



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

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September 22, 2020

Ref: 8WD-CWS

Mr. Tim Davis
Administrator
Water Quality Division
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

Re: Approval of Sediment and Temperature Total Maximum Daily Load Evaluations for the
Madison TMDL Planning Area

Dear Mr. Davis,

The U.S. Environmental Protection Agency (EPA) has completed review of the total maximum daily loads (TMDLs) submitted by your office on August 28, 2020. In accordance with the Clean Water Act (33 U.S.C. §1251 *et. seq.*) and the EPA's implementing regulations at 40 C.F.R Part 130, the EPA hereby approves Montana's TMDLs for the Madison TPA. The EPA has determined that the separate elements of the TMDLs listed in the enclosure adequately address the pollutants of concern, are designed to attain and maintain applicable water quality standards, consider seasonal variation and includes a margin of safety. EPA's rationale for this action is contained in the enclosure.

Thank you for submitting these TMDLs for our review and approval. If you have any questions, please contact Peter Brumm on my staff at (406) 457-5029.

Sincerely,

Judy Bloom, Manager
Clean Water Branch

Enclosure:

Madison Planning Area Sediment and Temperature TMDL EPA Review Summary

EPA TOTAL MAXIMUM DAILY LOAD (TMDL) REVIEW SUMMARY

TMDL: Madison Sediment and Temperature TMDLs

ATTAINS TMDL ID: M06-TMDL-01b

LOCATION: Madison and Gallatin Counties, Montana

IMPAIRMENTS/POLLUTANTS: The submittal contains sixteen TMDLs addressing seventeen pollutants prepared for thirteen waterbody segments in the Madison TMDL planning area (TPA). The Elk Creek (MT41F002_020) sediment TMDL addresses two pollutant impairment causes: sedimentation-siltation and turbidity.

Waterbody/Pollutants Addressed in this TMDL Action

Assessment Unit ID	Waterbody Description	Pollutants Addressed
MT41F004_140	Antelope Creek, Headwaters to mouth (Cliff Lake)	Sediment
MT41F004_021	Bear Creek, Headwaters to mouth (O'Dell Spring Creek)	Sediment
MT41F004_010	Blaine Spring Creek, Headwaters to mouth (Madison River, T7S R1W S6)	Sediment
MT41F002_010	Cherry Creek, Headwaters to mouth (Madison River)	Sediment
		Temperature
MT41F002_020	Elk Creek, Headwaters to mouth (Madison River)	Sediment
		Turbidity
		Temperature
MT41F002_030	Hot Springs Creek, Headwaters to mouth (Madison River)	Sediment
MT41F004_130	Moore Creek, Springs to mouth (Fletcher Channel), T5S R1W S15	Sediment
		Temperature
MT41F004_060	North Meadow Creek, Headwaters to mouth (Ennis Lake)	Sediment
MT41F006_020	Red Canyon Creek, Headwaters to mouth (Hebgen Lake)	Sediment
MT41F004_080	Ruby Creek, Headwaters to mouth (Madison River)	Sediment
MT41F004_070	South Meadow Creek, Headwaters to mouth (Ennis Lake)	Sediment
MT41F006_030	Watkins Creek, Headwaters to mouth (Hebgen Lake)	Sediment
MT41F004_160	Wigwam Creek, Headwaters to mouth (Madison River)	Sediment

BACKGROUND: The Montana Department of Environmental Quality (MDEQ) submitted to EPA the final sediment and temperature TMDLs for the Madison TMDL planning area, with a submittal letter requesting review and approval, to EPA dated August 28th, 2020.

The submittal included:

- Letter requesting EPA’s review and approval of the TMDLs
- Final TMDL document for Madison Sediment and Temperature TMDLs
- Water quality monitoring data
- QUAL2K temperature model appendix
- Other relevant appendices

APPROVAL RECOMMENDATIONS: Based on the review presented below, the reviewer recommends approval of the final Madison sediment and temperature TMDLs. All the required elements of approvable TMDLs have been met.

