BEAVERHEAD WATERSHED WATER QUALITY PLANNING PROJECT
METALS TMDLS

Public Review Draft

August 4, 2020

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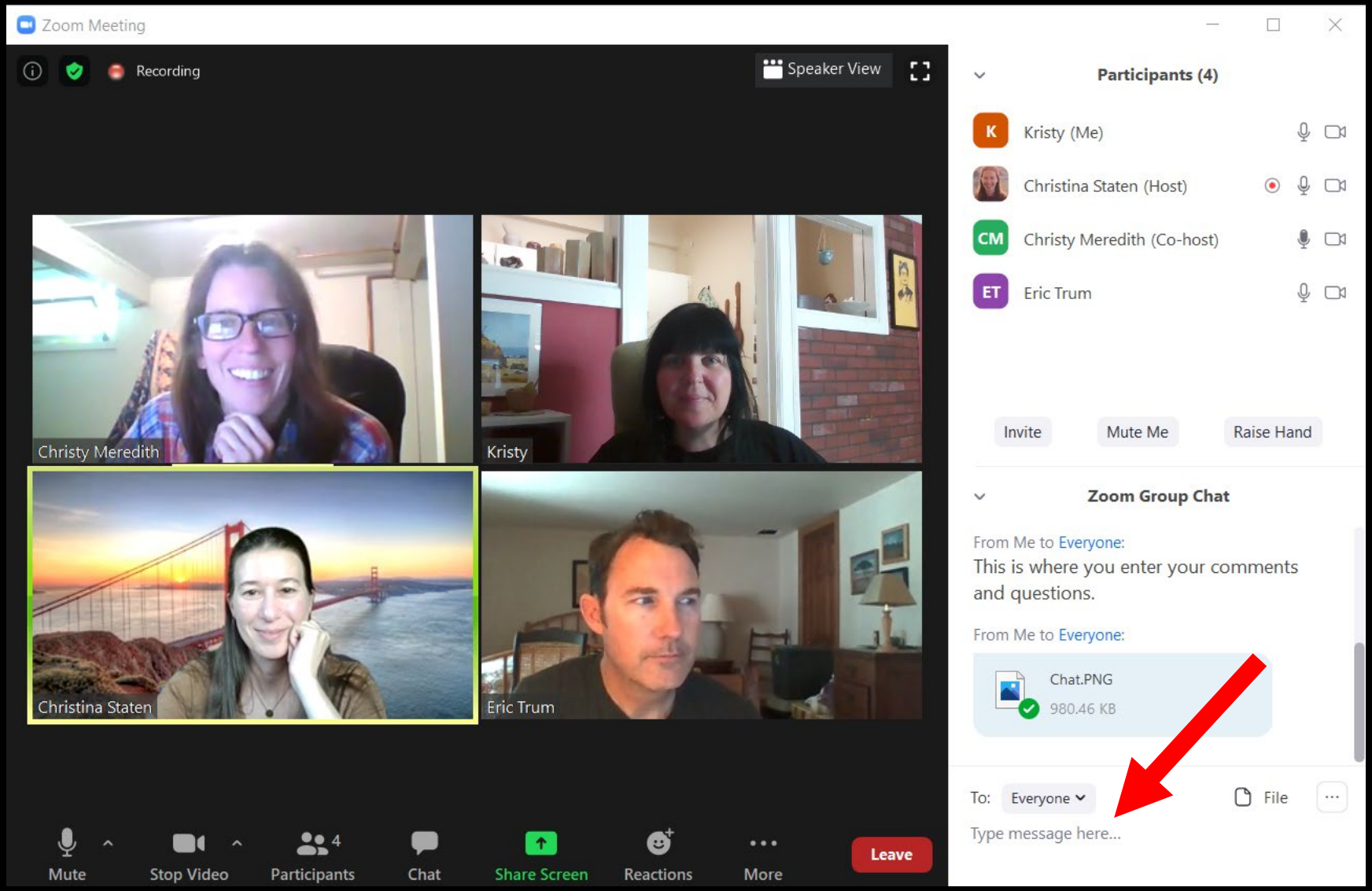
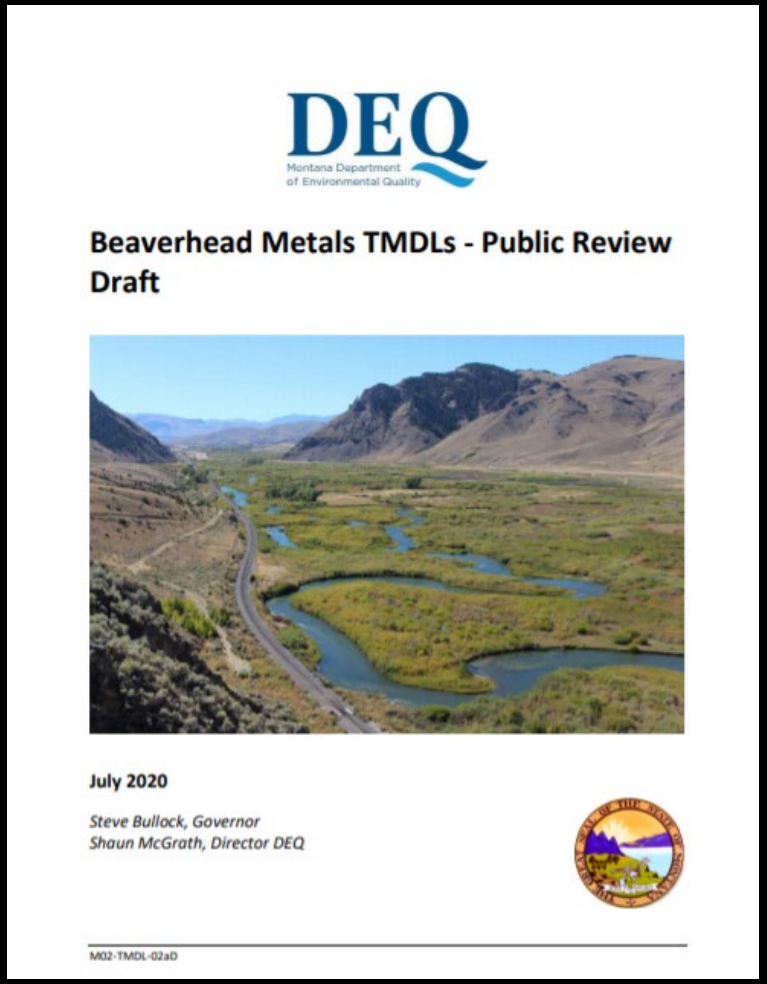
DEQ Montana Department of Environmental Quality

