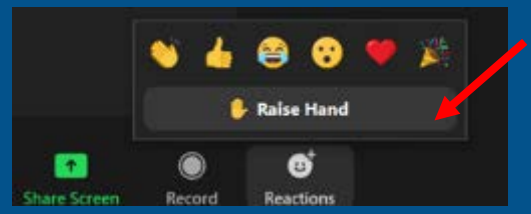
Nutrient Work Group Session Three

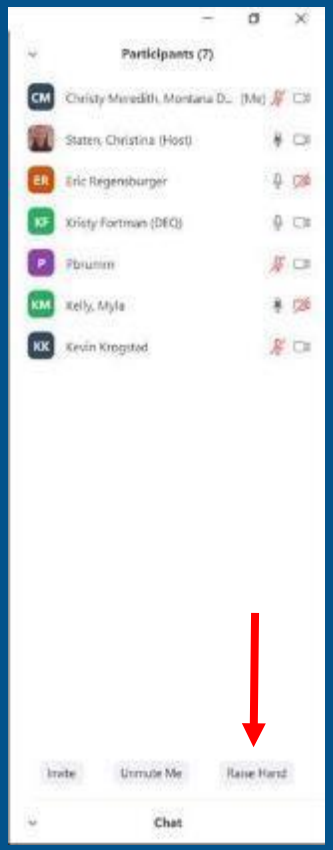
July 28, 2021

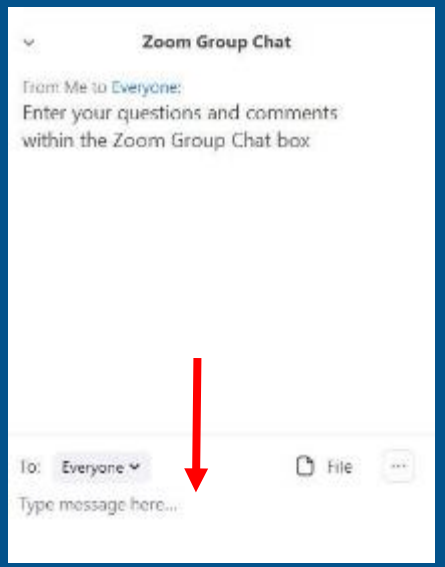
DEQ MONTANA

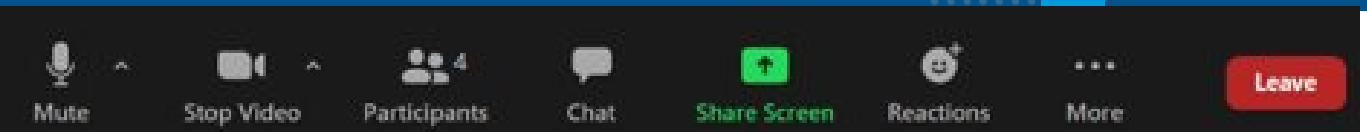
Welcome!

- Please keep your microphone muted until called on
- Only NWG Members may participate during discussions
- Please reserve public comment until the end
- *6 unmutes your phone
- State your name and affiliation before providing your comment
- Enter questions in the chat box at any time
- Turning off your video feed provides better bandwidth
- Please sign-in to the chat box with name and affiliation









DEQ MONTANA

Introductions

DEQ Staff

- Christopher Dorrington, Director
- George Mathieus, Deputy Director
- Kurt Moser, Legal Counsel
- Moira Davin, Public Relations
- Amy Steinmetz, Water Quality Division Administrator
- Jon Kenning, Water Protection Bureau Chief
- Rainie DeVaney, Discharge Permitting Section Supervisor
- Galen Steffens, Water Quality Planning Bureau Chief
- Myla Kelly, WQ Standards & Modeling Section Supervisor
- Kristy Fortman, Watershed Protection Section Supervisor
- Darrin Kron, WQ Monitoring & Assessment Section Supervisor
- Michael Suplee, Water Quality Science Specialist

DEQ MONTANA

Introductions

Nutrient Work Group Members

Interest Group	Representative	Substitute
Point Source Discharger: Large Municipal Systems (>1 MGD)	Susie Turner	Louis Engels
Point Source Discharger: Middle-Sized Mechanical Systems (<1 MGD)	Shannon Holmes	
Point Source Discharger: Small Municipal Systems with Lagoons	Rika Lashley	
Point Source Discharger: Non-POTW	Alan Olson	
Municipalities	Kelly Lynch	Amanda McInnis
Mining	Tammy Johnson	
Farming-Oriented Agriculture	John Youngberg	
Livestock-Oriented Agriculture	Jay Bodner	
Conservation Organization - Local	Kristin Gardner	
Conservation Organization – Regional	Sarah Zuzulock	
Conservation Organization – Statewide	David Brooks	
Environmental Advocacy Organization	Guy Alsentzer	
Water or Fishing-Based Recreation	Wade Fellin	
Federal Land Management Agencies	Andy Efta	
Federal Regulatory Agencies	Tina Laidlaw	
State Land Management Agencies	Jeff Schmalenberg	
Water Quality Districts / County Planning Departments	Pete Schade	
Soil & Water Conservation Districts – West of the Continental Divide	Samantha Tappenbeck	
Soil & Water Conservation Districts – East of the Continental Divide	Dan Rostad	
Wastewater Engineering Firms	Scott Buecker	
Timber Industry	Julia Altemus	

Ground Rules

- Speak one at a time – refrain from interrupting others.
- Wait to be recognized by facilitator before speaking.
- Facilitator will call on people who have not yet spoken before calling on someone a second time for a given subject.
- Share the oxygen – ensure that all members who wish to have an opportunity to speak are afforded a chance to do so.
- Be respectful towards all participants.
- Listen to other points of view and try to understand other interests.
- Share information openly, promptly, and respectfully.
- If requested to do so, hold questions to the end of each presentation.
- Remain flexible and open-minded, and actively participate in meetings.

DEQ MONTANA

Roles and Responsibilities

The Nutrient Work Group is an advisory group to DEQ.

Members agree to:

- Provide specific local expertise, including identifying emerging local issues;
- Review project reports and comment promptly;
- Attend as many meetings as possible and prepare appropriately;
- Complete all necessary assignments prior to each meeting;
- Relay information to and from their broader interest group counterparts after each meeting and gather information/feedback from their counterparts as practicable before each meeting;
- Articulate and reflect the interests that NWG members bring to the table;
- Maintain a focus on solutions that benefit the entire state;
- Present recommendations for the rulemaking throughout the planning process.

DEQ MONTANA

Agenda

Meeting Goal: Finalize AMP Definition, Review Watershed Scale Framework, Begin Response Variables/Thresholds Discussion

- Overview of MT State Law vs. MT Administrative Rules vs. Policy
- Technical Subcommittee Report
  - AMP definition
  - Defining watersheds and major waterbody categories
  - Watersheds with multiple point sources
- Introduction to Response Variables and Harm-to-Use Thresholds
- Outstanding Action Items
- Public input
- If Time: Nonpoint Source Program Overview

DEQ MONTANA

State Law vs. Administrative Rules vs. Policy

DEQ MONTANA

Department Rules: Where do they fit in?

The Three Coequal Branches of State Government

Legislative—makes the laws; MT legislature meets every two years, January-May

Executive—executes and administers the laws; DEQ is an executive branch agency, director serves at the pleasure of the Governor

Judicial—interprets the laws, particularly when there is disagreement about meaning and application of state statutes and administrative rules

DEQ MONTANA

Department Rules: Where do they fit in?

The Hierarchy of State Law (in order of rank)

None of the components should be in opposition/inconsistent with those above it

State Constitution

State Law (passed by Legislature, signed by Governor); in the Montana Code Annotated (MCA)

Administrative Rules (Department; ARMs and Circulars). Have the force of law once adopted.

Written Policy (Department memos, Technical Guidance Documents, etc.)

Work Unit Policy (written or understood)

DEQ MONTANA

Department Rules: Where do they fit in?

Federal Clean Water Act (CWA)

Sets minimum bar for water quality protection nationally

Federally Delegated Montana holds primacy to implement some Clean Water Act programs. Montana must implement these federally delegated programs consistent with applicable federal regulations.

Cooperative Federalism Montana interacts cooperatively with the federal government to solve common problems. EPA is our main federal counterpart. Many water quality standards rules we adopt must receive EPA review and only become applicable for CWA purposes after EPA approval.

DEQ MONTANA

Discussion / Questions

Nutrient Work Group

Technical Subcommittee Report

Final Draft Definition

Adaptive Management Program means a watershed-scale system that protects water quality from the impacts of nutrient sources by: (a) prioritizing phosphorus reduction while accounting for site specific conditions, (b) allowing for nutrient sources to be addressed incrementally over time by incorporating flexible decision-making which can be adjusted as management actions and other factors become better understood, (c) reasonably balancing all factors impacting a waterbody while considering the relative cost of treatment options, their feasibility, and their expected water quality improvement, (d) identifying specific nutrient reduction requirements, and (e) setting as its goal the protection and achievement of beneficial uses of the waterbody.

