

# STATEWIDE TMDL ADVISORY GROUP (STAG) MEETING SUMMARY

## NOVEMBER 2, 2020

### Zoom Meeting

1:30 p.m.

### Attendance:

#### ***STAG Members (name, affiliation, interest group represented)***

John Youngberg, Montana Farm Bureau – Farming-Oriented Agriculture (STAG Chair)

John DeArment, Clark Fork Coalition – Conservation or Environmental Interest

Brian Sugden, American Forest Management, Inc. - Forestry Industry

Doug Parker, Hydrometrics - Mining

Jeff Schmalenberg, MT Dept. of Natural Resources and Conservation – State Trust Land Management Agencies

Jordan Tollefson, Northwestern Energy – Hydroelectric Industry

Mike Geary, Healing Waters Lodge – Fishing-Related Business

#### ***Other Participants & Affiliation***

Peter Brumm, U.S. Environmental Protection Agency, Region 8 TMDL Program

Ethan Kunard, Montana Watershed Coordination Council

Tim Burton, Montana League of Cities and Towns

Kelly Lynch, Montana League of Cities and Towns

Julia Altemus, Montana Wood Products Association

Tim Davis, DEQ Administrator – Water Quality Division

Galen Steffens, DEQ Bureau Chief – Water Quality Planning Bureau

Darrin Kron, DEQ Supervisor – Monitoring and Assessment Section

Kristy Fortman, DEQ Supervisor - Watershed Protection Section

Myla Kelly, DEQ Supervisor – Water Quality Standards and Modeling Section

Christy Meredith, DEQ – Watershed Protection Section

Christina Staten, DEQ – Watershed Protection Section

Mark Ockey, DEQ – Watershed Protection Section

Hannah Riedl, DEQ – Watershed Protection Section

Darryl Barton, DEQ – Source Water Protection

Joanna McLaughlin, DEQ – MPDES Permitting Section

John Youngberg, STAG Chair, called the meeting to order just after 1:30 p.m. and there was a round of introductions of those in attendance via Zoom. See Attachment A for a copy of the presentation given by DEQ.

## ACTIVITIES COMPLETED IN 2020

### Water Quality Monitoring and Assessment

Darrin Kron, Supervisor of the Monitoring and Assessment Section of DEQ, gave an overview of the activities completed by his section this year. Monitoring was conducted on the Yellowstone, Missouri, Bitterroot, Gallatin, Clark Fork, and Smith rivers, as well as East Fork Armells, Kennedy, and Deep creeks. Algal bloom reports of nuisance cladophora were investigated on the Gallatin, Big Hole, Blackfoot, and Clark Fork rivers. Volunteer monitoring was supported for the: Big Hole River Foundation and Big Hole Watershed Committee, Carbon CD (Clark's Fork Yellowstone), Friends of Lake Mary Ronan, Little Bitterroot Lake Association, Missoula Water Quality District, Sun River Watershed Group, Upper Missouri Watershed Alliance, and the Ecological Research Center (Yellowstone River).

Montana's 2020 Water Quality Integrated Report, which includes the list of impaired waters, underwent a public comment process and DEQ is in the process of responding to comments received; the report will then be submitted to the U.S. EPA. As discussed in the January STAG meeting, DEQ's overarching beneficial use assessment method was updated and underwent public comment, and new assessment methods were drafted and underwent public comment for *E. coli*, and for electrical conductivity and sodium adsorption ratio for the Tongue, Powder and Little Powder rivers, the Tongue River Reservoir, and Rosebud Creek.

### Total Maximum Daily Loads (TMDLs)

Kristy Fortman, Supervisor of the Watershed Protection Section of DEQ, gave an update on TMDL development activities (see Attachment A for a map of TMDL project areas). Two TMDL documents were completed and approved by EPA this year: the Madison sediment and temperature TMDLs, and the Beaverhead metals TMDLs. The Sheep Creek aluminum TMDL is scheduled for completion before the end of the year; the public comment process is complete, and the document will soon be submitted to EPA for approval. The Musselshell, Red Rock and Tongue River TMDLs are still under development, and are discussed later in the meeting.

Kristy also gave an overview of a stream summary document being produced to supplement the Madison sediment and temperature TMDL document (see Attachment A for screenshots of the summary document). The goal of this document is to provide local stakeholders a digestible summary of each stream monitored by DEQ during the project. Each summary includes information on the pollution problems for that stream, possible solutions to those problems, and potential locations for restoration work. DEQ's goal is to produce this type of summary information for each TMDL project, moving forward; this will not be a retroactive effort for previously completed TMDLs.

### Nonpoint Source Program

Kristy then gave an overview of Nonpoint Source Program activities completed this year. As discussed at the January STAG meeting, the Nonpoint Source Program is now selecting "focus areas," where half of the program's technical and financial assistance is dedicated, with the goal of leading to measurable water quality improvements. The Bitterroot River watershed is the current focus area and the Lower Gallatin River watershed has been chosen as the next focus area (see map in Attachment A). Half of the program's federal 319 funding went toward projects within the Bitterroot in 2020, and will again be focused there with the 2021 round of funding. Additionally, a Bitterroot River protection plan is under development to address nutrients in the river.

A community readiness assessment is being conducted in both the Bitterroot and Lower Gallatin watersheds to help DEQ determine how to focus resources. The assessments determine local levels of knowledge regarding water quality and willingness to participate in water quality improvement measures. Small planning grants have been awarded in the Lower Gallatin watershed to help line up restoration projects in preparation for focused funding in that watershed, as well as to update their watershed restoration plan.

Additionally, effectiveness of past 319 projects across the state are being evaluated by the program to see how well the projects are holding up, if they are leading to water quality improvements, and if landowners are satisfied with the projects. To help streamline this process, a project effectiveness review app is being developed.