Zoom Meeting – Beaverhead TMDL



Meeting Purpose



To discuss the public review draft of the total maximum daily load (TMDL) document containing metals TMDLs for impaired streams in the Beaverhead Watershed

Document Breakdown

Part 1: Introduction	• 1.0 Project Overview • 2.0 Beaverhead TMDL Planning Area Description • 3.0 Montana Water Quality Standards • 4.0 Defining TMDLs and their Components
Part 2: TMDLs	• 5.0 Metals TMDLs and Source Assessment
Part 3: Water Quality Improvement Recommendations	• 6.0 Water Quality Improvement Plan and Monitoring Strategy • 7.0 Public Participation and Comments

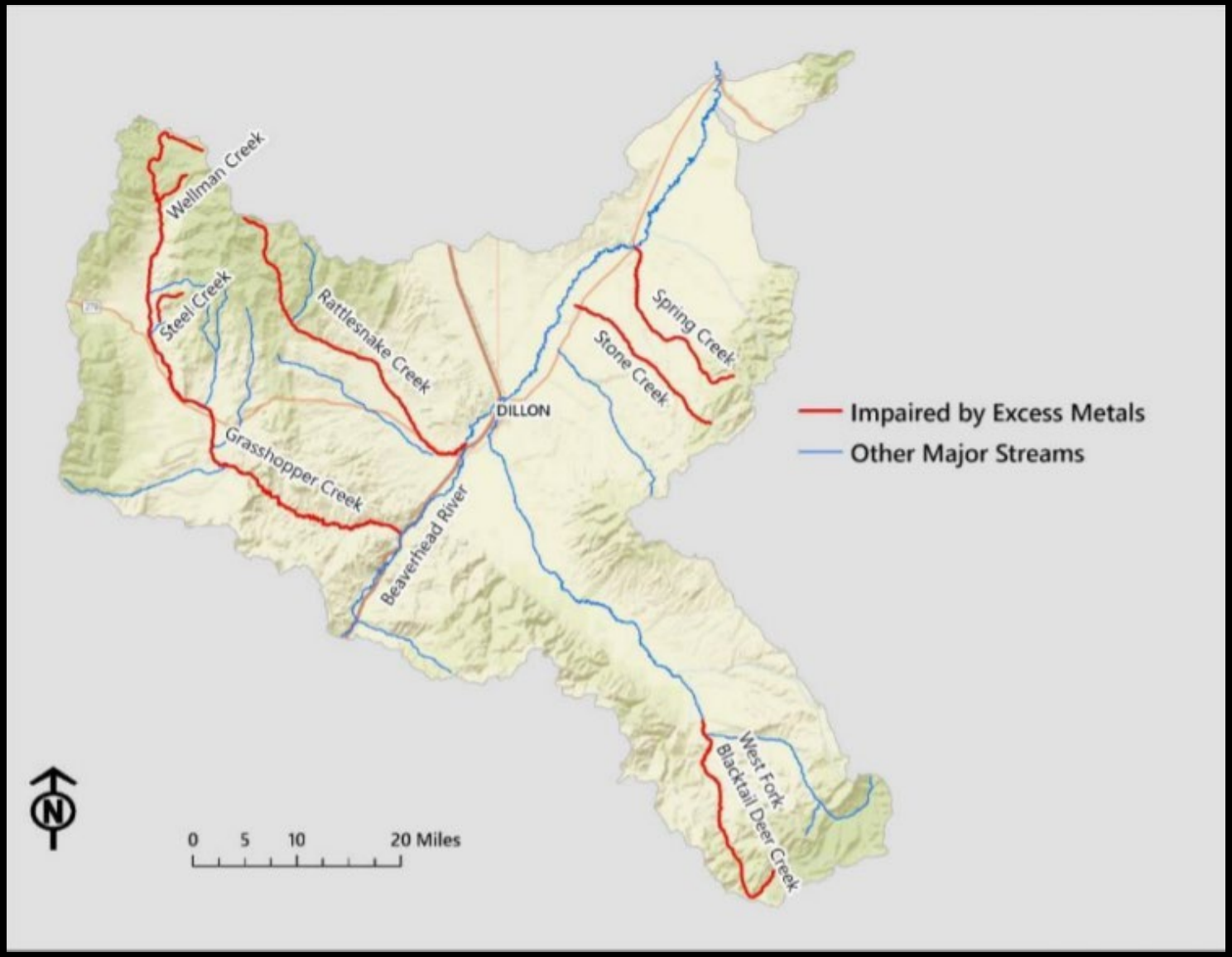
http://deq.mt.gov/Public/publiccomment

Why is DEQ writing TMDLs?