TMDL Approval Summary	
Number of TMDLs Approved:	16
Number of Causes Addressed by TMDLs:	17

REVIEWERS: Peter Brumm, EPA

The following review summary explains how the TMDL submission meets the statutory and regulatory requirements of TMDLs in accordance with Section 303(d) of the Clean Water Act (CWA), and EPA’s implementing regulations in 40 C.F.R. Part 130.

EPA TMDL REVIEW OF THE MADISON SEDIMENT AND TEMPERATURE TMDLS

This TMDL review document includes EPA’s guidelines that summarize the currently effective statutory and regulatory requirements relating to TMDLs (CWA Section 303(d) and 40 C.F.R. Part 130). These TMDL review guidelines are not themselves regulations. Any differences between these guidelines and EPA’s regulations should be resolved in favor of the regulations themselves. The italicized sections of this document describe the information generally necessary for EPA to determine if a TMDL submittal fulfills the legal requirements for approval. The sections in regular type reflect EPA’s analysis of the state’s compliance with these requirements. Use of the verb “must” below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.

1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal must clearly identify (40 C.F.R. §130.7(c)(1)):

- *the waterbody as it appears on the State’s/Tribe’s 303(d) list;*
- *the pollutant for which the TMDL is being established; and*
- *the priority ranking of the waterbody.*

The TMDL submittal must include (40 C.F.R. §130.7(c)(1); 40 C.F.R. §130.2):

- *an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading (e.g., lbs. per day);*
- *facility names and NPDES permit numbers for point sources within the watershed; and*
- *a description of the natural background sources, and the magnitude and location of the sources, where it is possible to separate natural background from nonpoint sources.*

This information is necessary for EPA’s review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

- *the spatial extent of the watershed in which the impaired waterbody is located;*
- *the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);*
- *population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;*
- *present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and*
- *an explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments; chlorophyll a and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.*

The Madison TPA follows the mainstem of the Madison River from the Wyoming border, near West Yellowstone, to the river’s mouth at the headwaters of the Missouri River near Three Forks, Montana. The area includes the watersheds of many tributary streams draining directly to the Madison River but does not include the portion of the Madison River watershed within Yellowstone National Park. The TPA encompasses approximately 2,583 square miles in western Montana and includes portions of Madison and Gallatin Counties. Figure 2-1 displays the general location of the Madison TPA, Table 1-1

displays impaired segments and the pollutants causing those impairments, Figures 6-3, 6-7, and 6-11 display the temperature monitoring locations and Appendix B Figures B-1 and B-2 display the sediment monitoring locations.

MDEQ has identified thirteen waterbody segments in Table DS-1 that do not meet applicable sediment water quality standards. Three of those waterbody segments also do not meet applicable temperature water quality standards. TMDLs are established for pollutants of concern that are clearly identified and match the state's 303(d) list: sedimentation-siltation, turbidity and temperature. The Elk Creek (MT41F002_020) sediment TMDL addresses both sediment-related pollutants, thus sixteen TMDLs are established addressing seventeen pollutant impairment causes (see Table 1-1).

Section 2.0 (Madison TMDL Planning Area Description) summarizes the physical, ecological and social profile of the planning area and includes multiple maps showing the distribution of various watershed attributes such as geology, precipitation, fire history and population density.

There are two permitted point sources in the Madison TPA: the Ennis National Fish Hatchery (MTG13008) and the Ennis Wastewater Treatment Plant (MT0030732). These facilities are described further in Section 2.3.5 (Wastewater Discharges). Nonpoint sources are also reviewed and characterized including natural background, eroding streambanks, unpaved roads, uplands, silviculture and agriculture. See Section 5.5 (Source Assessment and Quantification) for this type of information related to sediment and Section 6.6 (Source Assessment) for temperature.