A “success story” was written this year for Cramer Creek (tributary to upper Clark Fork River), where metals impairments were removed from the list of impaired waters. Monitoring for success stories occurred this year in Goat Creek (Swan River tributary), Middle Fork Judith River, Ruby River, tributaries of the upper Lolo River, and tributaries in the headwaters of the Bitterroot River. Additionally, a TMDL implementation evaluation (TIE) was completed for the Ruby and a TIE is nearing completion for the Bitterroot River headwaters.

## **Discussion**

Mike Geary, Fisheries-Related Business representative, asked if cladophora is expanding to different rivers. Darrin Kron responded that DEQ saw a bloom in the Big Hole River that we don’t usually see, a few in the upper Gallatin that we don’t usually see, and a little bit of growth in the Blackfoot River that we don’t usually see. However, he couldn’t say yes with scientific certainty. Mike then asked if DEQ had a feel for the cause of why these blooms are expanding – if it just isn’t warm weather because the last few springs have been cool. Darrin stated that DEQ is about to do its next round of data analysis on the Smith River that will shed some light, but the cooler the springtime temperatures we have on the Smith, the further back the blooms occur in the summer. Water temperature, nutrients, sunlight (smoky summers and overcast conditions can reduce algae growth), and flow rates all affect algae growth, so there’s no one smoking gun per se. Each situation appears individualistic: in the Big Hole, DEQ thinks it could be from a large thunderstorm that came through and caused erosion in a few tributaries.

Mike also asked if DEQ works with FWP to see if there is a correlation between a healthy fishery and cladophora. Darrin responded that if we see cladophora growth over multiple years, fish populations suffer, and shifts will occur in aquatic insect populations (more sensitive species get suppressed).

## **NUTRIENT WATER QUALITY STANDARDS AND VARIANCES**

Myla Kelly, Supervisor of DEQ’s Water Quality Standards and Modeling Section of DEQ, gave a timeline history of nutrient standards development work in Montana. See Attachment A for a copy of the timeline. Galen Steffens, Bureau Chief of the Water Quality Planning Bureau of DEQ, then gave an overview of DEQ’s recent actions pertaining to numeric nutrient standards based on recent litigation. Note from the history timeline that when the numeric nutrient standards and variances (Circulars DEQ-12A and -12B) were adopted by the Board of Environmental Review in 2014, the rules included a non-severability clause which essentially meant if there is not a variance process in place, the underlying numeric nutrient criteria cannot stand on their own; that they are intrinsically linked. A recent court decision triggered the non-severability clause, which eliminated the numeric nutrient criteria, leaving only the narrative nutrient standards in place for most of our state waters. There has been an appeal

case in progress in the 9<sup>th</sup> Circuit Court regarding the non-severability clause, and a new court decision was issued on Friday (10/30) that DEQ is still reviewing. The Water Quality Planning Bureau is still analyzing how to best apply the narrative nutrient water quality standards and determining implications on each water quality program (i.e., TMDLs, monitoring and assessment, surface water permitting). This will result in delays in development of nutrient TMDLs within the current TMDL priority areas.

## Discussion

Doug Parker, Mining Representative, asked why there are delays in TMDL development since DEQ previously operated off the narrative nutrient standards prior to adoption of the numeric standards. Galen Steffens responded that DEQ is still analyzing what the options are for implementing the narrative standards. Doug also stated that it appears DEQ would like to apply the numeric standards, whether it has the authority to do so, as the interpretation of the narrative standards, which appears problematic since the narrative standards are the law. Galen responded that is not what DEQ is doing; the agency is working on having a solution that involves what the narrative standards look like now, and the agency is still analyzing what the options are. Myla Kelly added that DEQ has reinvigorated the Nutrient Work Group to help address this question and identify approaches.

Doug asked a follow-up question on what DEQ sees as a schedule and a process going forward with laying out what the new approach will be. Galen responded that DEQ is working internally across the Water Quality Division, as well as with the Nutrient Work Group, to determine solutions, with an estimated timeframe of three to four months.

John Youngberg, Farming-Oriented Agriculture representative and STAG Chair, stated that he didn't understand what DEQ is trying to do to narrative standards to make them fit the scenario we have today – is DEQ trying to fit the narrative standards into something? Galen responded that it's not as simple as plugging in what we used to do in the past; we want to have a more robust conversation across the board and with the Nutrient Work Group to be very thoughtful and comprehensive in what that ends up looking like with the narrative standards. John also stated that he is concerned about litigation due to project delays and not meeting required timelines. Galen responded that DEQ is continuing TMDL development for pollutant categories that we can keep working on, such as TMDLs for *E. coli*, and working concurrently on developing a solution for narrative nutrient standards.

It was then asked what EPA's involvement is in this process. Galen responded that DEQ is having conversations with EPA throughout this process.

Brian Sugden, Timber Industry representative, wanted to clarify the timeline for the process and asked if DEQ is targeting the 2021 legislative session or a future session, as the timeline doesn't seem aggressive enough for a clean repeal versus the transition proposal. Galen responded that the draft legislation to repeal 75-5-313, MCA (nutrient standards variances) is for this upcoming session. The action for variances will transition under 75-5-320, MCA, which was approved in the 2019 session. What the narrative standards look like moving forward is a separate piece.

Darrin Kron provided additional information about how this affects assessment methodology, stating that nutrient assessments have a weight of evidence approach that looks at nutrient conditions as well as biological conditions. Depending on geographic location in the state, five or six indicators are evaluated. DEQ will be looking at whether any of this needs to be changed and if we need to rely more heavily on factors that point directly back to the narrative standard.

Doug stated that looking at biological indicators is a primary factor in determining impairment, which seemed to be lost for a while with having the numeric standards, so this is an opportunity to have more flexibility that wasn't available when the numeric criteria was in place.