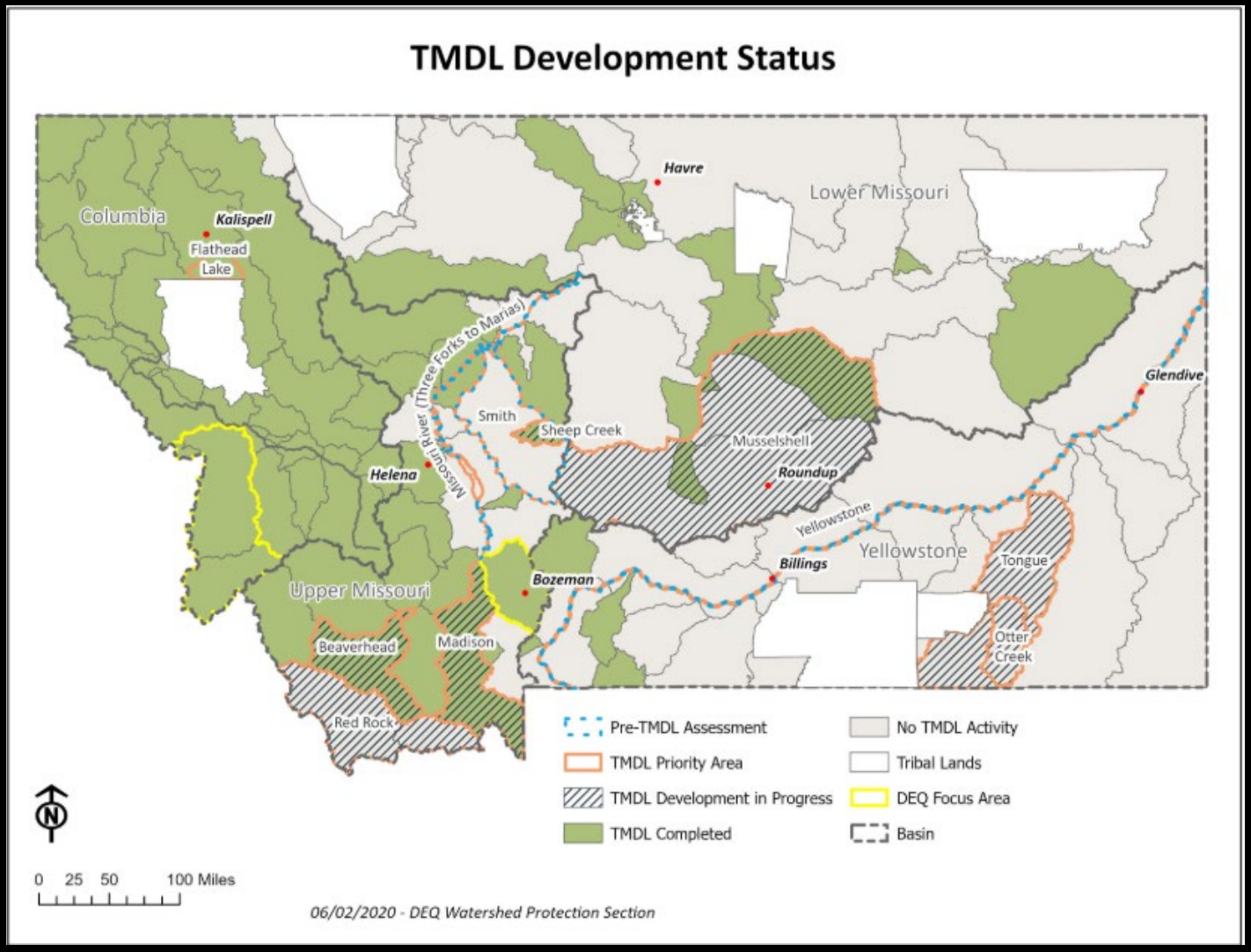
- Montana Constitution
  - All persons have an inalienable right to a clean and healthful environment
  - The state and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations.
- Clean Water Act (CWA)
  - Montana DEQ has delegated authority under the federal CWA (Section 303d)
    - to identify **impaired** streams, rivers, and lakes