Assessment: EPA concludes that MDEQ adequately identified the impaired waterbodies, the pollutants of concern, the priority ranking, the identification, location and magnitude of the pollutant sources, and the important assumptions and information used to develop the TMDLs.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include:

- *a description of the applicable State/Tribal water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy (40 C.F.R. §130.7(c)(1)); and*
- *a numeric water quality target for each TMDL. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal (40 C.F.R. §130.2(i)).*

EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

Section 3.0 (Montana Water Quality Standards) and Appendix A (Regulatory Framework and Reference Condition Approach) describe the water quality standards applicable to the impaired segments with citations to relevant Montana regulations. All streams within the Madison TPA are to be maintained suitable for:

- culinary and food processing purposes after conventional treatment (Drinking Water),
- bathing, swimming, and recreation (Primary Contact Recreation),

- growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers (Aquatic Life),
- agricultural and industrial water supply.

Table 3-1 indicates that sediment and temperature are preventing aquatic life from being a fully supported designated use in the thirteen TMDL streams. The mechanisms by which these pollutants impact aquatic life are explained in Section 5.1 (Effects of Excess Sediment on Beneficial Uses) and Section 6.1 (Effect of Excess Temperature on Beneficial Uses). MDEQ has identified aquatic life as the most sensitive use to excess sediment and temperature in Western Montana streams, thus by establishing TMDLs to protect aquatic life it is expected that all other designated uses will also be protected. The state’s antidegradation policies are discussed in Section 3.3 (Nondegradation Provisions).

The applicable sediment criteria are narrative statements listed in Appendix A Table A2-2 that seek to limit harmful or other undesirable conditions related to increases above naturally occurring levels of sediment. Consistent with EPA guidance for sediment TMDLs (EPA, 1999), water quality targets for the Madison TPA include a suite of measurements of instream siltation, channel form, and habitat characteristics that contribute to loading, storage, and transport of sediment, or that demonstrate those effects. These numeric targets, derived from reference sites representing attainment of the state’s narrative sediment criteria, are displayed in Table 5-2.

The applicable temperature criteria are numeric and address a maximum allowable increase above “naturally occurring” temperatures to protect the existing temperature regime for fish and aquatic life. For Madison TPA streams, the maximum allowable increase over the naturally occurring temperature is 1°F when the naturally occurring temperature is less than 66°F. Within the naturally occurring temperature range of 66 – 66.5°F, the allowable increase cannot exceed 67°F. If the naturally occurring temperature is greater than 66.5°F, the maximum allowable increase is 0.5°F. Because naturally the occurring temperature varies daily and seasonally, a suite of temperature influencing secondary TMDL targets were also developed as measurable parameters that collectively represent attainment of temperature water quality standards at all times. These include target values for riparian shade, width to depth ratios, and instream discharge. All temperature targets are summarized in Table 6-3.

Assessment: EPA concludes that MDEQ adequately described its applicable water quality standards and numeric water quality targets for these TMDLs.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

The TMDL submittal must include the loading capacity for each waterbody and pollutant of concern. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The TMDL submittal must:

- *describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model;*
- *contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling; and*
- *include a description and summary of the water quality data used for the TMDL analysis.*

EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation (40 C.F.R. §130.2).

The full water quality dataset should be made available as an appendix to the TMDL or as a separate electronic file. Other datasets used (e.g., land use, flow), if not included within the TMDL submittal, should be referenced by source and year. The TMDL analysis should make use of all readily available data for the waterbody unless the TMDL writer determines that the data are not relevant or appropriate.

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). Most TMDLs should be expressed as daily loads (USEPA, 2006a). If the TMDL is expressed in terms other than a daily load (e.g., annual load), the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen.

The TMDL submittal must describe the critical conditions and related physical conditions in the waterbody as part of the analysis of loading capacity (40 C.F.R. §130.7(c)(1)). The critical condition can be thought of as the “worst case” scenario of environmental conditions (e.g., stream flow, temperature, loads) in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet water quality standards. TMDLs should define the applicable critical conditions and describe the approach used to estimate both point and nonpoint source loads under such critical conditions.

The type and extent of contributing sources is characterized individually for each TMDL subwatershed starting with sediment impaired streams in Section 5.5 (Source Assessment and Quantification) and temperature impaired streams in Section 6.6 (Source Assessment).