## **FUTURE PROJECT CONSIDERATIONS: CURRENT TMDL PRIORITY AREAS**

Kristy Fortman led a discussion on future project considerations, as nutrients are a component of many TMDL priority areas scheduled for completion. See Attachment A for a map of TMDL priority areas. The Musselshell and Red Rock watersheds are scheduled for 2021 completion, both of which include nutrient impairments. Since nutrient work is delayed, DEQ is moving forward with completion of other pollutant categories for both projects and currently is not intending to include nutrients in the documents. The Musselshell document will include *E. coli* TMDLs, and the Red Rock document will include sediment and metals TMDLs. Additionally, nutrient TMDLs were removed from the Beaverhead document that was approved by EPA this year, and it only included metals TMDLs.

The Tongue River salinity TMDL and the Yellowstone River nutrient TMDLs are scheduled for 2022 completion. Depending on how DEQ strategizes moving forward, the Yellowstone TMDLs may or may not be delayed. The Smith River nutrient TMDLs and the Missouri River nutrient TMDLs are scheduled for 2023 completion. Unscheduled priority areas include Flathead Lake phase II and Beaverhead nutrient TMDLs.

Otter Creek is also listed as a TMDL priority area due to a former coal mine application for a permit to discharge to Otter Creek. The application is no longer active and the TMDL project was placed on hold a few years ago. DEQ proposes removing Otter Creek from the list of TMDL priority areas (changing from high priority to low priority).

## **Discussion**

Doug Parker asked how DEQ could complete the Tongue River TMDL without completing Otter Creek since it is an important tributary to the Tongue and the dataset for Otter Creek is extensive. Kristy Fortman responded that the Tongue River TMDL currently under development is an electrical conductivity (EC) TMDL and the TMDL for Otter Creek is an iron TMDL; therefore, the Otter Creek TMDL does not influence the Tongue River TMDL. However, water quality modeling work for the Tongue River salinity (EC) TMDL includes Otter Creek and an Otter Creek salinity dataset. Additionally, the factors used to determine TMDL priority areas no longer rank Otter Creek as a high priority, since stakeholder interest is low and there is no longer an active permit application. However, DEQ would like feedback on whether it should prioritize its resources toward completing this TMDL.

Doug stated that he understands the permit is not moving forward, but since quite a bit of work has already been done on Otter Creek, it seems like it could be included with the Tongue work. Kristy responded that since they are separate pollutants (EC versus iron), DEQ most likely would not include them in the same TMDL document, as they are separate projects.

John Youngberg asked how far along the iron TMDL work had proceeded before it was put on hold. Christina Staten, Water Quality Specialist, responded that a full document was drafted and went through a 30-day public comment period. Substantial comments were received from the Northern Cheyenne Tribe stating that their iron water quality standards for the Tongue River were not considered in the draft TMDL and that it needed to be revised to adequately consider the Tribe's downstream

beneficial uses for the Tongue River. The TMDL will need to be redone and undergo another public review period before the document can be completed. Since the permit for the new mine became inactive, there was no longer a driver to complete the document.

Doug stated that it seems like DEQ is just kicking the ball down the road and trying to avoid having to address the Tribe's comments. Christina responded that DEQ works with the Tribe regularly throughout the Tongue TMDL project and it's not a matter of not addressing their comment. Additionally, if the TMDL were to be revised, it would now be written with only load allocations to nonpoint sources; there would not be a wasteload allocation since there is no longer a point source to address. Doug then stated that DEQ must address future activities during TMDL development and there must be a placeholder for that. Christina responded that this is true, but a wasteload allocation would not be required.

John stated that DEQ will still have to address the Tribe's water quality standards for iron on the Tongue River and Christina replied that yes, ultimately DEQ will have to take those into consideration when completing the Otter Creek iron TMDL. Kristy added that it might take a significant amount of resources to complete the TMDL, and DEQ is posing the question to the STAG of whether that is something with which the agency should move forward.

Doug stated that because a draft document was out, and all the data is there, it seems a waste to skip over it and come back at a future time and have to redo the work. John then asked if the data would still be relevant in 10 years. Kristy responded that DEQ typically uses a dataset that is not older than 10 years and would have to check the dates of the Otter Creek data, but knows that it is currently within the 10-year timeframe. John then responded that he thinks DEQ should move ahead with the Otter Creek document since so much has been invested in it. Brian Sugden concurred with John and Doug.

## **FUTURE PROJECT CONSIDERATIONS: POSSIBLE FUTURE TMDL PRIORITY AREAS**

Kristy Fortman went over a few project areas that are on DEQ's radar, but are not scheduled for TMDL completion, including: Clarks Fork of the Yellowstone, Lake Koocanusa, and updating the Clark Fork VNRP (voluntary nutrient reduction plan). Myla Kelly then gave an overview of recent work on Lake Koocanusa.

In the last five to eight years, DEQ has been developing site-specific selenium standards for Lake Koocanusa, which is undergoing the rulemaking process now and DEQ is currently taking public comment on the standards. DEQ has proposed criteria for both fish tissue and the water column for Lake Koocanusa, and water column criteria for the Kootenai River. Once the standards are adopted, DEQ will then be working through developing an assessment method and making an impairment determination for both the lake and the river. Additionally, Idaho DEQ has listed the Kootenai River on their 2020 Integrated Report as impaired for selenium, which may lead to an Idaho TMDL with an allocation to the state of Montana. The human-caused sources of selenium to the lake originate in Canada from coal mining operations.

## **Discussion**

Doug Parker asked the purpose of doing a TMDL since DEQ doesn't have control over the transboundary water coming from Canada, and since there's no way for Montana to affect a change there, wouldn't it be better to just monitor fish tissue and put out advisory consumption warnings if it's a health issue? Myla responded that before a TMDL could be developed, an impairment determination would have to be made, and Montana doesn't have a water quality standard in place yet. So, this is looking a little bit

down the line. DEQ has been working very closely with British Columbia to develop a shared water quality standard (1 lake, 1 number). Having a protective standard in place is the first step in any transboundary negotiations.

John Youngberg requested clarification that DEQ isn't looking for a TMDL for Lake Koocanusa; it's instead looking for a water quality standard. Myla responded that DEQ is in the process of developing water quality standards, after which an impairment determination would need to be made before a TMDL would be developed. John then stated that he isn't sure the purpose of developing a TMDL since the sources of selenium do not originate in Montana.