    AND
    - to develop a plan to address them

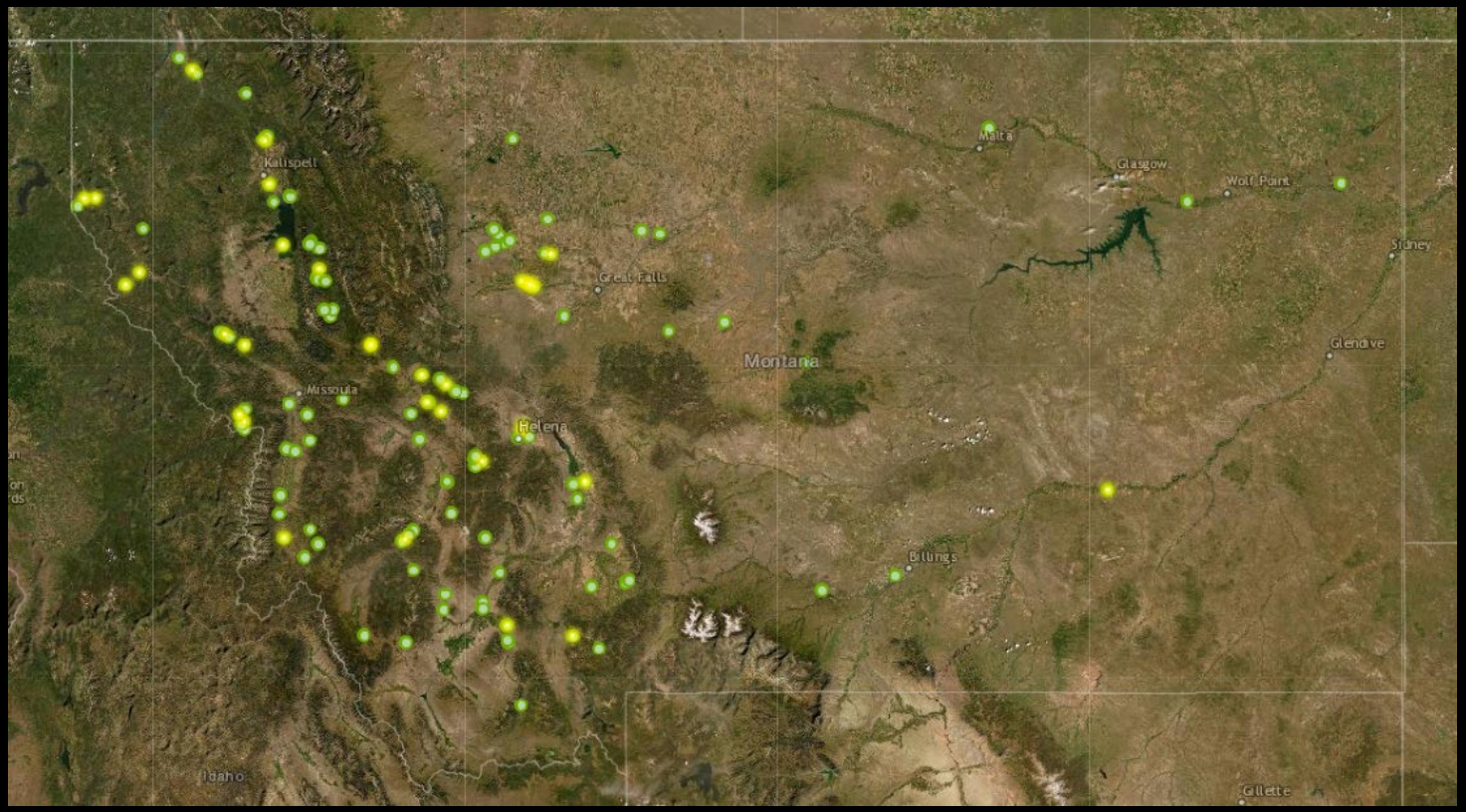
Beaverhead TMDL Planning Area



Why is DEQ interested in Beaverhead watershed?



