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October 21, 2021

Ref: 8WD-CWS

SENT VIA EMAIL
DIGITAL READ RECEIPT REQUESTED

Amy Steinmetz, Administrator
Water Quality Division
Montana Department of Environmental Quality
asteinmetz@mt.gov

Re: Approval of Red Rock Metals, Sediment, and *E. coli* TMDLs and Water Quality Improvement Plan

Dear Ms. Steinmetz,

The U.S. Environmental Protection Agency (EPA) has completed review of the total maximum daily loads (TMDLs) submitted by your office on October 18, 2021. 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 Red Rock TMDL Planning Area. 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. The 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 Margaret Stebbins on my staff at (404) 562-9393.

Sincerely,

Judy Bloom, Manager
Clean Water Branch

Enclosure:
Red Rock Metals, Sediment, and *E. coli* TMDL EPA Decision Rationale

Cc: Galen Steffens, Chief, Water Quality Planning Bureau, Montana Department of Environmental Quality
Kristy Fortman, Supervisor, Watershed Protection Section, Montana Department of Environmental Quality

EPA TOTAL MAXIMUM DAILY LOAD (TMDL) DECISION RATIONALE

TMDL: Red Rock Metals, Sediment, and *E. coli* TMDLs and Water Quality Improvement Plan

ATTAINS TMDL ID: M01-TMDL-01a

LOCATION: Beaverhead and Madison Counties, Montana

IMPAIRMENTS/POLLUTANTS: The submittal contains 36 TMDLs addressing 36 pollutants prepared for 22 waterbody segments in the Red Rock TMDL Planning Area (TPA). An additional 14 non-pollutant impairment causes are addressed by sediment TMDLs. Section 9 of the report describes how these non-pollutant causes are related to sediment and how they are expected to be addressed through implementing the pollutant reduction recommendations.

Waterbody/Pollutants Addressed in this TMDL Action:

Waterbody (Assessment Unit)	Assessment Unit ID	Pollutants Addressed
Bean Creek, Headwaters to mouth (Red Rock River)	MT41A004_140	Sediment
Big Sheep Creek, Headwaters to mouth (Red Rock River)	MT41A003_150	Sediment
Bloody Dick Creek, Headwaters to mouth (Horse Prairie Creek)	MT41A003_100	Aluminum
		Lead
Corral Creek, Headwaters to mouth (Red Rock Creek)	MT41A004_040	Sediment
East Fork Clover Creek, Headwaters to mouth (Clover Creek)	MT41A004_050	Sediment
Fish Creek, Headwaters to mouth (Metzel Creek)	MT41A004_030	Aluminum
		Sediment
Horse Prairie Creek, Headwaters to mouth (Clark Canyon Reservoir)	MT41A003_090	Sediment
		E. coli
Jones Creek, Headwaters to mouth (Winslow Creek)	MT41A004_130	Sediment
Little Sheep Creek, Headwaters to mouth (Red Rock River)	MT41A003_160	Iron
Long Creek, Headwaters to mouth (Red Rock River)	MT41A004_070	Sediment
Medicine Lodge Creek, Headwaters to mouth (Horse Prairie Creek)	MT41A003_010	Iron
		E. coli
		Sediment

Waterbody (Assessment Unit)	Assessment Unit ID	Pollutants Addressed
Metzel Creek, Headwaters to mouth (Red Rock River)	MT41A004_020	Arsenic
Muddy Creek, Confluence Sourdough and Wilson Creek to mouth (Big Sheep Creek)	MT41A003_020	Arsenic
		Iron
		Sediment
O'Dell Creek, Headwaters to mouth (Lower Red Rock Lake)	MT41A004_080	Sediment
Peet Creek, Headwaters to mouth (Red Rock River)	MT41A004_090	Arsenic
		Cadmium
		Copper
		Selenium
		Sediment
		E. coli
Price Creek, Headwaters to mouth (Red Rock River)	MT41A004_010	Arsenic
		Sediment
Red Rock Creek, Headwaters to mouth (Upper Red Rock Lake)	MT41A004_110	Sediment
Red Rock River, Lower Red Rock Lake to Lima Dam	MT41A001_020	*E. coli*
Sage Creek, Headwaters to mouth (Red Rock River)	MT41A003_140	Sediment
Selway Creek, Headwaters to mouth (Bloody Dick Creek)	MT41A003_110	Sediment
Tom Creek, Headwaters to mouth (Upper Red Rock Lake)	MT41A004_100	Sediment
Trail Creek, Headwaters to mouth (Horse Prairie Creek)	MT41A003_080	Aluminum
		Sediment