John also asked EPA's role in this project. Peter Brumm, EPA Region 8 TMDL Coordinator, responded that EPA is heavily involved with the meetings and negotiations between DEQ and British Columbia. EPA will also review and act on (approve or disapprove) the proposed selenium water quality criteria and standard. Peter also stated that this project is being discussed outside of EPA at the State Department and Senators are involved.

Brian Sugden noted that this will be a recurring item on future STAG meeting agendas. He stated that it seems like a logical second step to determine what the loads of selenium coming in are and how much they need to be reduced to meet the new water quality standards that's being developed. He thinks that ultimately a TMDL will need to be developed. Myla added that it will be interesting to watch Idaho DEQ's approach to developing a TMDL since Montana is an upstream source, and DEQ will keep the STAG apprised on any developments.

## **PLANNING FOR NEXT STAG MEETING**

John Youngberg requested future meeting topics. Doug Parker requested that DEQ keep the STAG apprised of how it plans to handle the narrative nutrient standards. Brian Sugden requested updates on Lake Koocanusa standards development.

It was agreed that the next STAG meeting should be held in February 2021 and John Youngberg requested DEQ set up a Doodle poll to determine a meeting date and time.

## **PUBLIC COMMENT**

There was no public comment.

The meeting was closed just after 3:00 p.m.

## **ATTACHMENT A: NOVEMBER 2, 2020 MEETING PRESENTATION**





## STATE TMDL ADVISORY GROUP



**NOVEMBER 2, 2020 | 1:30 PM - 4:00 PM**

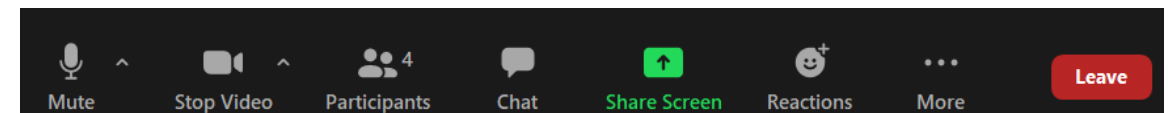
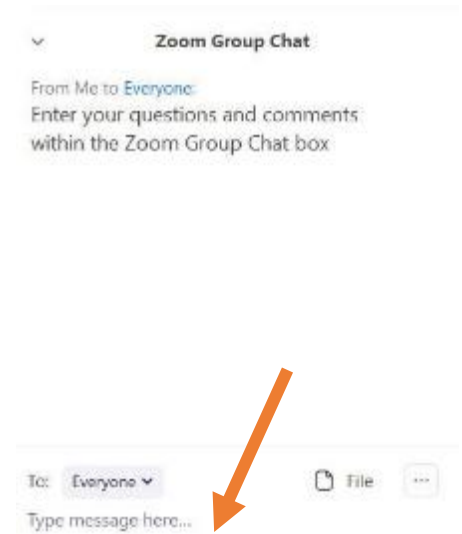
**Join via Zoom to see the presentations:**

<https://mt-gov.zoom.us/j/98254921562>

**Join by phone: (406) 444-9999, Meeting ID: 982 5492 1562**

# Welcome!

- Quick introduction to Zoom
- Call to order, introductions, agenda items, and public comment
- Video/camera is optional, please mute yourself during the presentation
- STAG members
  - Unmute to speak and ask questions
  - Public comment
  - Enter questions in the chat box during comment time or unmute to speak and ask questions
- Turning off your video feed provides better bandwidth





# STAG Members

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Name & Affiliation	Representing	Term End Date
<b>John Youngberg (STAG Chair)</b> <b>Montana Farm Bureau</b>	Farming-Oriented Agriculture	January 31, 2021
<b>Jay Bodner</b> <b>Montana Stock Growers Association</b>	Livestock-Oriented Agriculture	January 31, 2021
<b>John DeArment</b> <b>Clark Fork Coalition</b>	Conservation or Environmental Interest	January 31, 2021
<b>Joe Gutkoski</b> <b>Montana River Action</b>	Water-Based Recreation	January 31, 2021
<b>Brian Sugden</b> <b>American Forest Management, Inc.</b>	Forestry Industry	January 31, 2021
<b>Ryan Leland</b> <b>City of Helena</b>	Municipalities	January 31, 2021
<b>Vacant</b>	Point Source Dischargers	Vacant
<b>Doug Parker</b> <b>Hydrometrics</b>	Mining	January 31, 2021
<b>Alden Shallcross</b> <b>Bureau of Land Management</b>	Federal Land Management Agencies	January 31, 2021
<b>Jeff Schmalenberg</b> <b>Department of Natural Resources &amp; Conservation</b>	State Trust Land Management Agencies	January 31, 2022
<b>Stephen Granzow</b> <b>Lewis and Clark Conservation District</b>	Conservation District Supervisor - East	January 31, 2021
<b>Donna Pridmore</b> <b>Flathead Conservation District</b>	Conservation District Supervisor – West	January 31, 2022
<b>Jordan Tollefson</b> <b>Northwestern Energy</b>	Hydroelectric Industry	January 31, 2021
<b>Mike Geary</b> <b>Healing Waters Lodge</b>	Fishing-Related Business	January 31, 2022

# Agenda

## **Preliminaries**

- Zoom Meeting Initiation (Kristy Fortman, DEQ)
- Call to Order & Introductions (John Youngberg, STAG Chair)
- Meeting Agenda (John Youngberg)

## **Water Quality Monitoring, TMDL, and Nonpoint Source Program Activities Completed in 2020**

- Water Quality Monitoring & Assessment Activities (Darrin Kron, DEQ)
- Nonpoint Source Program Activities (Kristy Fortman)
- TMDL Program Activities (Kristy Fortman)