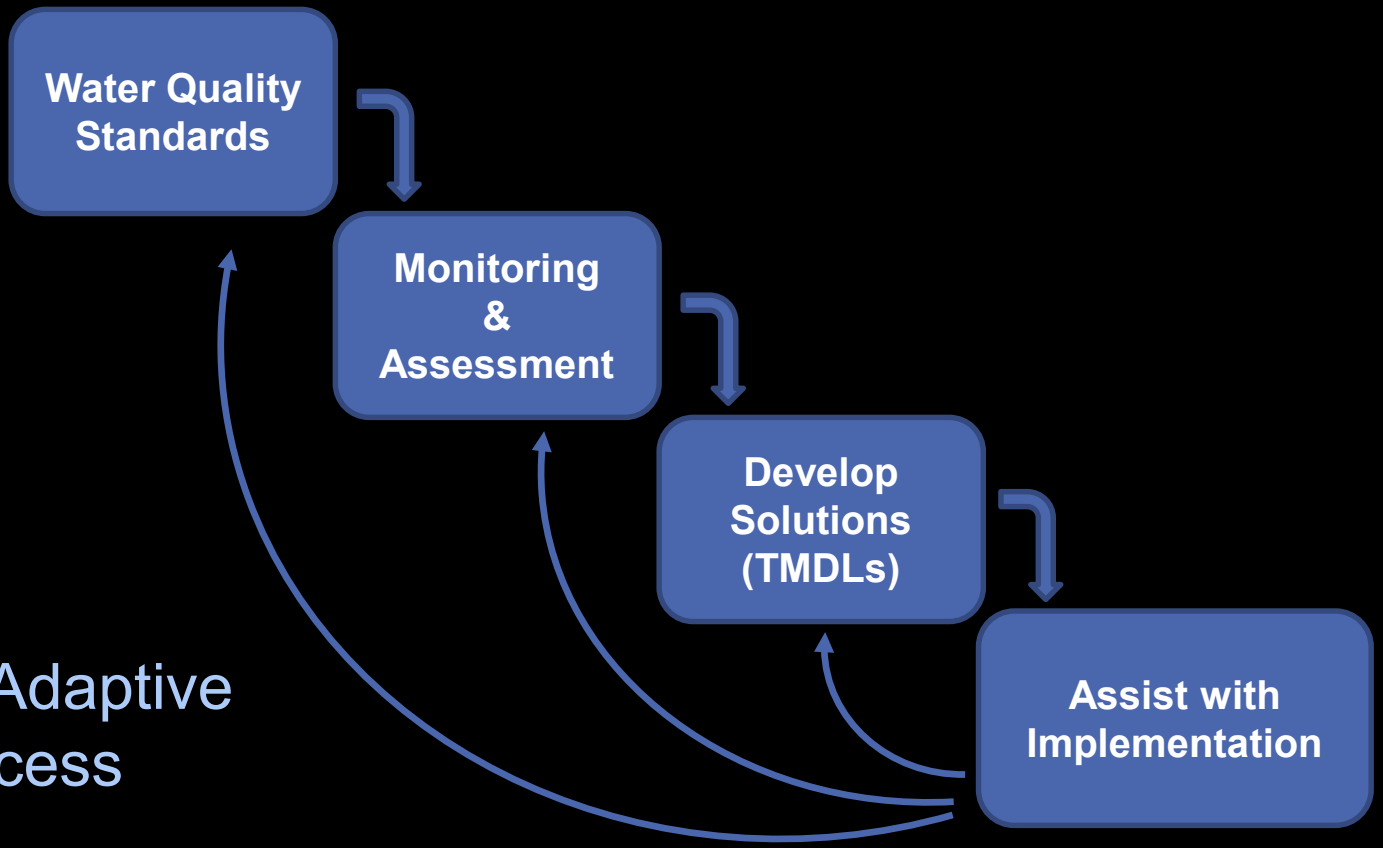
TMDLs lead to projects



Nonpoint Source 319 funded projects

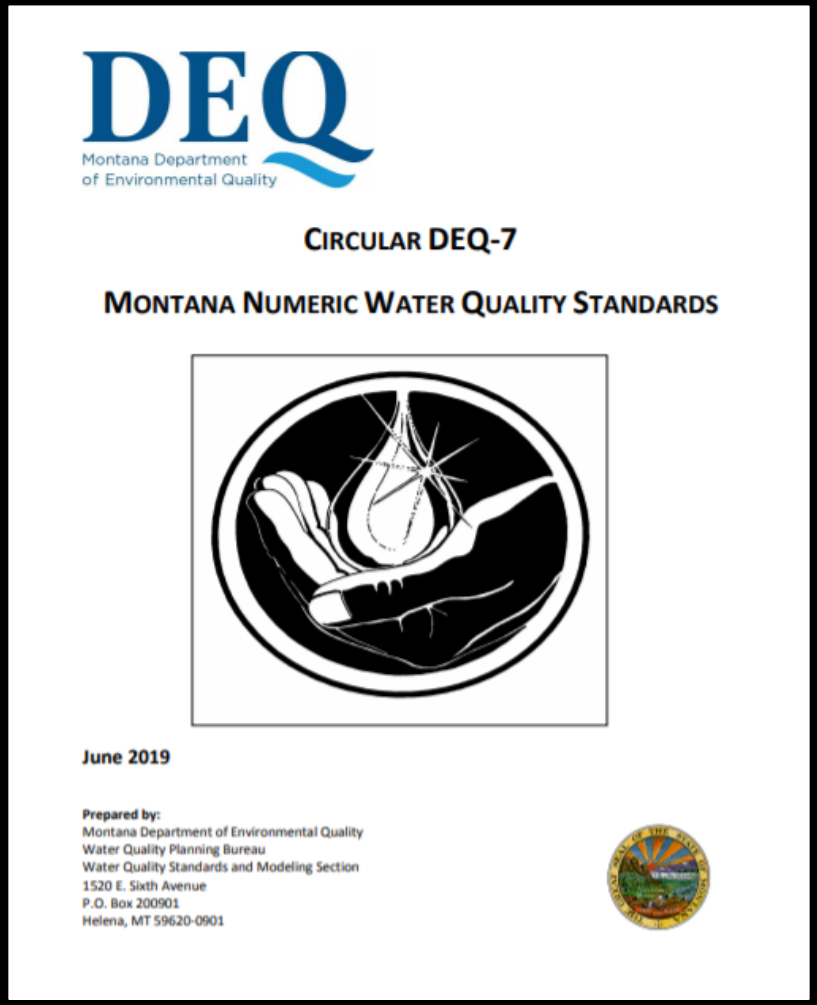
Lily/Orphan Boy Mine reclamation and stream restoration - https://www.youtube.com/watch?v=owFuMr9W7_8

DEQ's Water Quality Planning Steps



An Adaptive Process

Numeric WQ Standards for Metals


DEQ
Montana Department of Environmental Quality

CIRCULAR DEQ-7

MONTANA NUMERIC WATER QUALITY STANDARDS