Section 5.4.3 (Existing Condition and Comparison to Water Quality Targets) displays the sediment-related monitoring data used to confirm sediment impairments. MDEQ used a combination of models to establish the cause-and-effect relationship between sediment targets and various pollutant sources. These models determined the existing and allowable loading from each source category. Streambank erosion LAs were determined using the Bank Erosion Hazard Index (BEHI) method (Rosgen, 2001), unpaved roads LAs were determined using the U.S. Department of Agriculture’s (USDA) Water Erosion Prediction Project (WEPP) model (1995), and the upland erosion LA for Elk Creek was determined using USDA’s Universal Soil Loss Equation (USLE). These processes and related assumptions are described further in Appendix C (Bank Erosion Assessment), Appendix D (Road Sediment Assessment) and Appendix E (Upland Sediment Assessment).

Sediment load allocations and TMDLs in terms of tons per year are provided for each stream in Tables 5-33 through 5-45 and daily loads can be found in Appendix F (Sediment TMDL Estimates). Because categories of sediment sources were characterized using different methods, MDEQ emphasized the percent reductions provided, rather than the loads, as most useful to compare the magnitude of the problem across streams and source categories, the degree to which it can be mitigated, and as a way to prioritize restoration. Critical conditions were factored into the analysis by first recognizing how designated uses are most impacted and then establishing TMDLs for those conditions. Excess sediment impairs aquatic life by altering channel form and function and accumulating in critical aquatic habitat areas required for spawning. MDEQ’s monitoring parameters, monitoring timeframes and sediment TMDL targets focused on protecting aquatic life where and when the use is most sensitive to excess sediment. For example, measuring embeddedness and percent fines in riffles directly assesses the quality of spawning habitat.

Water temperature, streamflow and riparian shade data are provided in Appendix G (Madison Temperature Study Data Collection). Riparian shading was quantified using Geographic Information System (GIS) tools and aerial imagery as input variables into the Shade Tool, which is a model that calculates the percent effective shade and solar flux along a stream (Washington State Department of Ecology 2008). This information, along with channel geometry data, were incorporated into a QUAL2K water quality model (Chapra et al., 2012) to characterize existing temperature conditions and evaluate the effects of increases in shade and streamflow on water temperature. Temperature TMDLs are based on solar loading to a stream at a condition in which the stream is meeting its riparian shade targets, are derived as a function of the water surface area exposed to solar flux, and are presented as the modeled solar energy load in kilocalories (kcal) per day. The data, processes, and assumptions that went into using the Shade Tool are explained in Appendix I (Shade Targets and Target Development Data for Temperature TMDLs in the Madison TPA) and the QUAL2K modeling approach and results are detailed in Appendix J (QUAL2K Temperature Analysis, Description and Constraining Parameters). The QUAL2K and Shade Tool models identified critical conditions as the day in which water temperatures reached their maximum. MDEQ expects that meeting temperature TMDLs at these conditions will result in target attainment during all other days.

Assessment: EPA concludes that MDEQ’s loading capacity was calculated using an acceptable approach, used observed concentration data and water quality targets consistent with numeric water quality criteria, and has been appropriately set at a level necessary to attain and maintain the applicable water quality standards. The pollutant loads have been expressed as daily loads. The critical conditions were described and factored into the calculations and were based on a reasonable approach to establish the relationship between the target and pollutant sources.

4. Load Allocation

The TMDL submittal must include load allocations (LAs). EPA regulations define LAs as the portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution and to natural background sources. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, separate LAs should be provided for natural background and for nonpoint sources.

In the rare instance that a TMDL concludes that there are no nonpoint sources or natural background for a pollutant, the load allocation must be expressed as zero and the TMDL should include a discussion of the reasoning behind this decision.