## **Nutrient Water Quality Standards and Future Project Considerations**

- Status of Numeric Nutrient Water Quality Standards and Variances (Circulars DEQ-12A and 12B), Proposed Legislation, and Implications (Galen Steffens, DEQ)
- Future Project Considerations (Darrin Kron, Kristy Fortman)
- Discussion & Questions

## **Proposed TMDL Priority Area Changes**

- Removal of Otter Creek (Kristy Fortman)
- Discussion

## **Public Comment & Close of Meeting**

- Discussion of Next Meeting Topics and Meeting Date (facilitated by John Youngberg)
- Public Comment (facilitated by John Youngberg)
- Meeting Close (Kristy Fortman)

# Water Quality Monitoring and Assessment Activities 2020

- Sampled or contracted monitoring on the Yellowstone, Missouri, Bitterroot, Gallatin, Clark Fork and Smith Rivers, EF Armells, Kennedy and Deep Creeks.
- Sampled a handful of USFS streams for sediment and habitat to see if on-the-ground projects have led to water quality improvements.
- Volunteer Monitoring:
  - Big Hole River Foundation and Watershed Committee • Clark's Fork Yellowstone (Carbon CD) • Friends of Lake Mary Ronan • Little Bitterroot Lake Association • Missoula WQD • Sun River Watershed Group • Upper Missouri Watershed Alliance (Craig Area) • Yellowstone River (Ecological Research Center)



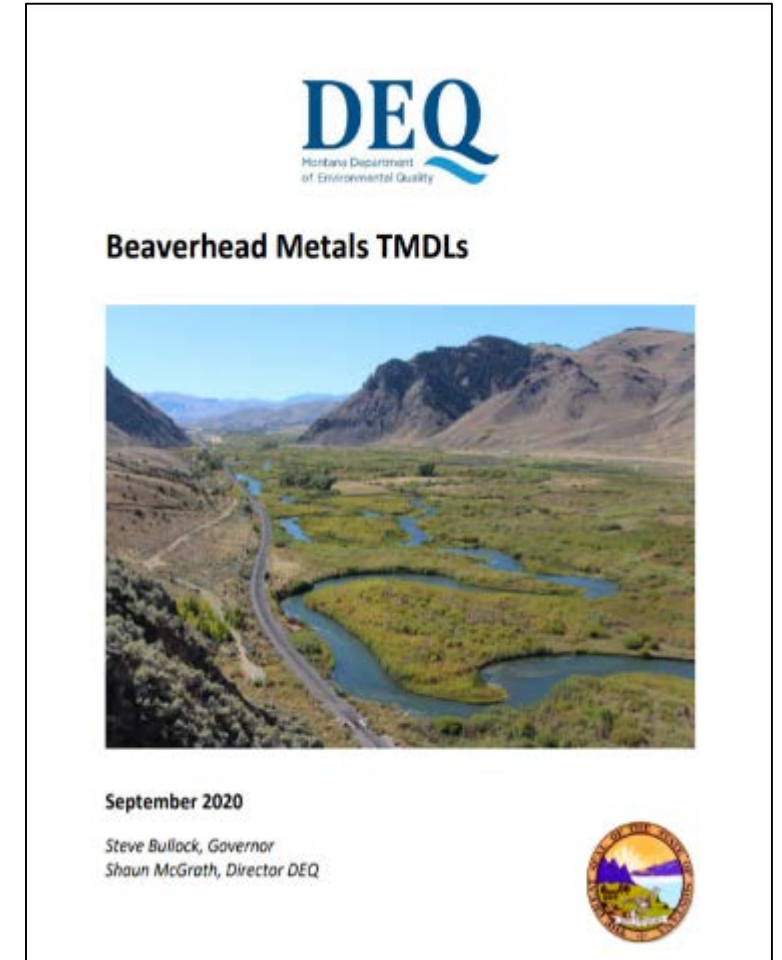
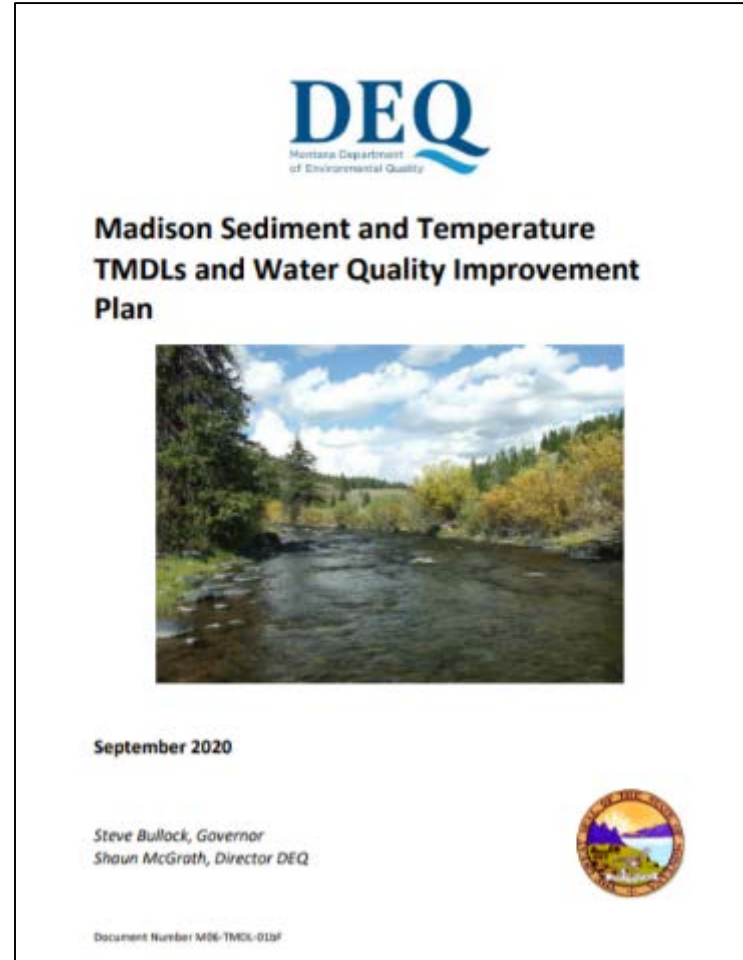
# Water Quality Monitoring and Assessment Activities 2020