BACKGROUND: The Montana Department of Environmental Quality (MDEQ) submitted to EPA the final metals, sediment, and *E. coli* TMDLs for the Red Rock TPA with a submittal letter requesting review and approval dated September 28, 2021. The TMDL report was subsequently withdrawn on October 8, 2021 due to errors associated with resolving non-pollutant impairments in the document. The errors were fixed by MDEQ and the TMDL report was resubmitted for final EPA review and approval on October 18, 2021.

The submittal included:

- Letter requesting EPA's review and approval of the TMDLs
- Final TMDL document for Red Rock TPA metals, sediment, and *E. coli* TMDLs
- Appendices for Red Rock TPA metals, sediment, and *E. coli* TMDLs

- Errata detailing the corrections made to document in the resubmittal

APPROVAL RECOMMENDATIONS: Based on the review presented below, the reviewer recommends approval of the final Red Rock TPA metals, sediment, and *E. coli* TMDLs. All the required elements of approvable TMDLs have been met.

TMDL Approval Summary	
Number of TMDLs Approved:	36
Number of Parameters Addressed by TMDLs:	50

REVIEWERS: Margaret Stebbins; 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 RED ROCK TPA METALS, SEDIMENT AND *E. COLI* 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 Red Rock TPA is located in Beaverhead and Madison Counties and includes the Red Rocks National Wildlife Refuge, Clark Canyon Reservoir, and Lima Reservoir. The Red Rock TPA matches the Red Rock River watershed (fourth-code hydrologic unit code 10020001), which begins in the headwaters above Red Rock National Wildlife Refuge and ends at the outlet of the Clark Canyon Reservoir. The TPA is bounded by the Bitterroot Mountains to the west and south, the Centennial Mountains to the east, and the Black Tail and Snow Crest Mountains to the north. Figure 1-1 of the

TMDL report shows a map of the Red Rock River watershed, and detailed maps with the locations of waterbodies impaired for metals, sediment, and *E. coli* can be found in Figures 5-1, 6-1, and 7-1 respectively. Table DS-1 lists the impaired waterbodies in the Red Rock TPA and the pollutants causing the impairments. Sampling locations for the metals-impaired segments are detailed in Section 5.5 of the report (Source Assessment), sediment monitoring locations can be found in Figures D-1 and D-2 of Appendix D of the report, and *E. coli* monitoring locations can be found in Figure 7-1 of the report.

MDEQ has identified 14 waterbody segments in Table 1-1 of the report that do not meet applicable metals water quality standards, 18 waterbody segments that do not meet sediment water quality standards, and four waterbody segments that do not meet *E. coli* water quality standards. All of these were ranked high priority for TMDL development on the most recent 303(d) list (MDEQ, 2021). TMDLs are established for the pollutant of concern that is clearly identified and matches the state's 303(d) list as displayed in Figure 5-1 for metals, Figure 6-1 for sediment, and Figure 7-1 for *E. coli*. In addition, Table 1-2 lists other known nutrient, metals, temperature, sediment, and non-pollutant impairments to area waters that will be addressed by future MDEQ efforts.

Section 2.0 of the report (Red Rock TMDL Planning Area Description) summarizes the physical, ecological, and social profile of the project area and includes multiple maps showing the distribution of various watershed attributes such as hydrography, geology, population density, land use, land management, and grazing allotments.