DEQ MONTANA

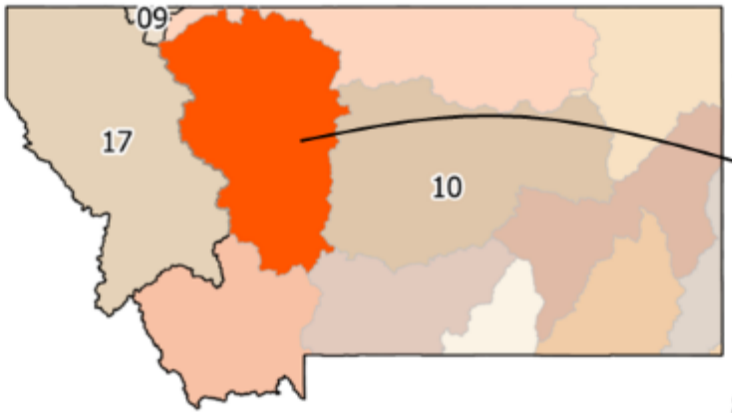
Defining Watersheds & Major Waterbody Categories

DEQ MONTANA

Water Resource Regions

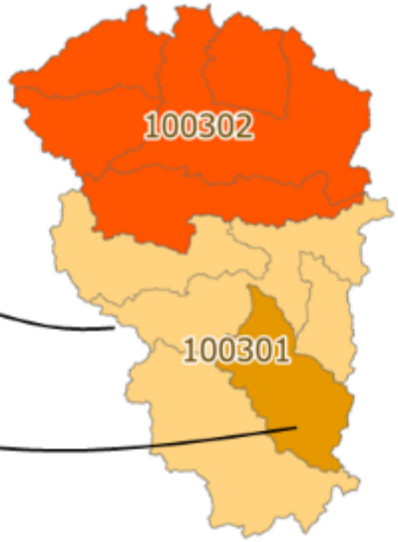
DEQ MONTANA

HUCs (Hydrologic Unit Codes)



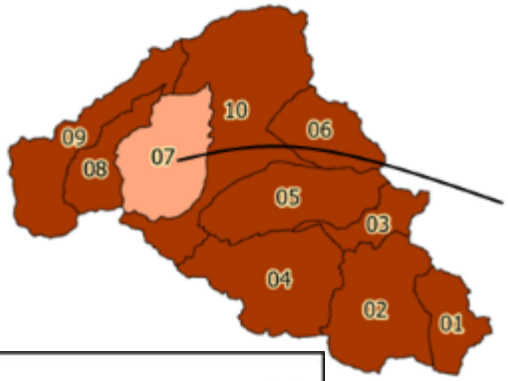
2-Digit Hydrologic Unit
10 – Montana Region

4-Digit Hydrologic Unit
1003 – Missouri-Marias



6-Digit Hydrologic Unit
100301 – Upper Missouri

8-Digit Hydrologic Unit
10030103 - Smith

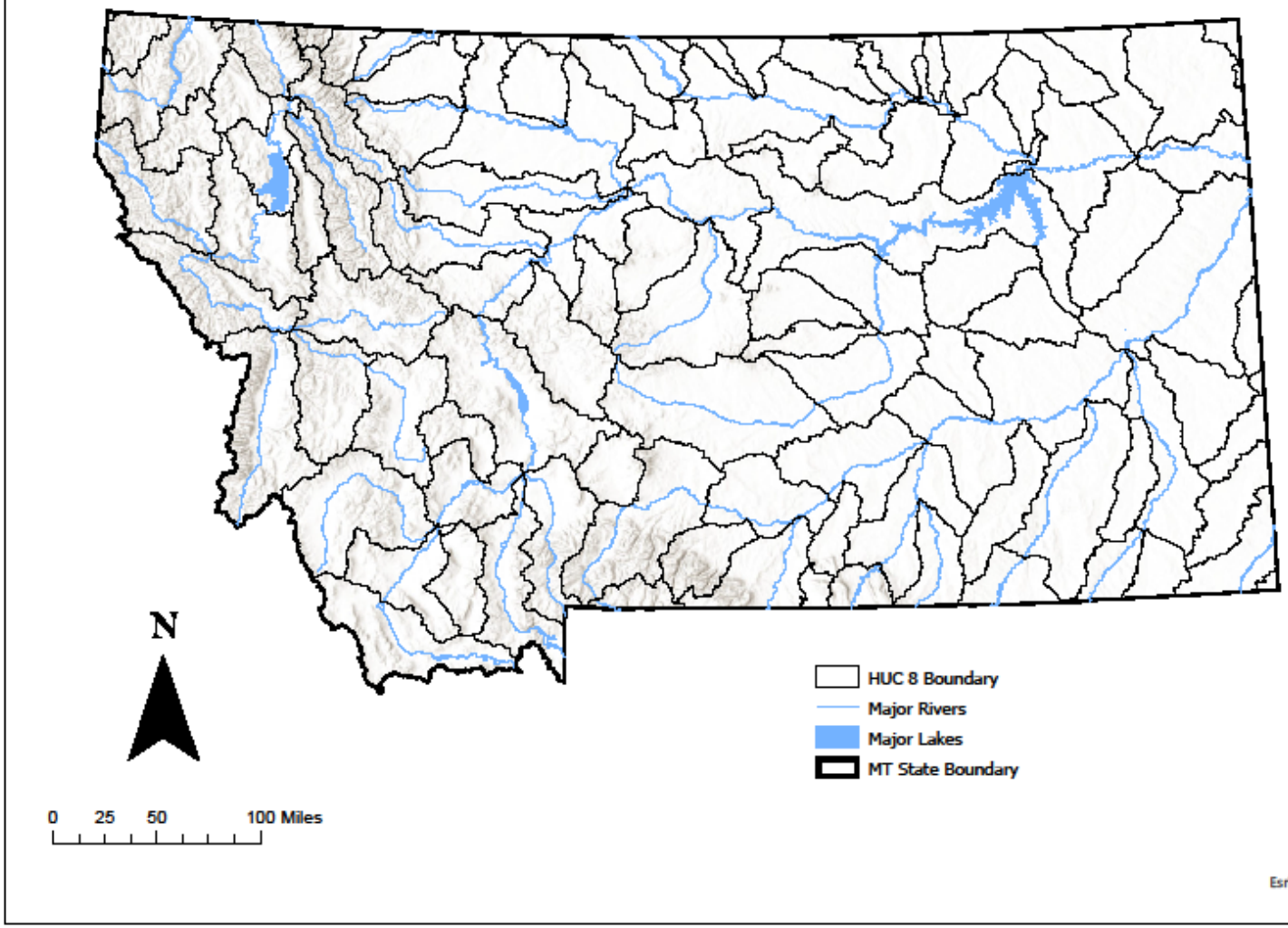


10-Digit Hydrologic Unit
1003010302 – South Fork
Smith River

12-Digit Hydrologic Unit
100301030207 – Woods
Gulch Creek

DEQ MONTANA

HUC 8 Boundaries in Montana



DEQ MONTANA

Discussion / Questions

Montana's Large Rivers

Large river segments within the state of Montana.

River Name	Segment Description
Big Horn River	Yellowtail Dam to mouth
Clark Fork River	Bitterroot River to state-line
Flathead River	Origin to mouth
Kootenai River	Libby Dam to state-line
Madison River	Ennis Lake to mouth
Missouri River	Origin to state-line
South Fork Flathead River	Hungry Horse Dam to mouth
Yellowstone River	State-line to state-line

DEQ MONTANA

Medium Rivers

- *Examples*:
  - Marias River
  - Blackfoot River
  - Smith River
  - Clarks Fork Yellowstone River
  - Bitterroot River
  - Jefferson River
  - Big Hole River
  - And many others…
- Not as clearly defined as large rivers
- Department sampling methods for these waterbodies developing

DEQ MONTANA

Wadeable Streams

- Common throughout western and eastern Montana
- Department sampling and assessment protocols well developed

DEQ MONTANA

Waterbody Size Definitions- *Draft*

Note: we could add "for AMP purposes" to any of these, if needed

Large river means a perennial waterbody that is unwadeable by a person during baseflow conditions

Note: DEQ has a table of defined large river segments.

Medium river means a perennial waterbody in which much of the wetted channel is unwadeable by a person during baseflow conditions.

Wadeable stream means a perennial or intermittent stream in which most of the wetted channel is safely wadeable by a person during baseflow conditions.