June 2019

Prepared by:
Montana Department of Environmental Quality
Water Quality Planning Bureau
Water Quality Standards and Modeling Section
1520 E. Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901

- Standards are protective of beneficial uses

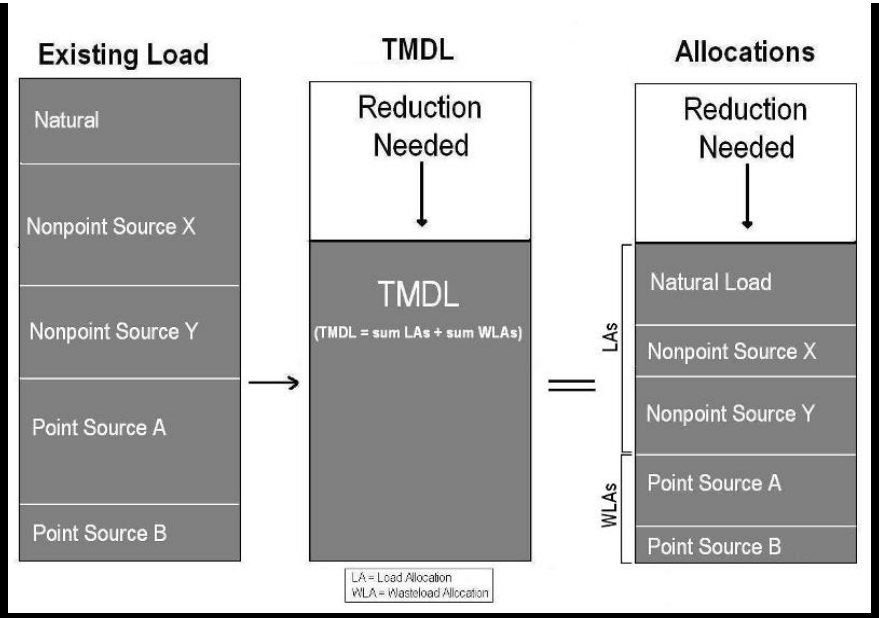
Water Quality Monitoring

- Determines if a waterbody is meeting standards
- If not it is designated as impaired and TMDL is written

What is a TMDL?

