street sweeping frequency during bare road conditions on Highway 200 within the city limits will be as specified in Section II C (b).

B. MDT Requirements:

1) MDT grants the City the right to enter Highway 200 within the city limits for the purpose of performing street sweeping services during the days in which the MDT sweeper is not available.

2) MDT agrees to compensate the City for street sweeping activities that the City performs on Highway 200 under this Section. Compensation must be agreed upon by the City and MDT.

3) MDT and the City will contact each other on or before September 1 of each year to discuss the street sweeping contract and compensation as outlined Section I. If necessary, the City and MDT shall submit proposed revisions to Section I and submit to DEQ by January 1 of each year.

SECTION IV: CONTINGENCY MEASURES

In the event a PM-10 exceedance occurs within the Thompson Falls PM-10 nonattainment area, the Parties have the following responsibilities until such time as the SIP control measures are revised and approved by EPA:

A. City Requirements:

The City shall increase its street sweeping frequency on the priority routes as listed in Section I from four (4) business days to two (2) business days.

B. MDT Requirements:

MDT shall increase its street sweeping frequency as outlined in Section I from two (2) business days to one (1) business day.

SECTION V: ENFORCEMENT

The Parties agree that DEQ shall petition the Board of Environmental Review ("Board") for an Order adopting this Agreement. The Parties further agree that the Board, if it finds that the terms of this Agreement are necessary to achieve and maintain the PM-10 NAAQS, may issue a Board Order adopting the terms of this Agreement. Upon issuance of such Board Order, the terms of this Agreement shall be enforceable by DEQ.

SECTION VI: INDEMNIFICATION

Each Party (hereinafter referred to in this Section as "First Party") shall hold harmless and indemnify the other Parties and their agents, principals, and employees from and against all claims, damages, losses, demands, judgments, and costs of suit, defense expenses, and attorney's fees to the extent arising out of or resulting from the First Party's wrongful acts, errors, omissions, or negligence, or from the First Party's failure to comply with the requirements set forth in this Agreement or with all federal, state, and local laws, regulations, and ordinances applicable to the work to be done under this Agreement.

SECTION VII: EXECUTION

This Agreement consists of eight (8) pages. One copy of the original is to be retained by each Party. A copy of the original has the same force and effect for all purposes as the original.

In witness of their intent to be bound by the terms of this Agreement, the Parties have executed this document on the dates set forth below:

CITY OF THOMPSON FALLS

By: _____ Date: 5-19-97
Jerry Neal, Mayor
City of Thompson Falls

STATE OF MONTANA DEPARTMENT OF TRANSPORTATION

By: _____ Date: 5-1-97
Stephen L. Herzog, P.E., Chief
Field Maintenance Bureau / Kalispell

STATE OF MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

By: _____ Date: 7/28/97
Mark Simonich, Director
Department of Environmental Quality

Signed Copies: City of Thompson Falls
Montana Department of Transportation
Montana Department of Environmental Quality
Montana Board of Environmental Review (attached to Board Order)

[illegible]

APPENDIX E

Data Substitution for Thompson Falls

Thompson Falls Data Substitution

For purposes of critical design value calculations and attainment determinations, the past thirteen (2007-2019) years were analyzed to determine data completeness. This is due to the critical design value being calculated from the previous eleven (2009-2019) three-year design values, which extends the timeframe back an additional two years The methodology follows the 2001 EPA memo and attachment titled "Limited Maintenance Plan Option for Moderate PM10 Nonattainment Areas."[1] Over the past thirteen years (2007-2019), three calendar quarters of PM_{10} data in Thompson Falls are below the 75% reporting threshold, making the quarters incomplete according to Appendix K of 40 CFR, Part 50. To address the missing data, Montana used the method outlined in the April 1987 "Guideline on Exceptions to Data Requirements for Determining Attainment of Particulate Matter Standards." Essentially, the guidance allows for monitoring data from the same quarter in one of the years used for attainment determination to be substituted for those samples in the incomplete quarter(s). The maximum PM_{10} value from that quarter over the test period may be substituted for missing scheduled sampling days in the incomplete quarter.