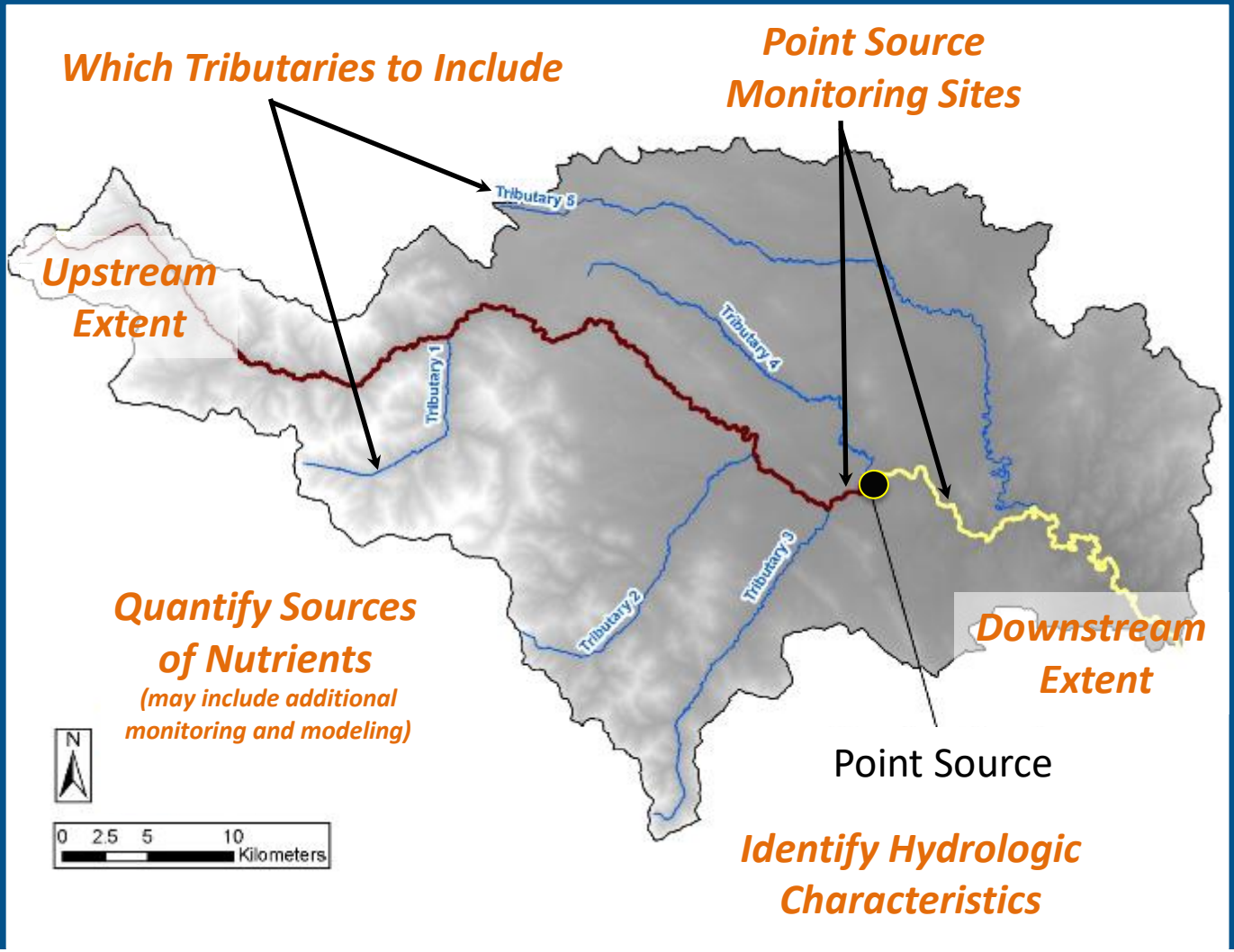
Note: The wadeable stream definition is adopted in rule in Circular DEQ-12A (which the department is required to repeal per SB-358).

DEQ MONTANA

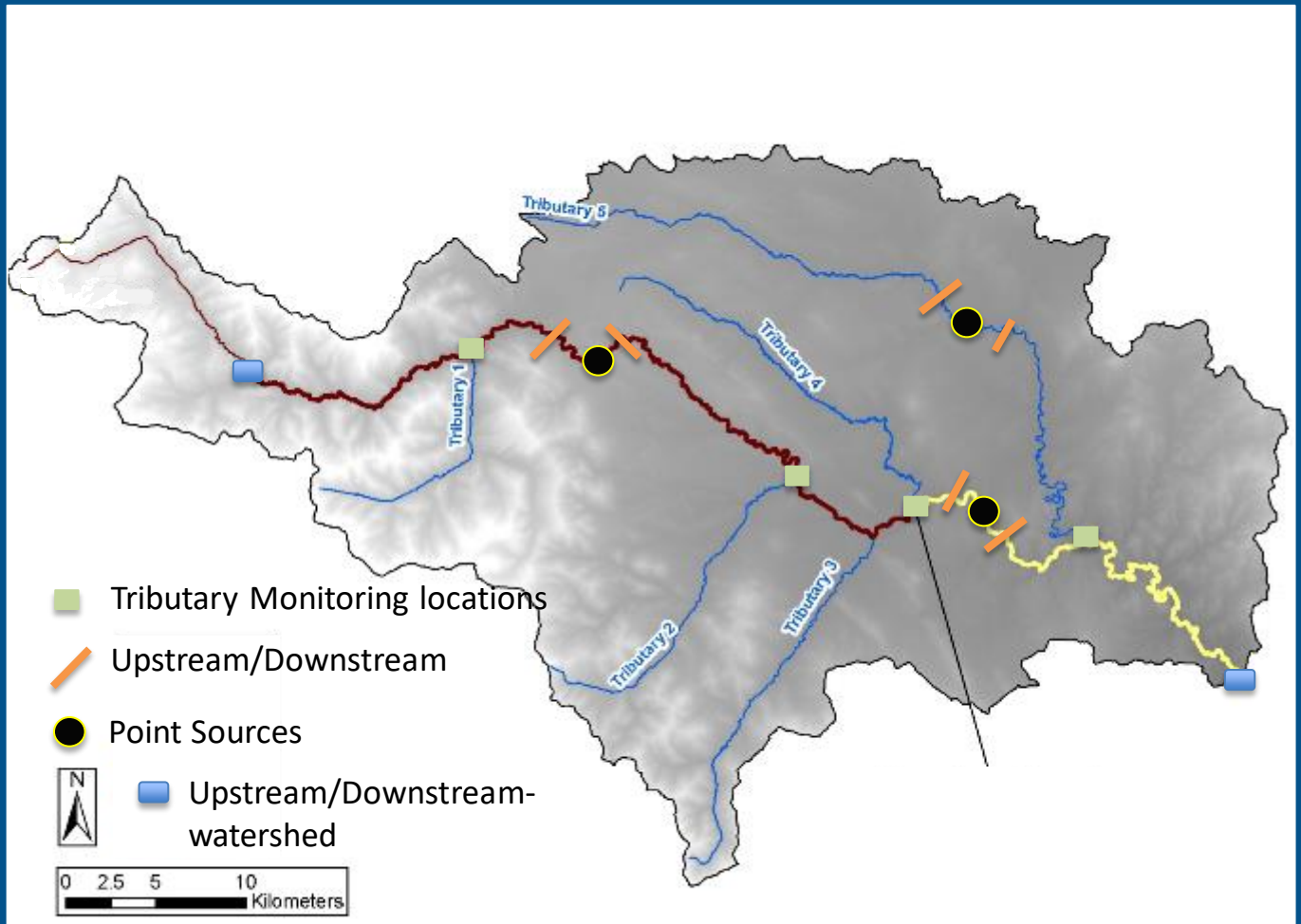
Discussion / Questions

Limits of an AMP Watershed & Watersheds with Multiple Sources

Key Considerations When Defining an AMP Watershed



Example Watershed with Multiple MPDES Permittees



Note: This map demonstrates monitoring locations upstream and downstream of point sources. The locations shown are for illustrative purposes only. In addition to upstream and downstream, monitoring downstream of the confluence would be required to demonstrate cumulative effects.

DEQ MONTANA

Watersheds with Multiple MPDES Permittees

- DEQ will identify each watershed (likely Hydrologic Unit Code 8) that requires a watershed monitoring plan
- DEQ will notify point sources in the watershed and may provide a preliminary watershed inventory of sources based on DEQ records
- DEQ will provide a deadline for submission of the watershed monitoring plan

Draft Approach for Determining Watershed

- Under an adaptive management plan the watershed must be defined, at a minimum, by its upstream extent, its downstream extent, the principal tributaries included, and the main sampling locations to be monitored for purposes of assessing sources and the direct effects of the point source.

- Proposed watersheds will be reviewed by the department. The department will (a) approve the watershed as described, or (b) make recommendations for an alternative layout. The department will have final review and approval on all AMP watersheds.

- For purposes of monitoring and assessment, the point source receiving waterbody will be identified as a wadable stream, medium river, or large river.

DEQ MONTANA

Discussion / Questions

Today's Discussion

Response Variables & Harm-to-use Thresholds

Among dozens of water quality variables, DEQ will focus here on those best for evaluating eutrophication (nutrient over-enrichment)

DEQ MONTANA

1. Wadeable Streams

- DEQ uses regional response variables with associated thresholds
- DEQ sampling/assessment protocols well developed
- Sampled by a wading field team, and small deployed instruments