After identifying streambank erosion, upland erosion and unpaved roads as the three primary sources of sediment to Madison TPA streams in Section 5.5 (Source Assessment and Quantification), MDEQ determined the allowable loading for each LA category following the process discussed in Section 5.6 (Determining the Total Allowable Sediment Load). This involved running Best Management Practice (BMP) scenarios to determine the controllable human-caused load based on literature, agency and industry documentation of BMP effectiveness, and/or field assessments. Stream-specific LAs are displayed in Tables 5-33 through 5-45. All streams were assigned a LA to streambank erosion and a LA to unpaved roads. Only Elk Creek (MT41F002_020) was assigned a LA to upland erosion, which was considered an insignificant sediment source to other the Madison TPA streams. Elk Creek has numerous agricultural fields within 50-100 feet of the stream that have poor cover and little to no riparian buffer to filter sediment contribution to the stream. The natural sediment load was not assigned a separate LA but

is recognized as a component of the streambank erosion LA category and was considered while using the reference-based approach to establish sediment TMDL targets.

Temperature TMDLs for each stream were allocated to a composite LA representing all nonpoint source contributions, both human and natural, as one allocation (see Tables 6-13 through 6-15). The LAs are based the solar load adjusted for the amount of shade that would be present during natural conditions, and represent such natural temperature influencing sources as geology, hot springs, wild animal grazing, other natural events (e.g., wildfire, beetle kill, etc.). The composite LA also represents an allowable loading to human sources applying all reasonable land, soil, and water conservation practices such as agriculture, silviculture, residential development and human-influenced thermal springs sources. The submittal discusses the composite temperature LA in Section 6.7 (Approach to TMDL Allocations) and how independent and combined modeled QUAL2K scenarios (e.g., decreased wetted width, 15% increased flow, etc.) impacted predicted stream temperatures in Appendix J (QUAL2K Temperature Analysis, Description and Constraining Parameters).

Assessment: EPA concludes that MDEQ's LAs provided in the TMDL are reasonable and will result in attainment of the water quality standards.

5. Wasteload Allocations

The TMDL submittal must include wasteload allocations (WLAs). EPA regulations define WLAs as the portion of a receiving water's loading capacity that is allocated to existing and future point sources (40 C.F.R. §130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and natural background will result in attainment of the applicable water quality standards, and all point sources have no measurable contribution.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. In some cases, WLAs may cover more than one discharger (e.g., if the source is contained within a general permit).

No WLAs are included in this TMDL submittal. There is one permitted point source facility that discharges to a sediment TMDL waterbody (Blaine Springs Creek): the Ennis National Fish Hatchery (MTG13008). The general permit for concentrated aquatic animal production requires monitoring for Total Suspended Solids (TSS) but does not contain TSS effluent limits. MDEQ considered the hatchery's TSS contribution to Blaine Spring Creek in terms of the sediment TMDL but determined the TSS to be of organic origin unrelated to the inorganic sediment water quality issue therefore, no sediment WLA was established for the fish hatchery.

Assessment: EPA concludes that the TMDLs considered all point sources contributing loads to impaired segments, upstream segments and tributaries in the watershed and the recommendation of zero WLA for each segment was justified and reasonable.

6. Margin of Safety

*The TMDL submittal must include a margin of safety (MOS) to account for any lack of knowledge concerning the relationship between load allocations, wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). The MOS may be **implicit** or **explicit**.*

*If the MOS is **implicit**, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is **explicit**, the loading set aside for the MOS must be identified.*

An implicit MOS was established for all TMDLs using conservative assumptions throughout the TMDL development process as summarized for sediment TMDLs in Section 5.8.2 (Margin of Safety) and temperature TMDLs in Section 6.9.2 (Margin of Safety). For example, the choices made when selecting targets and defining natural conditions, as well as the monitoring scheme followed to identify impairments, contribute to the implicit MOS which is represented as zero in the TMDL equation.

Assessment: Conservative assumptions mentioned in the TMDL document were adequately described and are reasonable. EPA concludes that MDEQ's TMDLs incorporate an adequate implicit margin of safety.