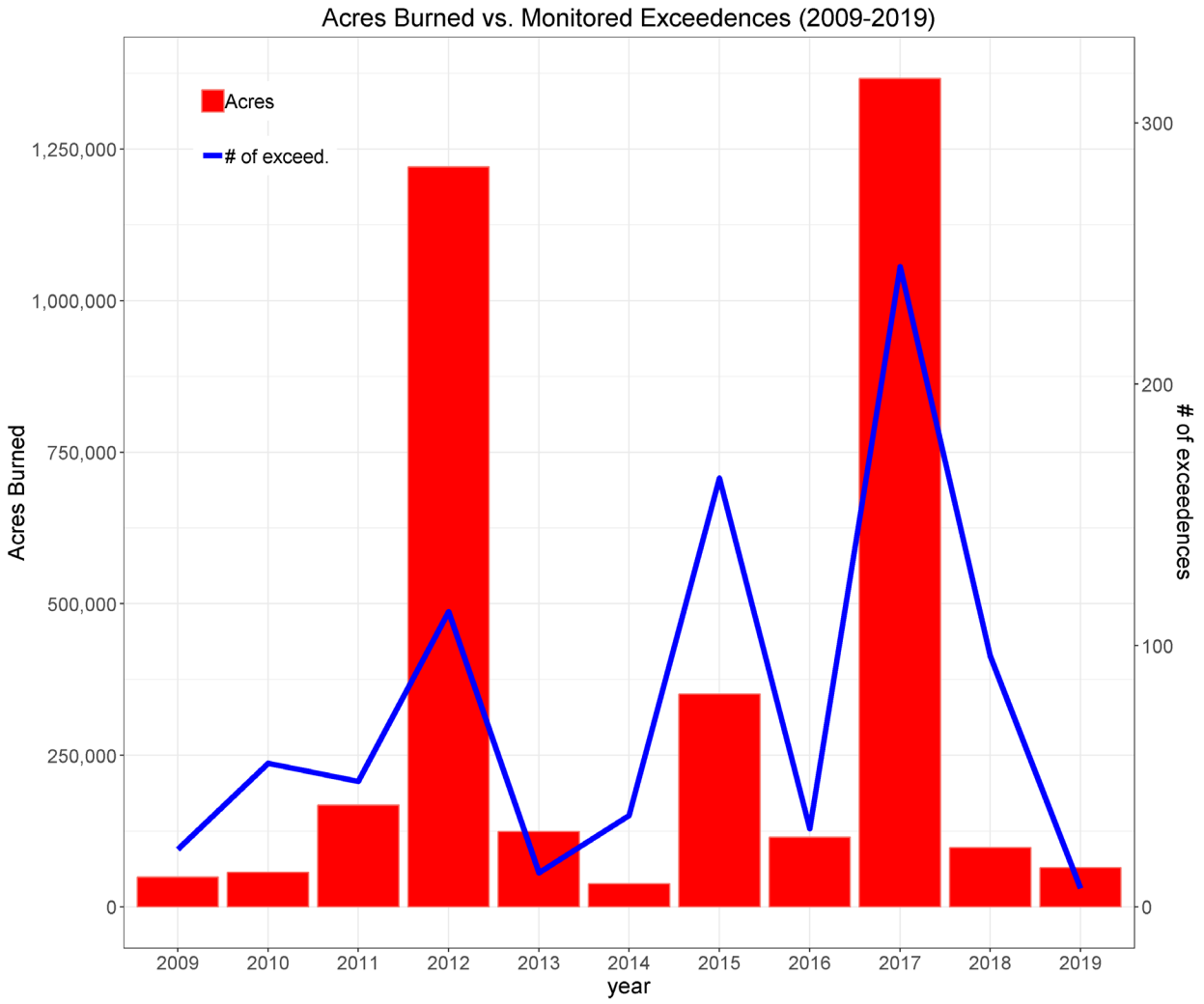
The second quarter of 2008 reported 60% completeness, the third quarter of 2014 achieved 51% data completeness, and the fourth quarter of 2016 reported 58% of PM_{10} monitoring values. Therefore, Montana set out to substitute missing data in the second quarter of 2008, the third quarter of 2014, and the fourth quarter of 2016. These quarters meet the minimum requirement from the guidance of having at least 50% of required samples in the incomplete quarters.