DEQ MONTANA

Response Variables & Thresholds for Wadeable Streams

3 Major Pieces:

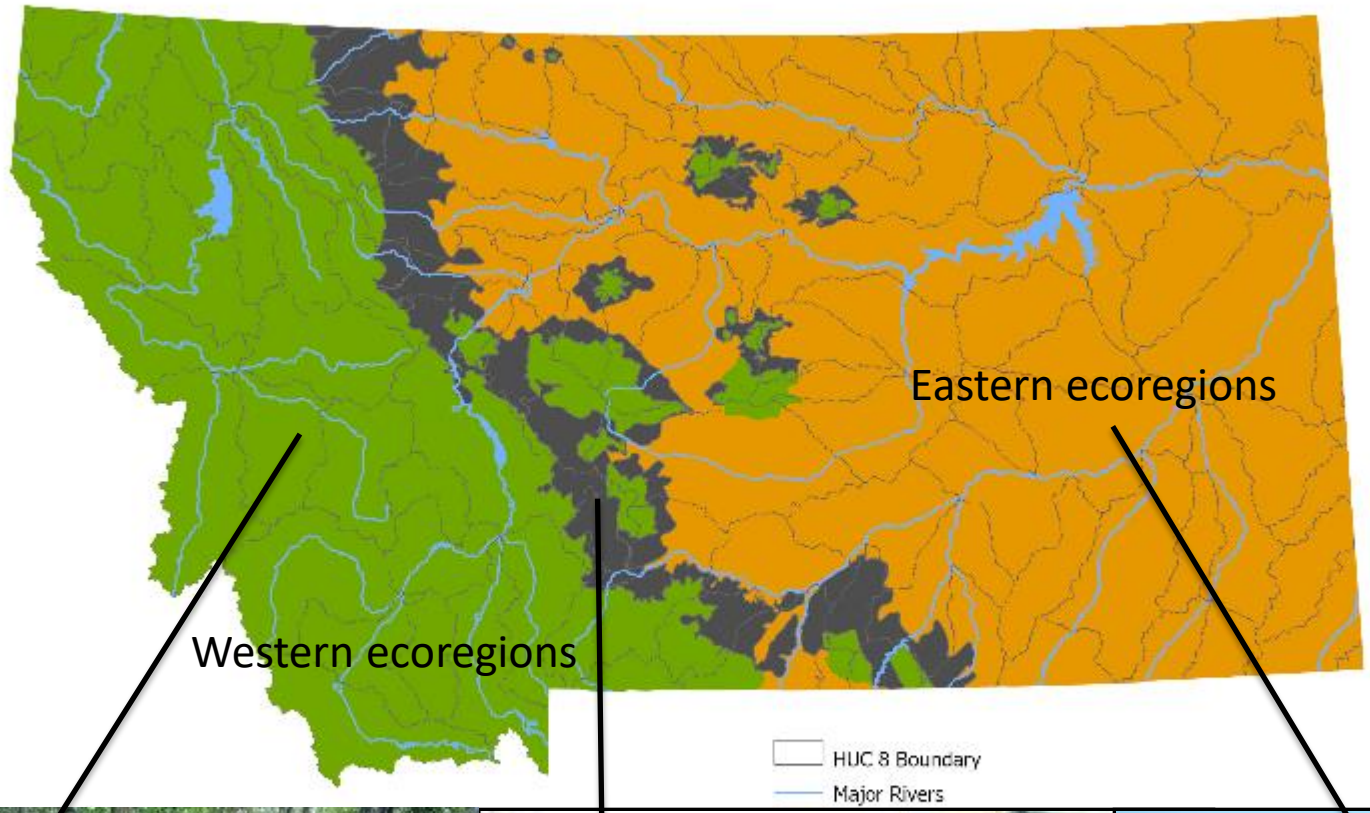
1. Identify geographic zones where specific response variables linked to eutrophication will be applied

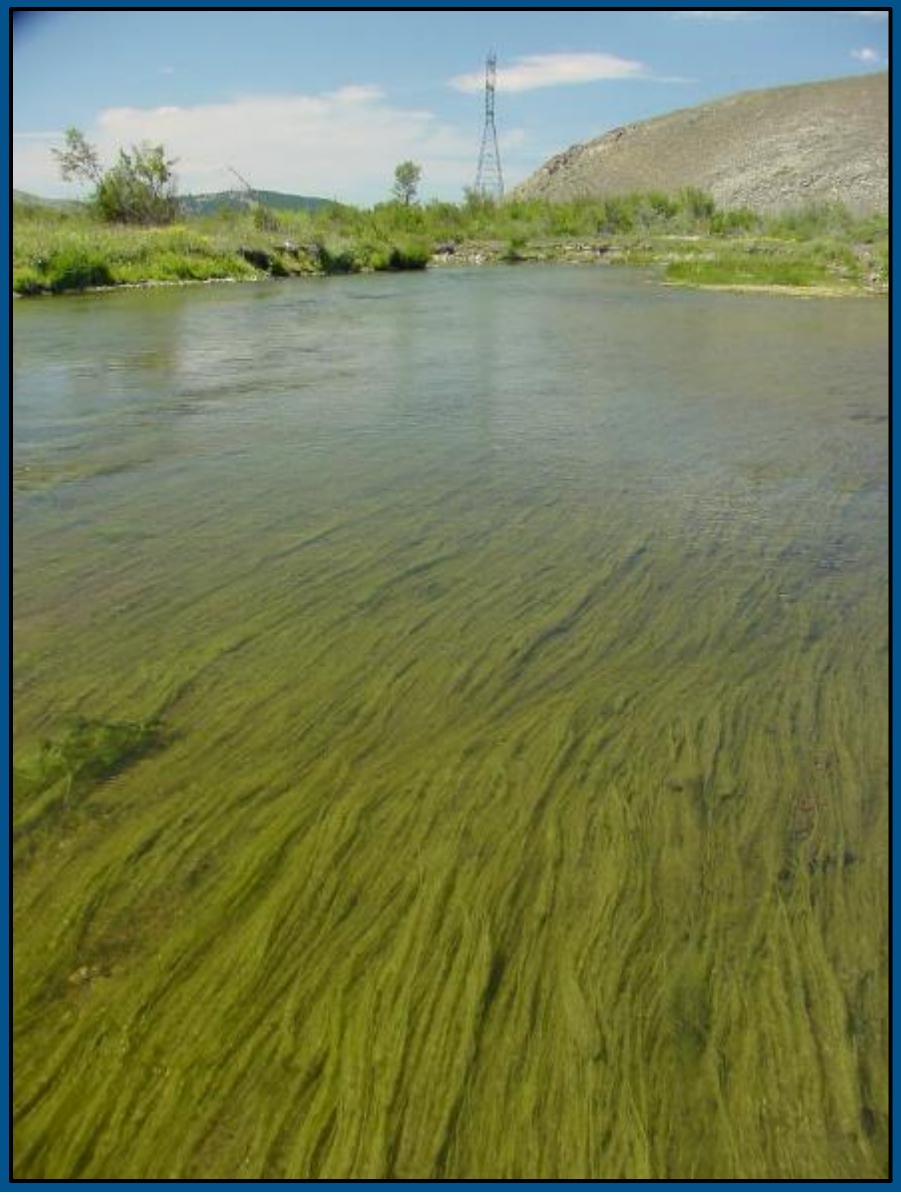
2. Understand and establish "harm to use"

3. Characterize the response variable in regional reference sites (they provide relative point of comparison)

DEQ MONTANA

HUC 8 Watersheds and Ecoregions

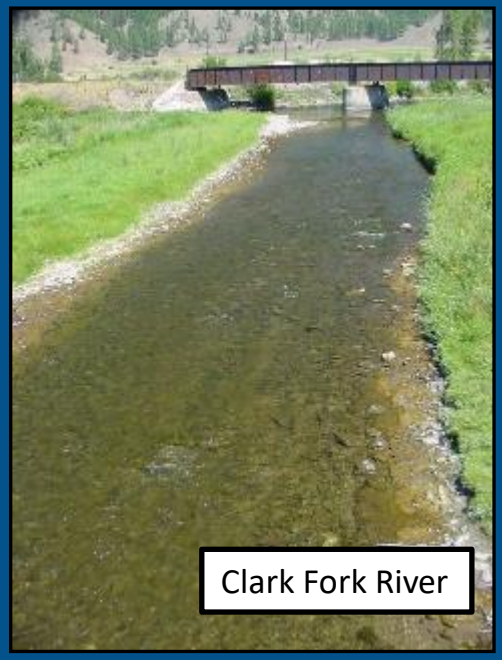




Nuisance algal growth,
Western MT streams/rivers

Attached algae quantified as milligrams of chlorophyll *a* per square meter of streambed (Chl*a*/m^2), AFDW (g/m^2), and % cover