7. Seasonal Variation

The TMDL submittal must be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

MDEQ considered the impacts of seasonality in assessing loading conditions and for developing water quality targets, TMDLs, and allocation schemes as summarized for sediment within Section 5.8.1 (Seasonality) and for temperature within Section 6.9.1 (Seasonality). Sediment TMDLs and allocations are presented as average yearly loadings to incorporate the yearly hydrologic cycle specific to the Madison TPA which is a primary driver of erosion and channel geometry. Additionally, sediment target parameters were measured during summer or autumn low flow conditions which affords the best opportunity to assess effects of the annual snow runoff and early spring rains, which is the typical time frame for most sediment loading to occur.

Temperature monitoring also took place in the late summer during the warmest time of the year when temperature-related impacts to aquatic life are most likely to occur. While water temperature fluctuates significantly each day and seasonally, a primary benefit of the secondary TMDL targets, such as riparian shading and channel width/depth ratio, is that these temperature influencing targets will not change seasonally and will contribute year-round benefits to temperature loading.

Assessment: EPA concludes that MDEQ's seasonal variations were adequately described and considered to ensure the TMDL allocations will be protective of the applicable water quality standards throughout any given year.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by both point and nonpoint sources, EPA guidance (USEPA, 1991) and court decisions say that the TMDL must provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement the applicable water quality standards (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

EPA guidance (USEPA, 1997) also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

The TMDLs contained in this submittal are for nonpoint source-only impaired waters. Still, nonregulatory, voluntary-based reasonable assurances are provided for the LAs where the submittal discusses MDEQ's adaptive management approach to the TMDL process, the monitoring strategy that will be used to gauge TMDL effectiveness in the future, and the core aspects of a TMDL implementation strategy. These assurances include the recommendation of specific activities to focus implementation by source and by pollutant, the identification of watershed partners with shared interests in water quality, and the identification of several potential funding sources, which are discussed throughout Section 9.0 (Water Quality Improvement Plan).

Assessment: EPA concludes that reasonable assurances are not required for these nonpoint source-only TMDLs. Nonpoint source load reductions could be achieved with adequate implementation of Best Management Practices (BMPs) in areas likely to contribute the most loading.

9. Monitoring Plan

The TMDL submittal should include a monitoring plan for all:

- *Phased TMDLs; and*
- *TMDLs with both WLA(s) and LA(s) where reasonable assurances are provided.*

Under certain circumstances, a phased TMDL should be developed when there is significant uncertainty associated with the selection of appropriate numeric targets, estimates of source loadings, assimilative capacity, allocations or when limited existing data are relied upon to develop a TMDL. EPA guidance (USEPA, 2006b) recommends that a phased TMDL submittal, or a separate document (e.g., implementation plan), include a monitoring plan, an explanation of how the supplemental data will be used to address any uncertainties that may exist when the phased TMDL is prepared and a scheduled timeframe for revision of the TMDL.

For TMDLs that need to provide reasonable assurances, the monitoring plan should describe the additional data to be collected to determine if the load reductions included in the TMDL are occurring and leading to attainment of water quality standards.

EPA guidance (USEPA, 1991) recommends post-implementation monitoring for all TMDLs to determine the success of the implementation efforts. Monitoring plans are not a required part of the TMDL and are not approved by EPA but may be necessary to support the decision rationale for approval of the TMDL.

In Section 10.0 (Monitoring for Effectiveness), MDEQ provides monitoring recommendations that are intended to assist local land managers, stakeholder groups, and federal and state agencies in developing appropriate monitoring plans to meet the water quality improvement goals outlined in the TMDL submittal. The objectives for future monitoring in the Madison TPA include: 1) tracking and monitoring restoration activities and evaluating the effectiveness of individual and cumulative restoration activities, 2) baseline and impairment status monitoring to assess attainment of water quality targets and identify long-term trends in water quality, and 3) refining the source assessments. Once restoration measures have been implemented and given time to take effect, MDEQ is compelled by state law (MCA 75-5-703(7) & (9)) to monitor and re-evaluate the impairment status to determine whether water quality standards (i.e., TMDL targets) are being met.

Assessment: Monitoring plans are not a required element of EPA’s TMDL review and decision-making process. The TMDL submitted by MDEQ includes objectives for future monitoring written to evaluate the progress toward attainment of water quality standards. EPA is taking no action on the monitoring plan included in the TMDL submittal.