An initial review of quarter 3 indicated that 2015 and 2017 were exceptionally high years for PM values due to wildfire impacts in Thompson Falls. The following graphic shows the acres burned in Montana from 2009-2019 compared with the number of monitored NAAQS exceedances at Montana's $PM_{2.5}$ monitors during quarters 3 and 4, when wildfire impacts are most likely to occur at the monitors. The graphic shows $PM_{2.5}$ monitors instead of PM_{10} monitors because the network is more extensive and is the primary pollutant of concern during wildfire season in Montana. $PM_{2.5}$ exceedances are a good way to judge the severity of a fire season in Montana. The discrepancy in 2015 between acres burned in Montana and the number of exceedances is due to the extreme fire conditions in Washington state. Transported smoke from these fires caused frequent, widespread air quality impacts in Montana in 2015.

Due to the extreme nature of the 2015 and 2017 wildfire seasons in Thompson Falls, DEQ has omitted those years when selecting the highest value in quarter 3. The 2015 wildfire season extended into October, causing elevated values in early quarter 4 as well. For this reason, DEQ has omitted 2015 when selecting the highest value in quarter 4. Additionally, for the remaining candidate years for data substitution, any value marked with a wildfire qualifier code was excluded from consideration to substitute into the missing quarters. For quarter 2, any year within the appropriate

[1] https://www.epa.gov/state-and-local-transportation/2001-limited-maintenance-plan-moderate-pm10-and-attachment

test period for the incomplete quarter was considered due to the fact that wildfire impacts generally do not occur during this time of year.



When excluding 2015 (quarters 3 and 4) and 2017 (quarter 3), the following high values were selected for data substitution:

- Q2: 72 µg/m^3 from 4/30/2007
- Q3: 97 µg/m^3 from 8/25/2016
- Q4: 62 µg/m^3 from 12/16/2014

The following high values were omitted from the analysis because they occurred in the years highly impacted by wildfire.

Date	Quarter	PM_{10} Conc. (µg/m^3)

9/6/2017	3	251
9/8/2017	3	249
9/7/2017	3	231
8/29/2015	3	143
8/26/2015	3	135
9/30/2015	3	135
8/27/2015	3	122
9/29/2015	3	121
8/24/2015	3	117
8/14/2015	3	105
9/9/2017	3	100
10/1/2015	4	100
10/2/2015	4	65

APPENDIX F

PUBLIC NOTICE DOCUMENTATION AND COMMENTS

TO: AIR QUALITY INTERESTED PARTIES

DATE: October 1, 2021

The Department of Environmental Quality (Department) is inviting public comment on the submittal of a proposed Request for Redesignation of the Thompson Falls particulate matter smaller than 10 microns (PM10) nonattainment area to attainment and a proposed Thompson Falls attainment area Limited Maintenance Plan. The proposal will be submitted to the Environmental Protection Agency (EPA) as a revision to the Montana State Implementation Plan (SIP). The Thompson Falls PM10 nonattainment area has attained the 1987 National Ambient Air Quality Standards (NAAQS), and the Department has provided a demonstration that the area has attained and will maintain compliance with the 1987 PM10 NAAQS.

The Department will accept public comment for 30 days beginning on Friday, October 1, 2021, through Monday, November 1, 2021.

Interested persons may view the proposed submission on the Department's website at: http://deq.mt.gov/Public/publiccomment

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
PUBLIC NOTICE

1) The Department of Environmental Quality (Department) is inviting public comment on the submittal of a proposed Request for Redesignation of the Thompson Falls particulate matter smaller than 10 microns (PM10) nonattainment area to attainment and a proposed Thompson Falls attainment area Limited Maintenance Plan. The proposal will be submitted to the Environmental Protection Agency (EPA) as a revision to the Montana State Implementation Plan (SIP).

   The Thompson Falls PM10 nonattainment area has attained the 1987 National Ambient Air Quality Standards (NAAQS). The Department has provided a demonstration that the area has attained and will maintain compliance with the 1987 PM10 NAAQS.

2) The Department will accept public comment for 30 days beginning on Friday, October 1, 2021, through Monday, November 1, 2021.

3) Interested persons may view the proposed submission on the Department's website at: http://deq.mt.gov/Public/publiccomment or may call the Department at 444-9741 to have copies made available for their inspection.

4) Interested parties may submit their comments concerning the proposal described above in writing to the Department by:

   - the DEQ public notice website: http://deq.mt.gov/Public/publiccomment
   - addressing them to Liz Ulrich, MT DEQ AQB, 1520 E 6th Avenue, Helena, MT 59620-0901;
   - faxing them to 406-444-1499; or
   - sending them via email addressed to EUlrich2@mt.gov.