40 mg Chl*a*/m^2
10 g/m^2
~5% bottom cover

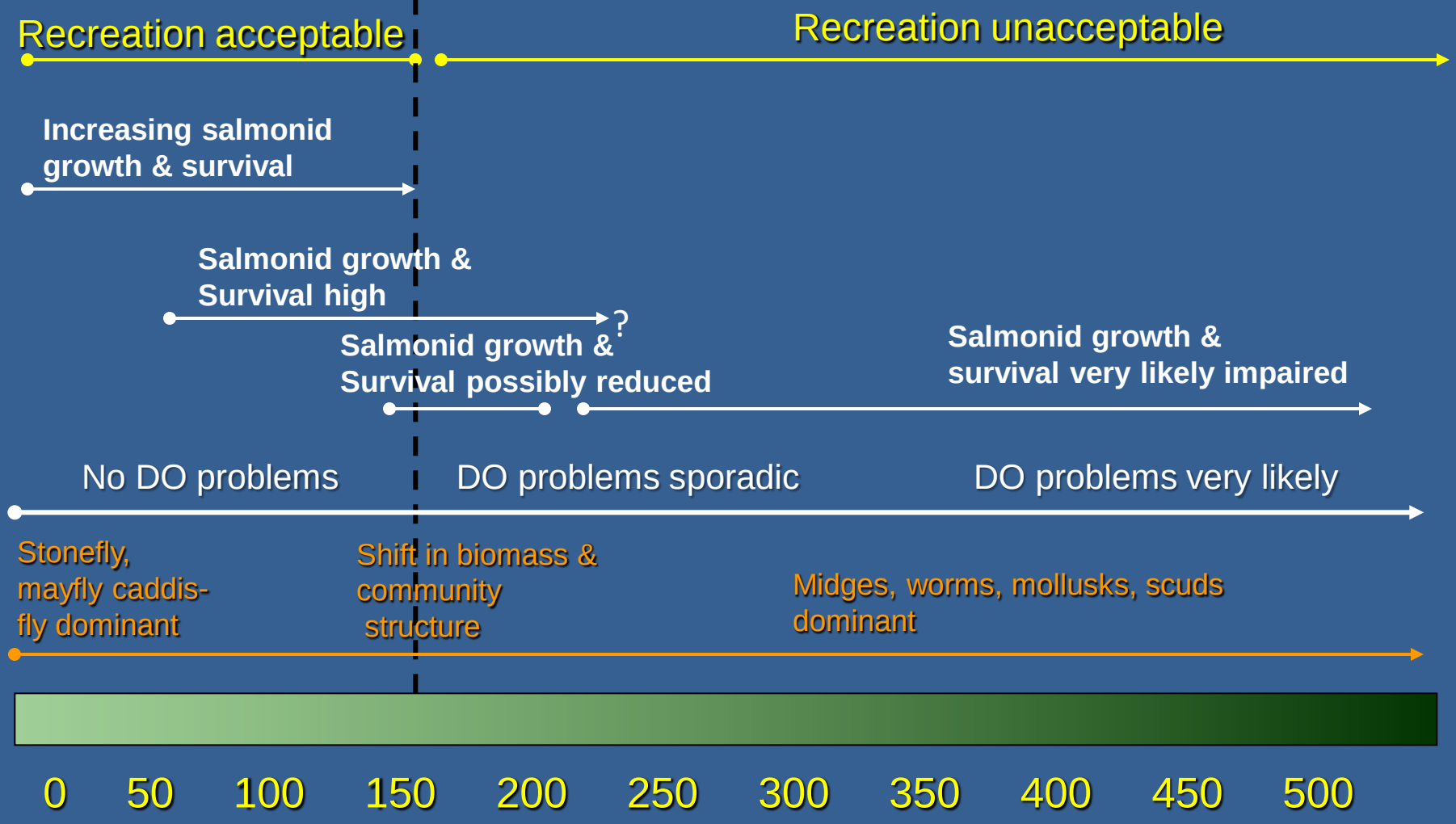


120 mg Chl*a*/m^2
~32 g/m^2
~30% cover

300 mg Chl*a*/m^2
~120 g/m^2
>60% cover

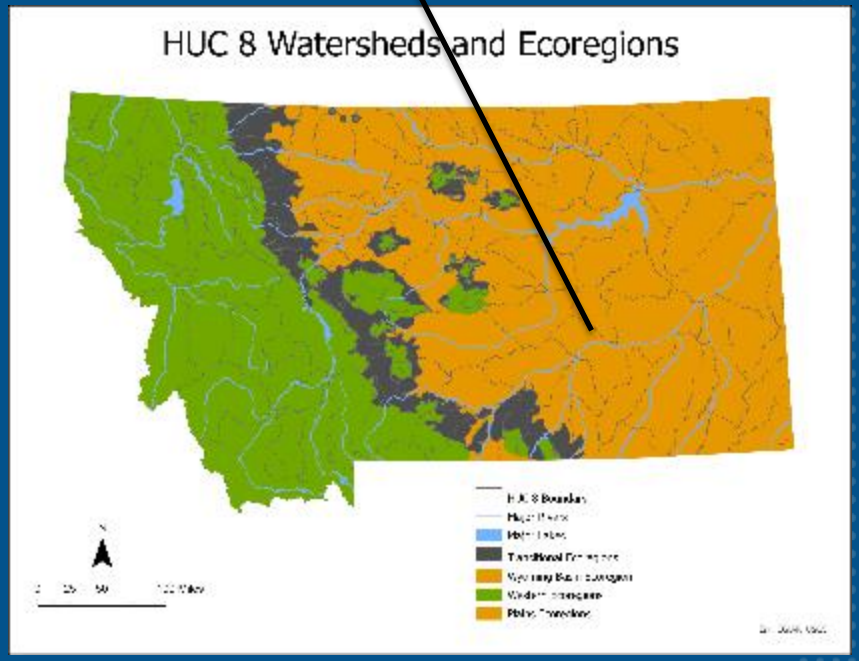
DEQ MONTANA

Known or Likely Effects on Wadeable Streams at Different Algae Levels (Western Montana)



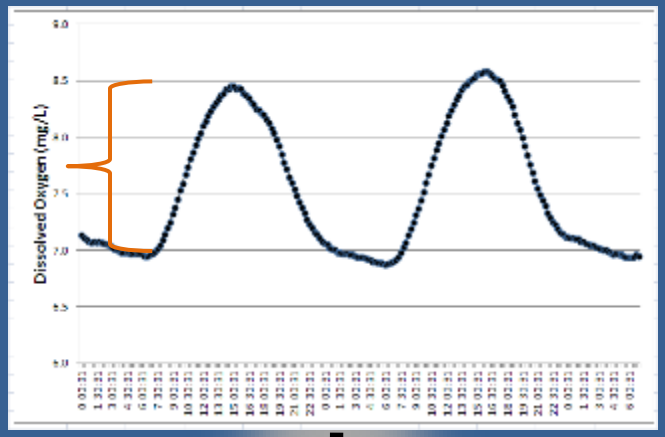
Eastern Montana Wadeable Streams

Recommend Dissolved Oxygen (DO) Delta for this Region



Known or Likely Effects on Wadeable Streams at Different DO Deltas (Eastern Montana)

DO Δ



Diverse fishery including sensitive species (e.g., smallmouth bass, silvery minnow)

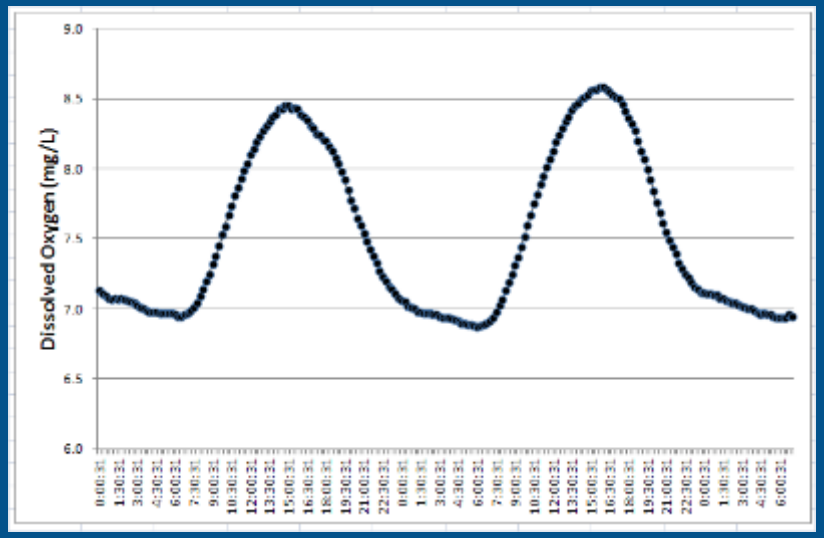
Loss of sensitive species, dominance by tolerant ones (e.g., carp)

No known DO problems

DO below minimum state standards seasonally/episodically

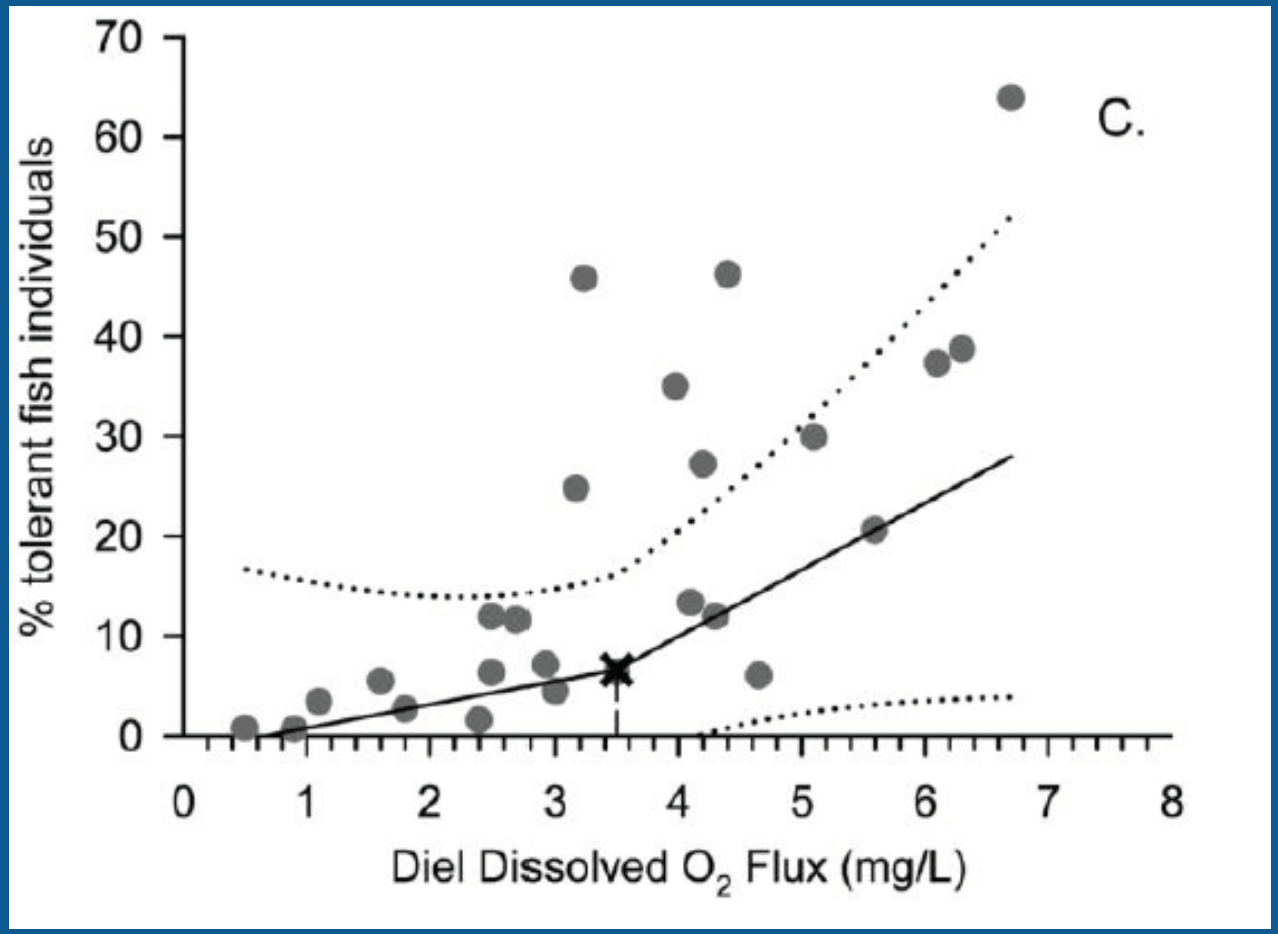
0 2.5 5.0 7.5 10

Dissolved Oxygen Delta (daily MAX – daily MIN)



Small instruments can be used to measure DO, DO Δ, temperature

DEQ MONTANA



DEQ uses 5.3 mg/L as a threshold; Minnesota adopted 4.5 mg/L for their plains region

Figure from Heiskary and Bouchard (2015), river nutrient study.