10. Implementation

EPA policy (USEPA. 1997) encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

EPA encourages States/Tribes to include restoration recommendations (e.g., framework) in all TMDLs for stakeholder and public use to guide future implementation planning. This could include identification of a range of potential management measures and practices that might be feasible for addressing the main loading sources in the watershed (see USEPA. 2008, Chapter 10). Implementation plans are not a required part of the TMDL and are not approved by EPA but may be necessary to support the decision rationale for approval of the TMDL.

The TMDL submittal contains information to assist local stakeholders develop a future Watershed Restoration Plan, which is a locally developed plan that will provide more specific restoration goals for the Madison TPA. In Section 9.0 (Water Quality Improvement Plan), MDEQ encourages a variety of general restoration approaches by pollutant and source type including management actions that support riparian buffers, wetland restoration, and vegetated filter strips. Additional information to support future implementation activities are also provided, such as a discussion of partner roles and potential funding sources.

Assessment: Although not a required element of the TMDL approval, MDEQ discussed how information derived from the TMDL analysis process can be used to support implementation of the TMDLs. EPA is taking no action on the implementation portion of the TMDL submittal.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each State/Tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 C.F.R. §25.3 and §130.7(c)(1)(ii)).

The final TMDL submittal must describe the State/Tribe's public participation process, including a summary of significant comments and the State/Tribe's responses to those comments (40 C.F.R. §25.3 and §25.8). Inadequate public participation could be a basis for disapproving a TMDL; however, where EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

Section 7.0 (Public Participation and Public Comments) explains the public engagement process MDEQ followed during development of the TMDL document. A draft TMDL report was released for public comment from July 22nd, 2020 to August 20th, 2020. The public comment period and public meeting were announced in a July 22nd, 2020 press release from MDEQ which was published on MDEQ's website and was distributed to multiple media outlets across Montana. A public notice advertising the public comment period and public meeting was published in the following newspapers: The Bozeman Daily Chronicle, The Madsonian, and Lone Peak Lookout. A virtual public informational meeting was held August 5th, 2020 via Zoom. Additionally, the announcement was distributed to the project's TMDL watershed advisory group, the Statewide TMDL Advisory Group, and other additional contacts via e-mail.

One public comment was received questioning why other streams in the Madison TPA were excluded from TMDL analysis. In Section 7.2 (Response to Public Comments), MDEQ summarized the comment and responded by describing the state's process for soliciting and incorporating feedback on the selection of waters to be monitored and assessed, which influences where TMDLs are ultimately developed. MDEQ offered to share the original comment letter upon request.

MDEQ worked to keep stakeholders apprised of project status and solicited input from a TMDL watershed advisory group. MDEQ consulted with the Beaverhead and Gallatin conservation districts during development of the TMDLs in this document, which included opportunities to provide comment during the various stages of TMDL development and an opportunity for participation in the watershed advisory group described above. MDEQ requested participation from the interest groups defined in state law (MCA 75-5-704) and included local city and county representatives; livestock-oriented and farming-oriented agriculture representatives; conservation groups; watershed groups; hydroelectric industry representatives; state and federal land management agencies; and representatives of fishing, recreation, and tourism interests.

Assessment: EPA has reviewed the state's public participation process, the summary of significant comments received and MDEQ's responses to those comments. EPA concludes that the state involved the public during the development of the TMDL, provided adequate opportunities for the public to comment on draft documents and provided reasonable responses to the comments received.

12. Submittal Letter

The final TMDL submittal must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute (40 C.F.R. §130.7(d)(1)). The final submittal letter should contain such identifying information as the waterbody name, location, assessment unit number and the pollutant(s) of concern.

A transmittal letter with the appropriate information was included with the final TMDL report submission from MDEQ, dated August 28th, 2020 and signed by Tim Davis, Division Administrator, Water Quality Division.

Assessment: EPA concludes that the MDEQ's submittal clearly and unambiguously requested EPA to act on final TMDLs in accordance with the Clean Water Act and the submittal contained all the necessary supporting information.

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