- Investigated algae bloom reports (Cladophora) on Gallatin, Big Hole, Blackfoot and Clark Fork
- Public process for 2020 IR, which includes impaired waters list
- Beneficial use assessment methods:
  - Updated: Overarching Methodology
  - Created: 1. E. coli, 2. EC and SAR in the Tongue, Powder and Rosebud Watersheds
- Bureau wide data management and monitoring equipment maintenance



# TMDL Development Activities 2020

- **Completed TMDLs 2020**
  - Madison Sediment and Temperature
  - Beaverhead Metals
- **Scheduled for completion 2020**
  - Sheep Creek Aluminum
- **TMDLs in development 2020**
  - Musselshell
  - Red Rock
  - Tongue





# MADISON WATERSHED



STREAM SUMMARIES  
2020



## Stream Summaries

### Pollution Problems

#### Sediment

Sediment is a naturally occurring component of a healthy and stable stream system. Excess amounts of sediment, however, has many negative effects. Accumulation of fine sediment reduces availability of suitable spawning habitat for fish and smothers fish eggs and fry. Accumulation of large particles, such as cobbles, leads to over-widened channels and reduced streamflow (sometimes leading to subsurface flow). Water can also appear murky when excess sediment is suspended in the water (turbidity).

##### Human-Caused Sources

- Streambank Erosion
- Erosion from dirt/gravel roads
- Construction sites
- Mining
- Agricultural activities

##### Solutions

Improve health of streamside vegetation to increase streambank stability and filter sediment from reaching the stream from upland sources



#### Temperature

Montana's western streams naturally run cold and support trout fisheries. Increased stream temperatures from solar radiation or human additions of heated water threaten the health of fish by reducing dissolved oxygen, and increases amounts of algae growing in the stream that further reduces available dissolved oxygen for fish. Higher stream temperatures also make fish more susceptible to disease, and boost the opportunity for non-native fish more tolerant of higher stream temperatures to outcompete native trout.



##### Human-Caused Sources

- Removal of native streamside vegetation
- Irrigation withdrawals
- Warm irrigation return flows

##### Solutions

Improve health of streamside vegetation to create temperature-reducing shade and channel stability (keep streams from becoming wide and shallow)

### Pollution Problems

#### Flow Modifications

Flow modification refers to a change in the flow characteristics of a water-body relative to natural conditions. Modifications could be associated with changes in runoff and streamflow, commonly linked to elevated peak flows. Road crossings, particularly where culverts are undersized or inadequately maintained, can also alter flows by causing water to back-up upstream of the culvert. Irrigation withdrawal management can lead to base flows that are too low to support aquatic life and recreational activities, or result in dry channels. Low flow conditions absorb solar radiation more readily and increase stream temperatures, which in turn creates dissolved oxygen conditions too low to support some species of fish.

##### Human-Caused Sources

- Urban development
- Timber harvest
- Undersized culverts
- Irrigation withdrawal management

##### Solutions

- Install properly sized culverts at stream crossings
- Implement irrigation efficiency projects, where appropriate
- Maintain buffers between streams and timber harvest areas
- Avoid straightening stream channels



#### Instream and Streamside Habitat Alterations

These alterations refer to circumstances where practices along stream channel have altered or removed vegetation and cases where the stream has been physically altered or manipulated. These changes subsequently alter channel shape and stream temperature, and may result in loss of instream habitat (riffles and pools).

##### Human-Caused Sources

- Removal of streamside vegetation
- Overgrazing in stream corridors
- Channel straightening to accommodate roads, agricultural fields, or mining operations
- Channel alterations due to new infrastructure (roads, bridges, dam impoundments)

##### Solutions

- Maintain streamside buffers
- Grazing management practices that maintain healthy streamside vegetation
- Maintain natural stream shape and pattern and allow streams to move/migrate (avoid straightening streams)



# Antelope Creek

Location Description: Headwaters to junction with Cliff Lake

**Impairments: Sediment, Flow Alteration, Alterations to Streamside Vegetation**

**Negatively Affects: Aquatic Life**

## Problem

The excess fine sediment loading at the upper DEQ-monitored site (ATLP 04-02) is linked to riparian grazing in the form of trampled streambanks and over-widened areas of the stream from cattle crossings.

## Solutions

Riparian area improvements in the form of grazing best management practices could eventually result in reducing sediment loading enough to meet the water quality standard. The DEQ-monitored site on lower Antelope Creek (ATLP 10-01) demonstrated stable streambanks and a recovering riparian area due to a more recent fencing project and hardened stream crossing that has reduced livestock access to the stream.

## Potential Restoration Project Locations

The project locations discussed in this section are directly linked to riparian grazing management or other riparian zone improvement BMPs that would subsequently result in reduced bank erosion and improvements in the stream's ability to transport sediment and provide aquatic habitat (channel form and function). Based on reviews of aerial photography, riparian areas generally appear healthy along the very upper reaches of Antelope Creek. Heavy grazing throughout the middle and lower portions of Antelope Creek is likely creating the same conditions seen at the DEQ-monitored site ATLP 04-02 (unstable streambanks and unhealthy riparian areas). Additionally, Antelope Creek runs dry during the summer months below ATLP 04-02 and projects to increase streamflow during hot summer months would prove beneficial to aquatic life as well as the riparian area for maintaining stable streambanks.