Discussion / Questions

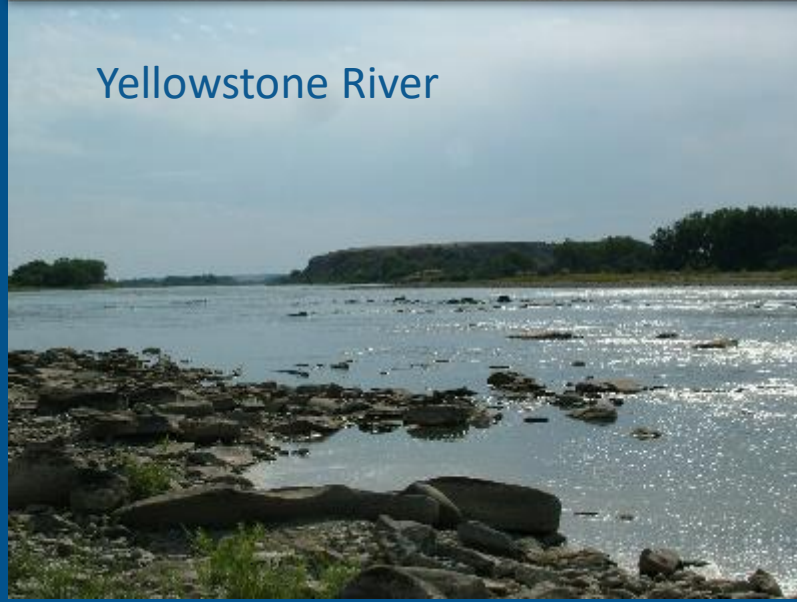
2. Medium Rivers

- Wadeable stream response variables can be used
  - Require sampling method modifications

- Modeling is also a good option
  - Discussed next for large rivers…..

3. Large Rivers

- Drain multiple large watersheds, water quality often different from local streams
- Longer runoff period
- Process nutrients over much longer distances due to deeper depths, higher velocities
- Do not lend themselves to wadeable stream sampling methods
  - Boats sometimes needed
  - Larger deployed instruments
  - Specialized data-collection methods
- Mechanistic water quality models best

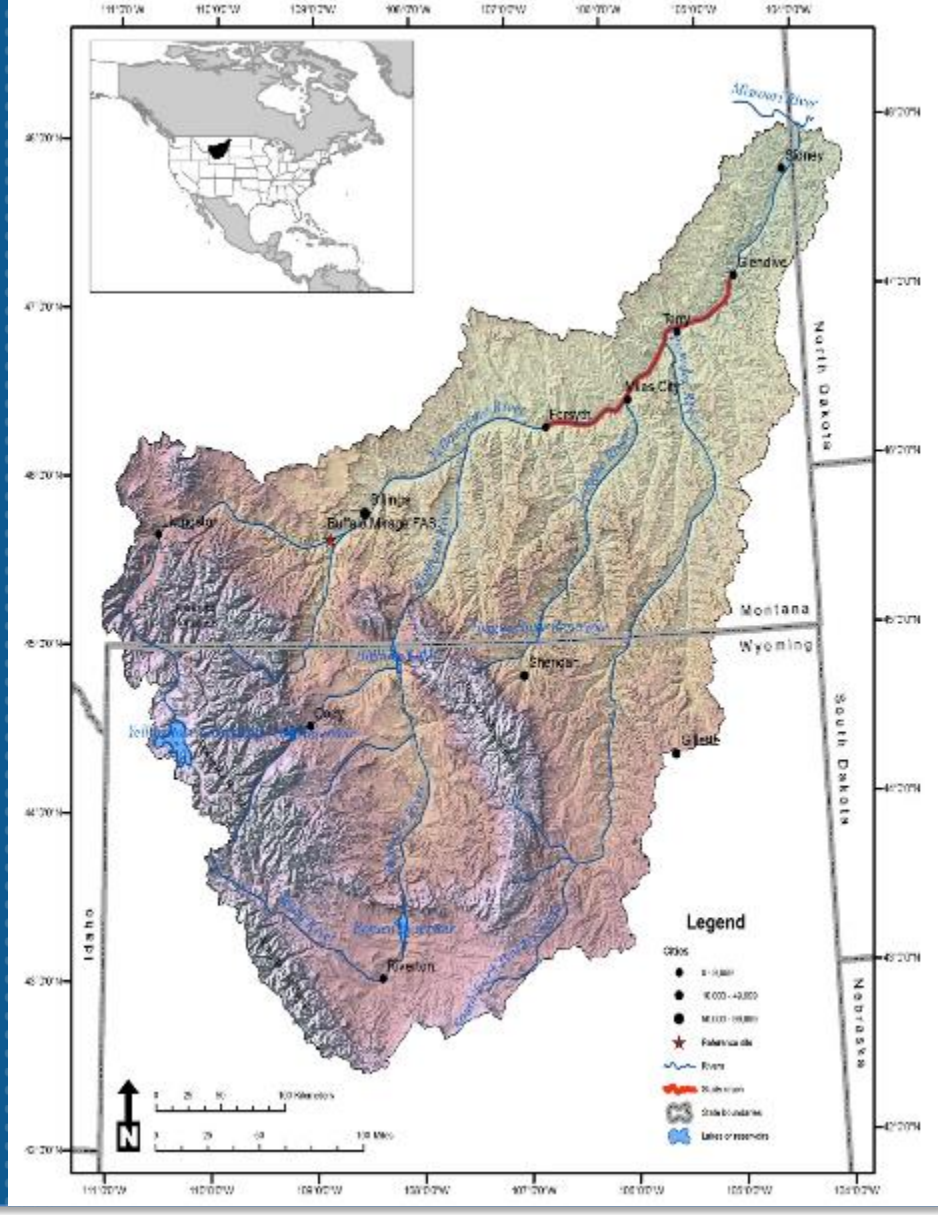


Yellowstone River

DEQ MONTANA

Response Variables Related to Nutrients that can be Modeled in Large Rivers

- Dissolved oxygen concentrations (DO)
- Benthic algal biomass (chlorophyll *a*, AFDW) in near-shore areas
- pH
- Phytoplankton concentrations (relating to DO, turbidity)
- Total organic carbon (drinking water)
- Total dissolved gas (as linked via DO supersaturation)



DEQ MONTANA

Standards Endpoints / Ecological Response Variables

Segment Description	Use Class	Beneficial Uses
Yellowstone River mainstem from the Billings water supply intake to the North Dakota state line	B-3	**Drinking, recreation, non-salmonid fishery and associated aquatic life, waterfowl and furbearers, agricultural and industrial water supply**

<u>Standards for B-3 waters (i.e., lower Yellowstone River):</u>

1. **Dissolved oxygen levels ≥ 5 mg L^{-1} to protect aquatic life and fishery uses (early life stages; DEQ 2012).**