There are no MPDES-permitted sources in the Red Rock Project Area. There are, however, two priority abandoned mines, one Small Miner Exclusion, and eleven opencut mines present in the Red Rock TPA. Table 5-14 (Mining Permits in the Red Rock Watershed) details further information about these sources. Nonpoint sources are reviewed in each pollutant-specific section in the report: Section 5.5 for metals (Source Assessment), Section 6.5 for sediment (Source Assessment and Quantification), and Section 7.6 for *E. coli* (Source Assessment and Quantification). Nonpoint sources for the pollutant groups are characterized into the following categories: metals: natural background; sediment: streambank erosion, upland erosion and riparian health, and unpaved roads; and *E. coli*: agriculture, subsurface disposal of domestic wastewater and failing septic systems, residential development and recreation, and natural background. Source contributions are described for each stream segment individually in sections for each pollutant group: metals: Sections 5.5.1 through 5.5.9; sediment: Sections 6.7.1 through 6.7.18; *E. coli*: Sections 7.6.2 through 7.6.5.

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) explains the general topic of water quality standards and provides relevant citations to state statute and administrative rules. Streams within the Red Rock TPA are to be maintained suitable for a variety of designated uses according to their use classifications defined in Table 3-1. MDEQ's antidegradation policies are discussed in Section 3.3 (Nondegradation Provisions) of the report. Additional information is organized by pollutant group.

Metals:

Table 5-1 of the report lists the metals-related section 303(d) listings in the Red Rock TPA, which include arsenic, aluminum, cadmium, copper, iron, lead, mercury, and selenium. The mechanisms by which metals impact beneficial uses are described in Section 5.1 (Effects of Excess Metals on Beneficial Uses). MDEQ identified the most sensitive uses to excess metals as drinking water and aquatic life. The concentration of metals for most streams in the Red Rock TPA did not violate the human health standard but did violate the standard for protecting aquatic life at long-term exposure. Therefore, TMDLs were prepared indicating the amount of metals that must be reduced at example flows to meet the aquatic life standard. Four exceptions exceeded the human health standard for arsenic: Metzel Creek, Muddy Creek, Peet Creek, and Price Creek. For these segments, TMDLs for arsenic were prepared describing the amount of arsenic that must be reduced at example flows to meet the human health standard.

Table 5-3 and 5-4 of the report identify the water quality targets for metals and the metals sediment quality targets, respectively. Metals numeric water quality criteria include values for protecting human health and for protecting aquatic life and apply as water quality standards for the streams addressed in the report. Aquatic life criteria include values for both acute and chronic effects. For any given pollutant, the most stringent of the criteria were adopted as the water quality target to protect all beneficial uses.

Sediment:

Sediment-related water quality targets for the Red Rock TPA are summarized in Table 6-2 of the report and described in detail in Section 6.4.2 (Target Development Rationale). The targets are based on reference site data discussed in Section 6.4 and Appendix A of the report. Consistent with EPA guidance for sediment TMDLs (EPA, 1999), water quality targets for the Red Rock 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. The statistical approach used to develop sediment targets is further explained in Appendix A of the report. Targets represented naturally occurring conditions, which is consistent Montana's water quality standard for sediment as described in Section 3.2 (Numeric and Narrative Water Quality Standards).

E. Coli:

Table 7-1 of the report indicates that *E. coli* is preventing primary contact recreation from being a fully supported designated use in four stream segments of the Red Rock TPA. The mechanisms by which *E. coli* impacts recreation are explained in Section 7.1 (Effects of Excess *E. coli* on Beneficial Uses).

MDEQ has identified primary contact recreation as the most sensitive use to excess *E. coli*; thus, by establishing TMDLs to protect primary contact recreation, it is expected that all other designated uses identified as being affected by *E. coli* will also be supported.

Table 7-2 identifies all components (magnitude, duration, frequency) of the numeric *E. coli* water quality criteria for both the recreation season (April-October) and the non-recreation season (November-March). These numeric *E. coli* criteria are applied directly as water quality targets for the TMDLs and are comprised of a seasonally dependent 30-day geometric mean criterion (≤ 126 or ≤ 630 colony forming units (cfu)/100mL) and an individual sample criterion (≤ 252 or ≤ 1,260 cfu/100mL). MDEQ expects that meeting the numeric *E. coli* criteria will lead to conditions necessary to support all other relevant narrative criteria.