A trampled stream bank from cattle access at monitoring site ATLP 04-02



Healthy riparian vegetation along Antelope Creek



Monitoring location ATLP 10-01 above Cliff Lake

# Antelope Creek

## WATERSHED RESTORATION PLAN INFORMATION

Antelope Creek WRP Elements

Waterbody / Assessment Unit ID: MT41F004\_140

Impairments Addressed in TMDL Document	Applicable Document Section(s)			
	Source Assessment	Load Reductions	Targets	Water Quality Improvement Practices & Monitoring Plan
Sedimentation – Siltation	5.4.3.1, 5.5	5.6, 5.7.1	5.4.1	9.0, 10.0
Alteration in stream side or littoral vegetative covers	NA	NA	NA	8.0, 9.0, 10.0
Flow Regime Modification	NA	NA	NA	8.0, 9.0, 10.0

NA = not applicable



## MONITORING LOCATIONS AND COLLECTED DATA

### Legend

Sediment, Bank Erosion, and Greenline Sites

Study Stream

### Antelope Creek Sediment Monitoring Locations

Site ID	Collection Entity	Latitude <sup>1</sup>	Longitude <sup>1</sup>	Monitoring Parameters
ATLP 04-02 (MOSANT LCO2)	DEQ	44.68141	-111.52829	Instream fine sediment <sup>2</sup> Instream habitat BEHI Greenline
ATLP 10-01 (MOSANT LCO2)	DEQ	44.74677	-111.53753	Instream fine sediment <sup>2</sup> Instream habitat BEHI Greenline

<sup>1</sup> Latitude/longitudes are the downstream end of the sampling site

<sup>2</sup> Instream fine sediment includes cross sections, pebble counts and pool tail grid tosses

# Nonpoint Source Activities 2020



## Focus Areas

- Bitterroot
- Lower Gallatin

## New 319 Projects

- Funded 9 new projects in 2020
- Call for 2021 - due November 13<sup>th</sup>
- Project Effectiveness Review App

## Success Stories

- Cramer Creek Metals
- Monitoring for new success stories
  - (Goat Creek, Middle Forth Judith Creek, Kennedy Creek, Ruby, and the Upper Lolo/Bitterroot headwaters)

## TMDL Implementation Evaluation

- Ruby River Watershed
- Bitterroot Headwaters

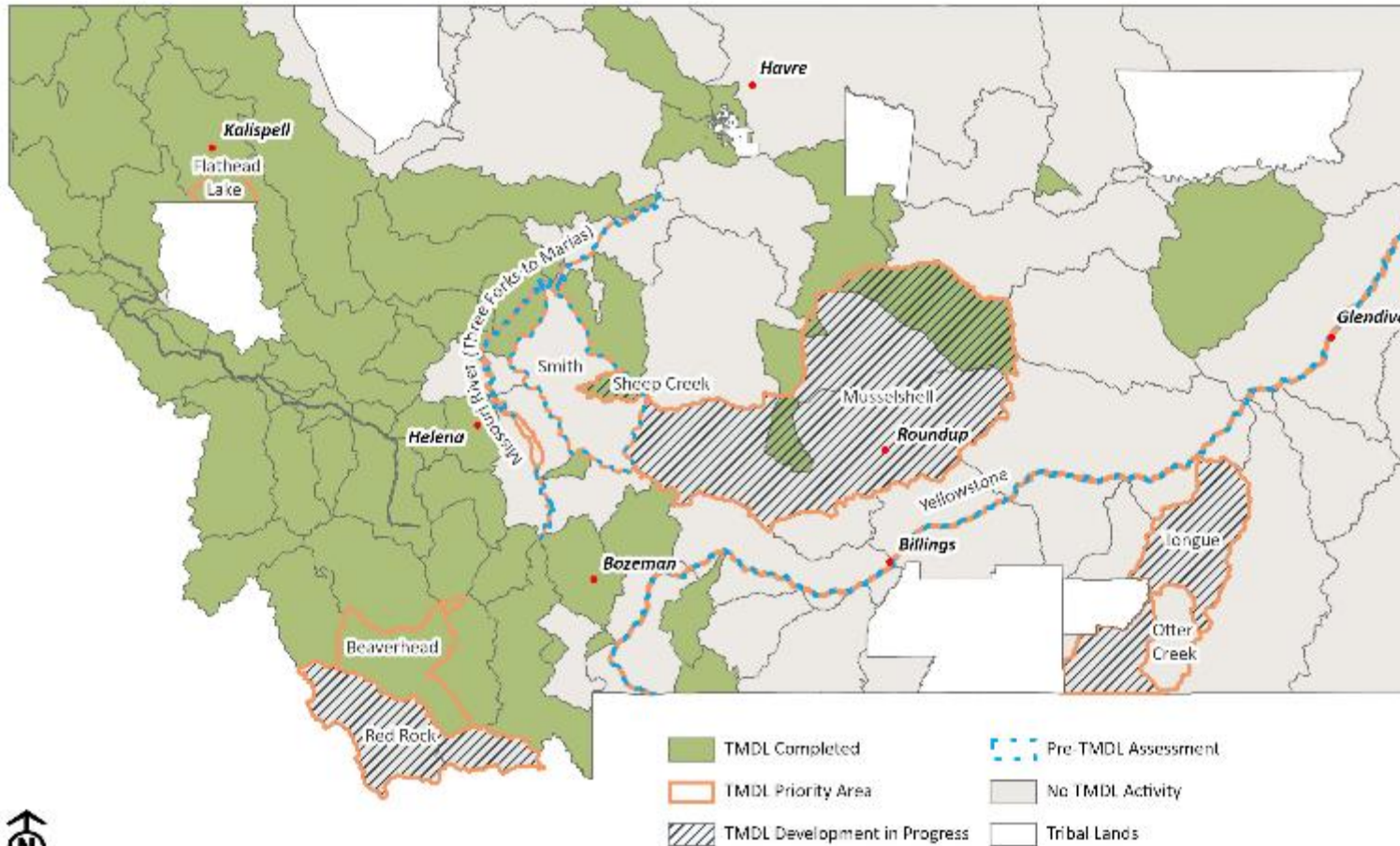
# Nutrient Standards Development in Montana