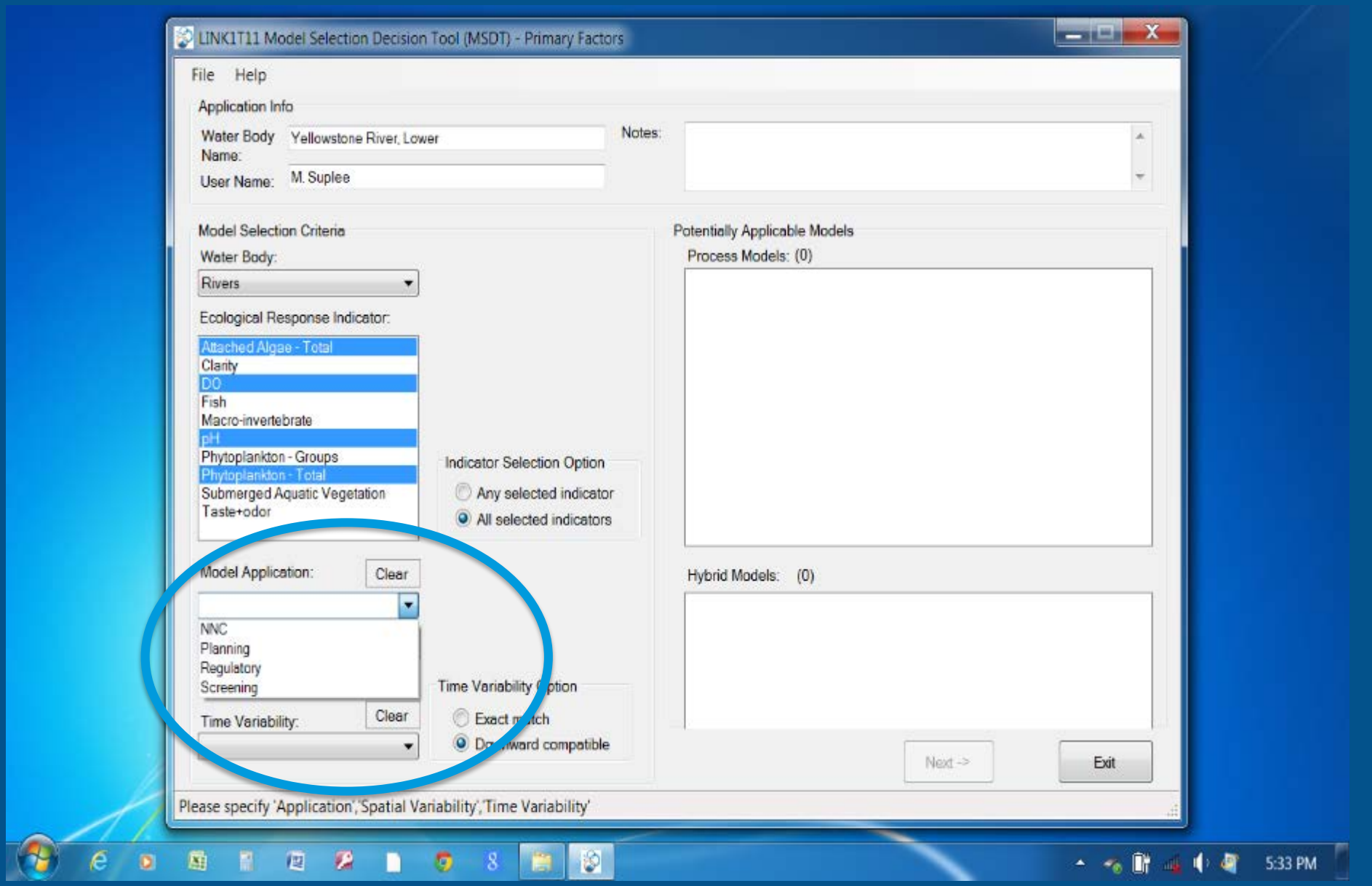
2. **Total dissolved gas levels, which must be ≤ 110% of saturation to protect aquatic life (Circular DEQ-7).**

3. **Induced variation of hydrogen ion concentration (pH), which must be less than 0.5 pH units within the range of 6.5 to 9.0, or without change if natural is outside this range [ARM 17.30.625(2)(c)] to protect aquatic life.**

4. **Turbidity levels, which a maximum increase of 10 nephelometric turbidity units (NTU) is acceptable; except as permitted in 75-5-318, MCA [ARM 17.30.625(2)(d)] to protect aquatic life.**

5. **Benthic algae levels, which DEQ interprets per our narrative standard (ARM 17.30.637(1)(e) should be maintained below a nuisance threshold of 150 mg Chla m^{-2} to protect recreational use.**

Tools are available to help you choose a model



Discussion / Questions

Action Items

Nutrient Work Group Action Items

	Action	Who*	Status
1	Provide documents in advance of NWG meetings	DEQ	On-going
2	Get Microsoft Teams up and running for NWG and TSC members	DEQ	Complete
3	Address the question of nonpoint source participation in the AMP process	DEQ, NWG	Complete
4	Consensus opinion of farming and nonpoint source community on this process and what they think is possible or realistic	Nonpoint source representatives	Comment Noted
5	Add timeframes to the Adaptive Management Program flowchart	DEQ and TSC	On-going
6	Indicate responsibilities for adaptive management program in flow chart	DEQ and TSC	Complete
7	Summarize the process for determining a wadeable stream vs large river	DEQ	Complete
8	Add groundwater to the adaptive management program framework	DEQ and TSC	Complete
9	Summarize and provide training on SOPs for sampling nutrients	DEQ	On-going

*** NWG = Nutrient Work Group, TSC = Technical Subcommittee**

DEQ MONTANA

Technical Subcommittee Action Items

In-Progress Action Items			
#	Action	Who	Status
1	Provide feedback from the TSC about the time component in the flow chart	TSC	In progress
2	Update the flowchart and supporting materials based on TSC feedback	Rainie DeVaney, Mike Suplee	In progress
3	Receive feedback from TSC on time component of each flowchart step.	TSC	In-progress
4	Receive written comments from League	Amanda McInnis	Complete
5	Define what phosphorus prioritization means	DEQ and TSC	Pending
6	Define roles and responsibilities of DEQ and permittees for AMP process	DEQ	In-progress
7	Identify and define what is needed to determine how far upstream and downstream monitoring should occur for a point source	TSC	In-progress
8	Medium rivers definition	Mike Suplee	In-Progress

DEQ MONTANA

Technical Subcommittee Action Items

Complete Action Items			
#	Action	Who	Status
1	Distribute the flowchart and supporting materials to the TSC in a format to provide comments/track changes	Rainie DeVaney, Mike Suplee	Complete
2	Consider other measures that may trigger action (Box 7 of flowchart)	TSC	Complete
3	Clarify in the supporting documents that the narrative standards are those referenced in the Administrative Rules of the Montana of the State of Montana.	Rainie DeVaney, Mike Suplee	Complete
4	Define the overall work for the AMP by the June 23 Nutrient Work Group meeting	TSC	Complete
5	Provide information to the TSC on how to get on the agenda for a future meeting	Rainie DeVaney, Mike Suplee	Complete
6	Schedule two TSC meetings between each Nutrient Work Group	Rainie Devaney, Mike Suplee	Complete
7	Set up Teams TSC collaboration site. Send invite email. Post comments received from TSC members and draft DEQ documents	Moira Davin, Christina Staten	Complete
8	Update AMP definition based on TSC feedback. Share out to TSC.	Rainie DeVaney, Mike Suplee	Complete
9	Decide whether medium sized rivers should be broken out	TSC	Complete
10	Add the draft approach for determining watersheds to Teams for feedback from TSC	Mike Suplee	Complete
11	Reorganize technical subcommittee Teams folders so they are more intuitive	DEQ	Complete

DEQ MONTANA

Public Comment

Public Input

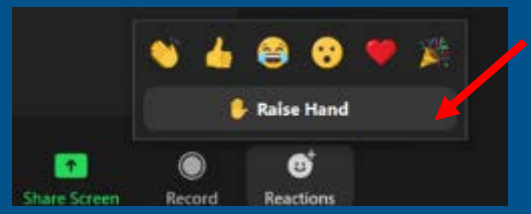
- Future listening session
- Website question submittal button

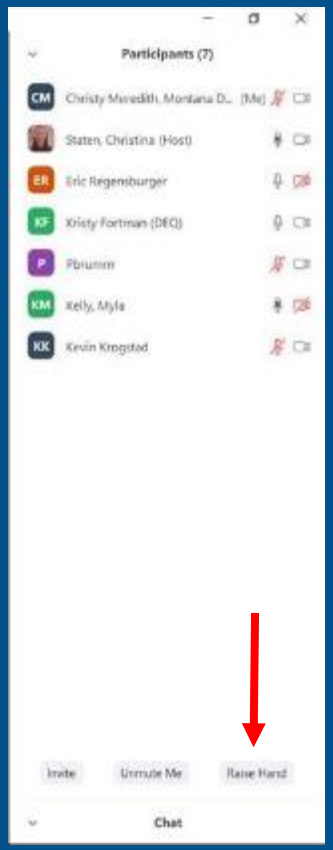
  Deq.mt.gov/water/resources

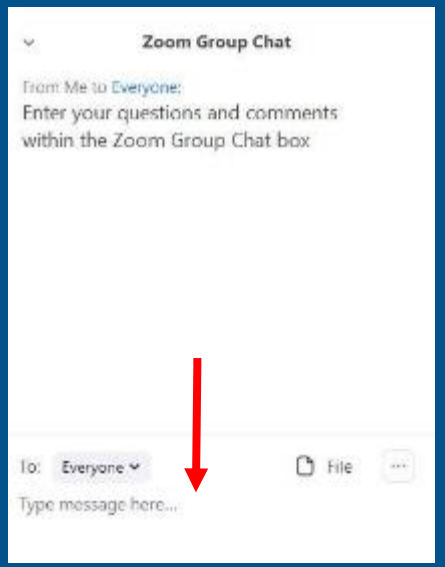
  https://deq.mt.gov/water/resources
- General Questions

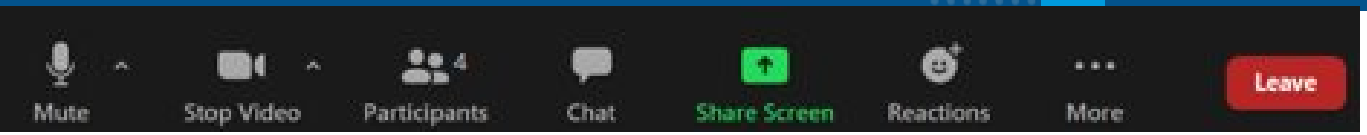
Questions/ Comments

- Raise hand or type questions into the chat
- Please keep your microphone muted until called on
- If calling by phone, press*6 to unmute
- State your name and affiliation before providing your comment









DEQ MONTANA

As Time Allows:

Nonpoint Source Program Overview

Nonpoint Source Program Overview

Partners | stakeholder involvement

Assessments | how streams get listed

TMDLs | data analysis and source assessments

Nonpoint Source Program | plan and process

Implementation | voluntary participation

DEQ MONTANA

Partners

Watershed Advisory Groups

- 75-5-704, MCA
- Partners from assessment through implementation
- Could carry through AMP implementation

- Local conservation districts
- Livestock-oriented agriculture
- Farming-oriented agriculture
- Conservation or environmental interests
- Water-based recreationists
- Forestry industry
- Municipalities
- Affected or potentially affected point source dischargers
- Mining
- Existing local watershed groups
- Federal land management agencies
- State trust land management agencies
- Tourism industry
- Hydroelectric industry, if applicable
- Fishing-related businesses

DEQ MONTANA

Assessments

DEQ's Water Quality Monitoring and Assessment Section assess whether state waters meet water quality standards and support beneficial uses.