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 pollutant group starting with metals-impaired streams in Section 5.5 (Source Assessment), sediment-impaired streams in Section 6.5 (Source Assessment and Quantification), and *E. coli*-impaired streams in Section 7.6 (Source Assessment and Quantification).

Metals:

Section 5.4 (Water Quality Data and Comparison to Targets) describes the water quality data and how it was evaluated for attainment of metals water quality targets. Source characterization and assessment to determine the major sources in each of the metal impaired waterbodies was accomplished by using monitoring data, aerial photos, Geographic Information System (GIS) analysis, field reconnaissance, and literature reviews. The type and extent of contributing sources is characterized individually for each segment in Section 5.5.1 through Section 5.5.9.

MDEQ established TMDLs at levels equivalent to the loading capacity for each waterbody-pollutant combination and expressed the TMDLs in terms of pounds per day under typical high and low flow conditions. The analysis examined water quality data under various hydrologic conditions in order to characterize water chemistry and consider critical conditions. Loading summaries and source load allocations were provided for each waterbody-pollutant combination for which a TMDL was prepared (Tables 5-26 through 5-34). Loading summaries were based on the sample data used for metals target evaluations. For each waterbody-pollutant combination, water quality and flow volume data were used to calculate metals loading estimates and the required percent load reduction to achieve the TMDL. Refer to Appendix B of the report for the complete water quality dataset used by MDEQ and Appendix C of the report for the specific data and calculations used in developing the TMDLs and allocations. Additional descriptions of equations used to calculate the TMDLs and rationales for flow data used in TMDL calculations for individual waterbody segments are summarized in Section 5.6 (Approach to Total Maximum Daily Loads).

Sediment:

Section 6.4.3 (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 sediment loading due to hillslope erosion was modeled using a method that incorporated the USDA's Universal Soil Loss Equation (USLE). These processes and related assumptions are described further in Appendix E (Bank Erosion Assessment), Appendix F (Unpaved Road Sediment Assessment), and Appendix G (Upland Sediment Assessment).

Sediment load allocations and TMDLs in terms of tons per year are provided for each stream in Tables 6-39 through 6-45 and estimated daily loads can be found in Appendix H (H3.0, Sediment Total Maximum Daily Loads). 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 was most sensitive to excess sediment.

E. coli:

Assessments to determine sources of *E. coli* were conducted individually by MDEQ for each segment (Section 7.6.2 through Section 7.6.5) and were based on water quality monitoring data collected by MDEQ in July and August of 2017, flow measurements, aerial photos, GIS analysis, field work, grazing lease management plans, and literature reviews. MDEQ determined that *E. coli* inputs to the Red Rock watershed come primarily from nonpoint sources, including agriculture, surface disposal of domestic wastewater and failing septic systems, residential development and recreation, and natural background sources.

The natural background contribution was estimated using data collected from 2003-2005 at several sampling sites outside the Red Rocks watershed that were identified as "reference" sites by MDEQ's water quality standards section. The median reference value of 19.6 cfu/100mL was used as an estimate of natural background sources for the calculations of load allocations in the report. The process is described further in Section 7.6.1.1 (Natural Background).

Water quality data used for analysis are presented in tables within stream-specific source assessment sections in Sections 7.6.2 through 7.6.5. Loading estimates and load allocations were based on observed water quality data and representative flow conditions; as such, TMDLs were not expressed as a load or mass, but instead as the number of cfu per day due to the nature of the pollutant. This approach is consistent with EPA guidance and the flexibility offered in 40 CFR §130.2(i) to express TMDLs in other appropriate, non-mass-based measures (USEPA, 2001).

Critical conditions are defined and incorporated into the TMDL process as described in Section 7.9.1 (Seasonality and Critical Conditions). MDEQ considers critical conditions as wet weather periods when the highest *E. coli* concentrations were observed, and summer low flow periods when water-based recreation was most common.