- 1980s: P-detergent bans in Flathead, Clark Fork basins
- 1990s: Clark Fork River criteria derived; voluntary compliance
- 2001-2008: DEQ develops criteria for most flowing waters; Clark Fork River criteria adopted by BER; large river criteria work undertaken (lower Yellowstone River)
- 2009, 2011: Legislature adopts SB-95, SB-367: allow variances from nutrient standards. Nutrient Work Group (NWG) created.
- 2011-2013: DEQ & NWG meet, address implementation details
- 2014: Statewide standards & variances adopted by BER, DEQ (Circulars DEQ-12A, -12B); rules include non-severability clauses
- 2015: Montana's nutrient standards & variances approved by EPA (February); EPA publishes new federal variance regulations at 40 CFR 131.14 (August)
- 2017: 1<sup>st</sup> DEQ triennial review of Circular DEQ-12B (variances); EPA approves some revisions
- 2018: 1<sup>st</sup> Individual variance adopted by DEQ in 12B; EPA approves revisions
- 2019: Federal court decisions regarding nutrient variances lead DEQ to revise 12B
- 2020: EPA disapproves DEQ's 2019 revisions to the general variance in 12B, and approves the 2014 non-severability clauses which EPA had not previously acted on



# Future Project Considerations

## TMDL Development Status



10/29/2020 - DEQ Watershed Protection Section

## TMDL Priority Areas

### 2021

- Musselshell Watershed\*
- Red Rock Watershed\*

### 2022

- Tongue Watershed
- Yellowstone\*

### 2023

- Smith River\*
- Missouri River – Three Forks to Marias\*

### Not scheduled

- Flathead Lake Phase II\*
- Beaverhead Nutrients\*

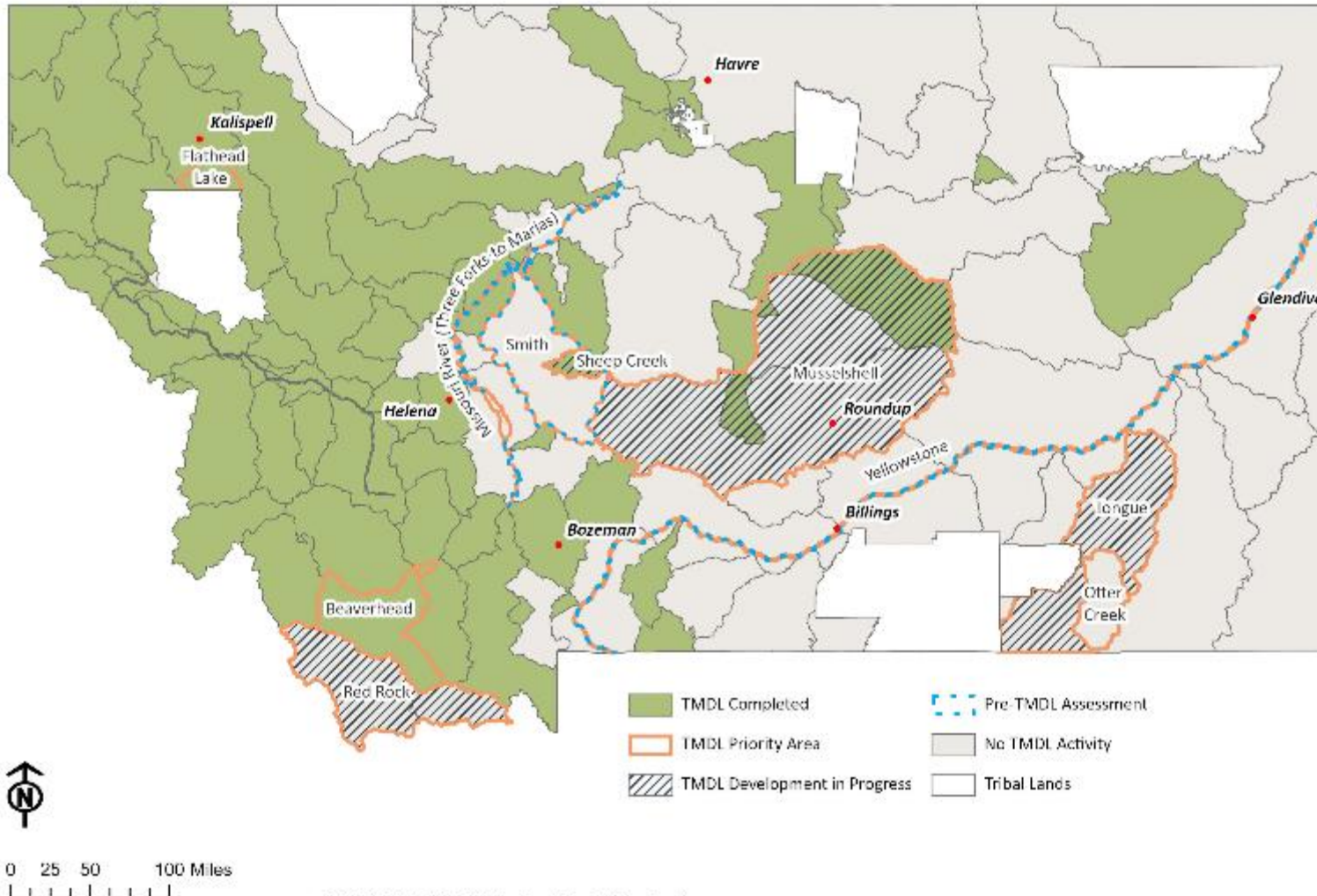
### No activity – move to Low Priority?

- Otter Creek

\*Nutrient component – possible delays

# Future Project Considerations

## TMDL Development Status



No activity – move to low priority?

- Otter Creek

Possible future priority areas

- Clarks Fork (Yellowstone)
- Clark Fork VNRP update
- Lake Koocanusa

Other thoughts on priority changes

# Discussion



# Meeting Close



Discussion of Next Meeting  
Topics and Meeting Date  
(facilitated by John Youngberg)



- Public Comment (facilitated by John Youngberg)



- Meeting Close (Kristy Fortman)