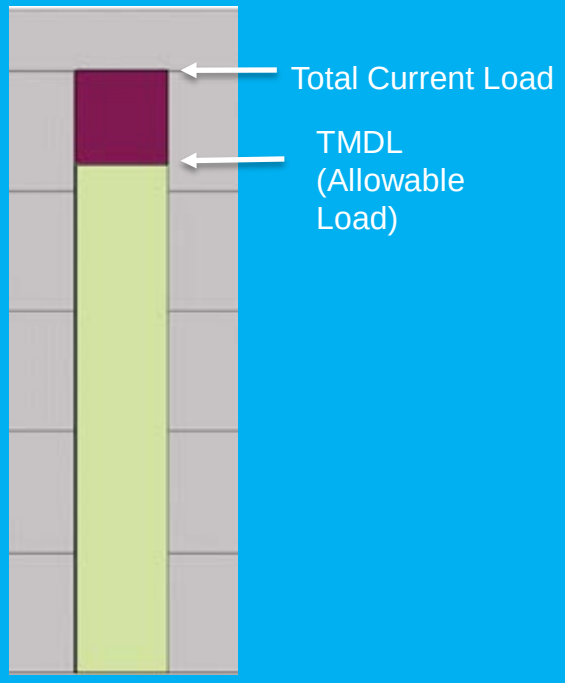
- Pollutant specific
- If listed as impaired for a pollutant, a TMDL is written

TMDL Development

TMDLs address cumulative impacts, incorporating both point (regulated) and nonpoint (non-regulated) sources

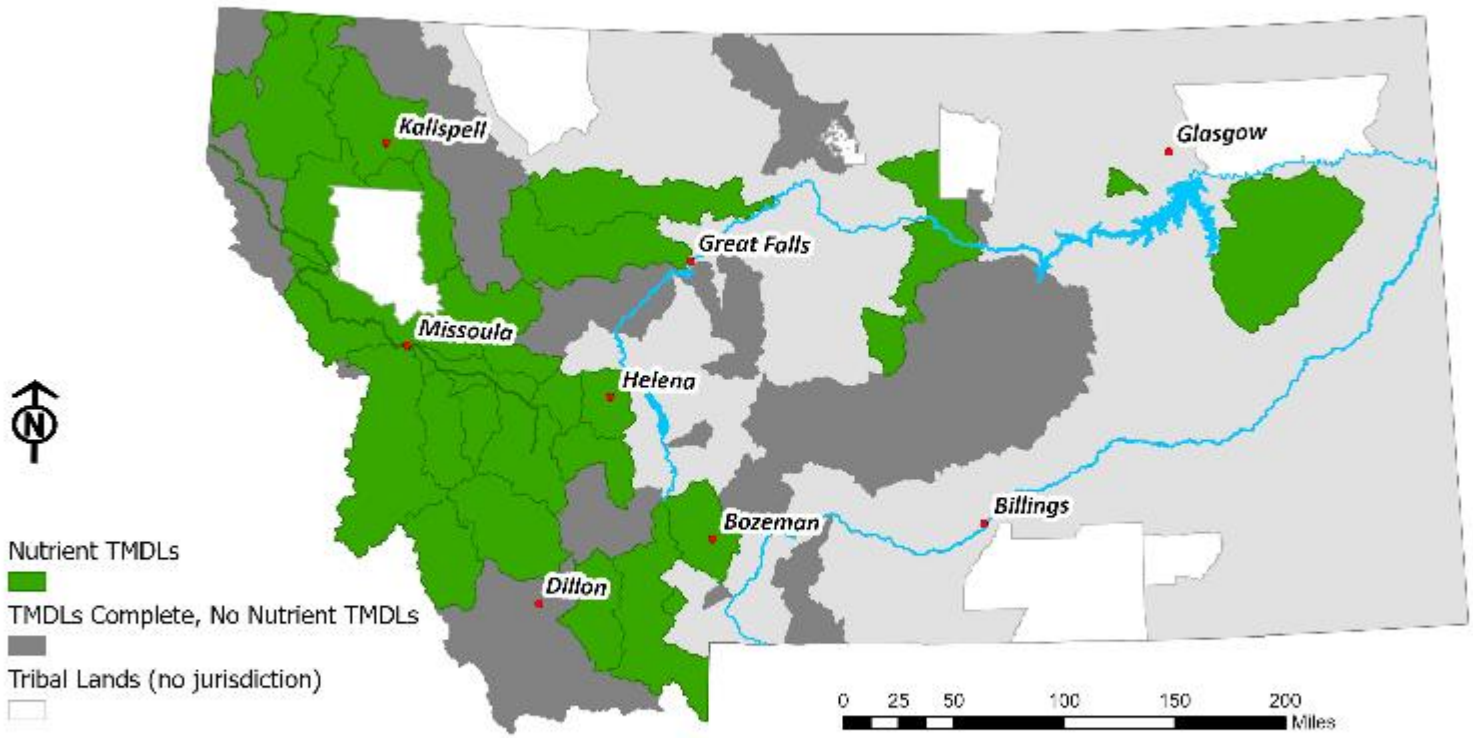
How a TMDL is Developed:

- Define the water quality targets
- Define the allowable loading rate
- Determine the sources of pollutant loading
- Allocate to the significant sources
- Develop water quality improvement recommendations



DEQ MONTANA

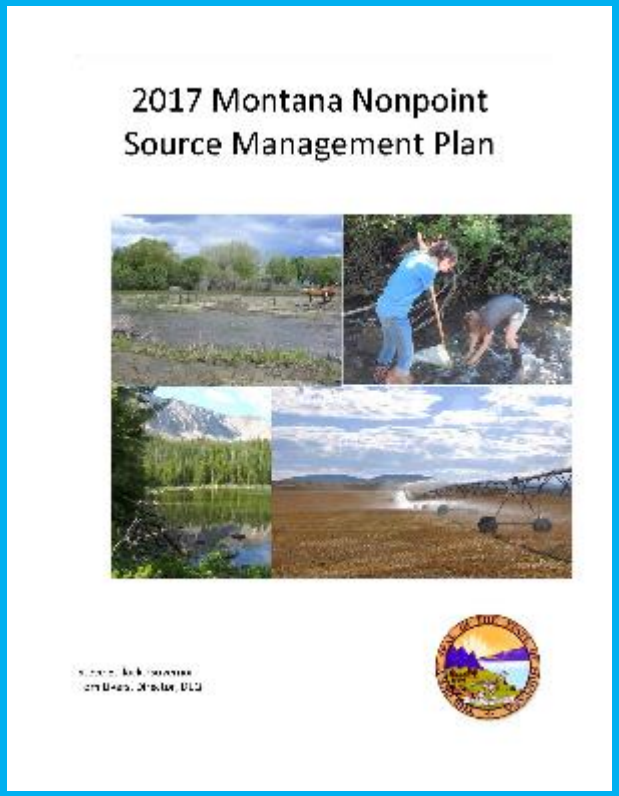
TMDL Project Areas With Nutrient TMDLs



Nonpoint Source Program

Statewide management plan

- Assists watershed groups, CDs, and other organizations to incorporate TMDL information into their watershed restoration plans
- Implement voluntary restoration and protection
- Effectiveness
- Education and outreach — create awareness
- Technical assistance — source identification



DEQ MONTANA

Nonpoint Source Implementation

Funding

- 319 — Limited funding (~1 million a year)
- Funds roughly 5-10 restoration projects
- Average project costs for recent contracts per streambank mile range from $50,000 for small streams to $1,000,000 on medium/large streams/rivers
- Funding partners — Grant working group

DEQ MONTANA

Summary

- TMDLs with nutrient source assessments may be complete
- Stakeholder lists may be available
- Partnerships may be in place
- Watershed Restroation Plans may be complete or in-progress
- A DEQ AMP Coordinator will be available

https://deq.mt.gov/water/Programs/sw

DEQ MONTANA

Next Meetings & Public Comment

DEQ MONTANA

Next Meeting

- Wednesday, August 25 from 9 – 11 a.m.
- Next meeting topics:
  - Wrap-up from today's meeting
  - Outstanding questions
  - Point source long-term nutrient targets
- Technical Subcommittee meeting
  - Tuesday, August 3 from 1:30 – 3:30 pm

DEQ MONTANA

Thanks for Joining Us

Contact:
Galen Steffens
Galen.Steffens2@mt.gov

To submit comments or questions

Submit Comments or Questions

http://deq.mt.gov/water/resources

DEQ MONTANA