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.

Metals:

Metals LAs comprised of the pollutant load from naturally occurring sources. The natural background load was equal to the natural background allocation under all conditions in the report and was calculated for each flow for each stream using Equation 5-3. To determine the LA for each segment, MDEQ used the process outlined in Section 5.6 (Approach to Total Maximum Daily Loads). Natural background loading was accounted for separately from other human-caused sources in the TMDL allocations and was estimated from MDEQ water quality sampling sites with similar natural geology as the streams in the Red Rock watershed receiving TMDLs, but with low mining impacts. The average of site-level values across all ecoregions was used for natural background concentration for most parameters, with the exception of aluminum, arsenic, and lead, which varied by eco-region. For these parameters, reference-site values were averaged across each ecoregion that comprised a large portion of the watershed upstream of sampling points. Table 5-25 (Background Concentrations Used in Load Allocations) details further information on the background concentrations used in LAs, and segment-specific LA information can be found in tables 5-26 through 5-34.

Sediment:

After identifying streambank erosion, upland erosion and riparian health, and unpaved roads as the three primary sources of sediment to Red Rock TPA streams in Section 6.5 (Source Assessment and Quantification), MDEQ determined the allowable loading for each LA category following the process discussed in Section 6.6 (Determining the Total Allowable Sediment Load). This involved running Best Management Practice (BMP) scenarios for each major source type 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 6-39 through 6-56. All streams were assigned a LA to streambank erosion, unpaved roads, and upland erosion. 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.

E. coli:

As described in Section 7.7 (Approach to TMDL Allocations), MDEQ established two LAs for each TMDL, one for natural background and a second representing all human-caused nonpoint sources. The natural background LA was calculated according to Equation 7-3 and was based on median *E. coli* concentrations from sites within Montana that have similar land use characteristics as those found in the

Red Rock watershed. The composite human-caused LA was calculated as the difference between the TMDL and the sum of all the remaining load allocations, as displayed in Equation 7-4. This composite LA represents all human-caused nonpoint source contributions as one allocation; however, individual nonpoint source categories were characterized in greater depth for each waterbody in Section 7.6 (Source Assessment and Quantification). LAs can be found in Tables 7-10 through 7-13.

Assessment: EPA concludes that the 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).

Metals:

MDEQ identified historical mining in the Red Rock TPA as the major contributing source of metals to the impaired waters in Section 5.5 (Source Assessment). Each metals TMDL was assigned a composite WLA to abandoned mines and other human-caused sources. The composite WLA was determined by calculating the difference between the TMDL and the sum of the natural background load and the load from any active MPDES-permitted mines or upstream sources. No mining operations with MPDES permits were present in the Red Rock watershed, so the WLA_{active} was set to zero. The composite WLA strategy approach assumed that reductions in metals loading could be achieved through the remediation of the abandoned mines and the use of BMPs to control the other pollutant loads. Section 5.6.2 (Approach to Calculating Metals TMDLs and Allocations) outlines the equations used to determine TMDLs and the percent reduction needed. Segment-specific WLAs are outlined in Tables 5-26 through 5-34.

Sediment and *E. coli*:

There are no sediment or *E. coli* point sources in the Red Rock TPA; therefore, no WLAs are calculated in the TMDL report for those pollutant groups.

Assessment: EPA concludes that the WLAs provided in the TMDL are reasonable, will result in the attainment of the water quality standards and will not cause localized impairments. The TMDLs account for all point sources contributing loads to impaired segments, upstream segments and tributaries in the watershed.

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 metals in Section 5.8.2 (Margin of Safety), sediment in Section 6.8.2, and *E. coli* in Section 7.9.2. For example, *E. coli* TMDLs implicitly applied the MOS by selecting the 30-day geometric mean criterion as the daily loading target and not factoring a bacterial decay rate into loading calculations.

Assessment: EPA concludes the TMDLs incorporate an adequate implicit margin of safety. The conservative assumptions used to form the implicit MOS were adequately described in the TMDL submittal and are reasonable.

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, selecting water quality targets, and developing TMDLs and allocation as summarized for metals in Section 5.8 (Metals Seasonality and Margin of Safety), sediment in Section 6.8.1 (Seasonality), and *E. coli* in Section 7.9.1 (Seasonality and Critical Conditions).

Metals:

Metal concentrations and loading conditions were evaluated for both high flow and low flow conditions. MDEQ's assessment method used a combination of both high and low flow sampling for target evaluation since abandoned mines and other metals sources could lead to elevated metals loading during high and/or low flow conditions. Additionally, metals concentration targets applied year-round, with monitoring criteria for target attainment developed to address flow-related seasonal water quality extremes associated with loading and hardness variations. The TMDL equation incorporated all potential flow conditions that may occur during any season.

Sediment:

Sediment TMDLs and allocations were presented as average yearly loadings to incorporate the yearly hydrologic cycle specific to the Red Rock TPA. Seasonal loading rates for each source category were incorporated into the sediment TMDLs development.

E. coli:

E. coli water quality criteria are seasonally defined to coincide with impacts to designated uses. Criteria are more stringent during the summer season (April 1 through October 31) when bacterial growth is high and water-based recreation is common. MDEQ focused monitoring and source analysis work during this timeframe and ultimately chose the more stringent summer criterion for the TMDL target as a protective measure.

Assessment: EPA concludes that 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 developed for waters impaired by both point and nonpoint sources. Nonregulatory, voluntary-based reasonable assurances are provided for the TMDLs where the submittal discusses MDEQ's adaptive management approach to the TMDL process, the monitoring strategy that will be used to gage 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 category, the identification of watershed partners with shared interests in water quality, and the identification of several potential funding sources, which are discussed throughout Section 10.0 (Water Quality Improvement Plan) and Section 11.0 (Monitoring for Effectiveness).

Assessment: EPA considered the reasonable assurances contained in the TMDL submittal and concludes that they are adequate to meet the load allocation reductions. Nonpoint source load reductions are expected to occur through the implementation of BMPs planned to begin in the near future following the development of a Watershed Restoration Plan.

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 11.0 (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 Red Rock TMDL Planning Area include tracking and monitoring restoration activities and evaluating the effectiveness of individual and cumulative restoration activities, baseline and impairment status monitoring to assess attainment of water quality targets and identify long-term trends in water quality, and 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 in these waters.

Assessment: Monitoring plans are not a required element of EPA's TMDL review and decision-making process. The TMDL document 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 Red Rock TPA. In Section 10.0 (Water Quality Improvement Plan), MDEQ encourages a variety of general restoration approaches by pollutant source type, outlined in Section 10.5 (Restoration Approaches by Source). 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 8.0 (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 28, 2021 to August 18, 2021. A virtual public informational meeting was held August 10, 2021 via Zoom. The public comment period and public meeting were announced in a July 28, 2021 press release which was published on MDEQ's website and was distributed to multiple media outlets across Montana, including: *The Dillon Tribune*, *The Montana Standard*, and *Dillonite Daily*. 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. MDEQ received no formal comments during the public comment period.

Throughout the process, MDEQ worked to keep stakeholders apprised of project status and solicited input from a TMDL watershed advisory group. Interest groups defined in state law (MCA 75-5-704) were invited by MDEQ to participate and included livestock-oriented and farming-oriented agriculture representatives; conservation groups, such as the Beaverhead Conservation District and associated Beaverhead Watershed Committee; watershed groups, such as The Red Rock TMDL Planning Area TMDL Watershed Advisory Group; state and federal land management agencies; and representatives of fishing, recreation, and tourism interests.

Assessment: EPA has reviewed the MDEQ's public participation process and concludes that the state involved the public during the development of the TMDLs and provided adequate opportunities for the public to comment on draft documents.

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 October 15, 2021 and signed by Amy Steinmetz, Division Administrator, Water Quality Division. EPA received the package on October 18, 2021.

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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