- **T**otal **M**aximum **D**aily **L**oad is a calculation of the maximum amount of a pollutant (e.g. lead) that a waterbody can receive from all sources and still meet water quality standards

- Montana State Law and the Federal Clean Water Act require that a TMDL be developed for all waterbodies impaired by a pollutant



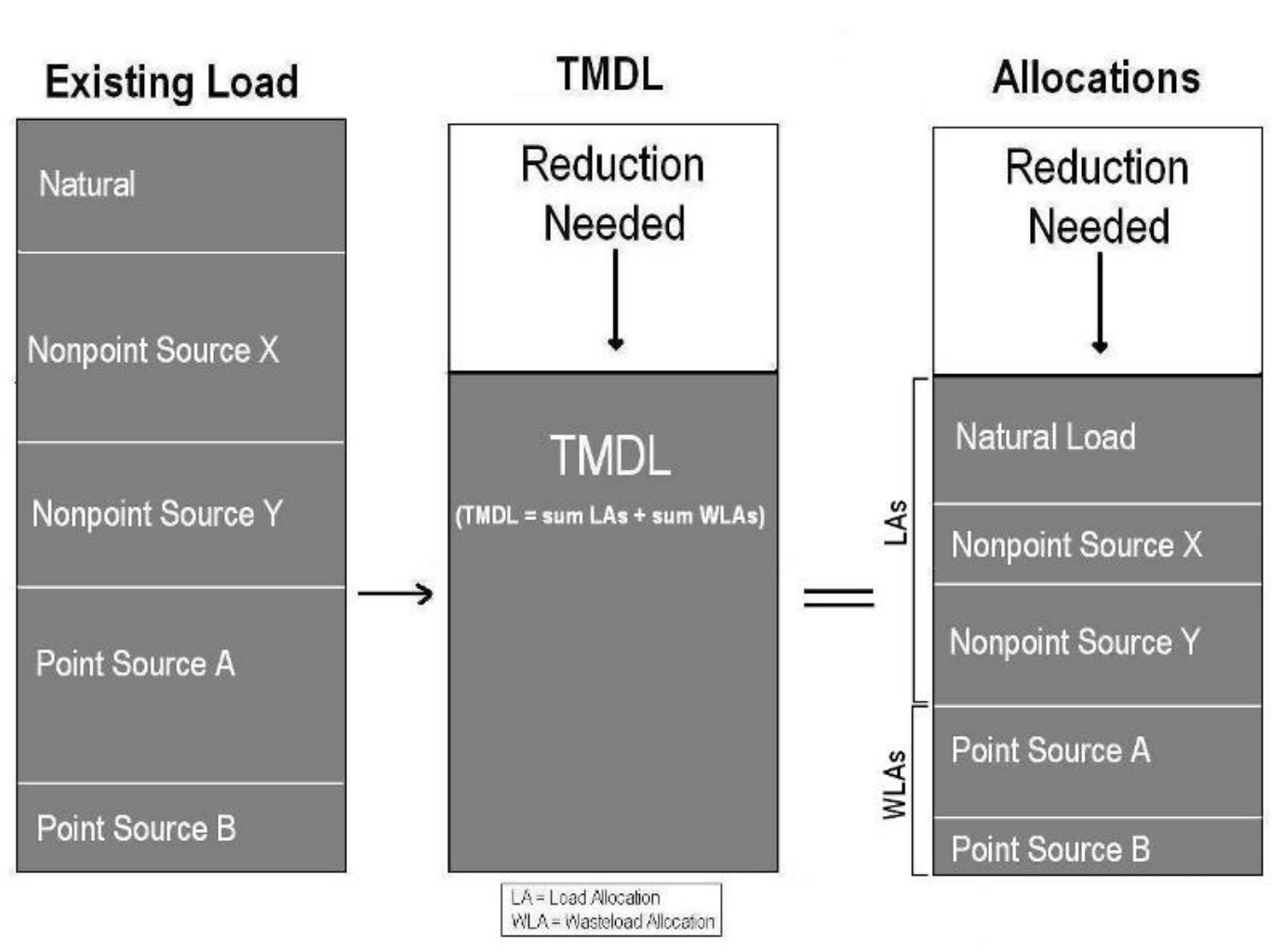
Sources of Pollutants

Point Sources

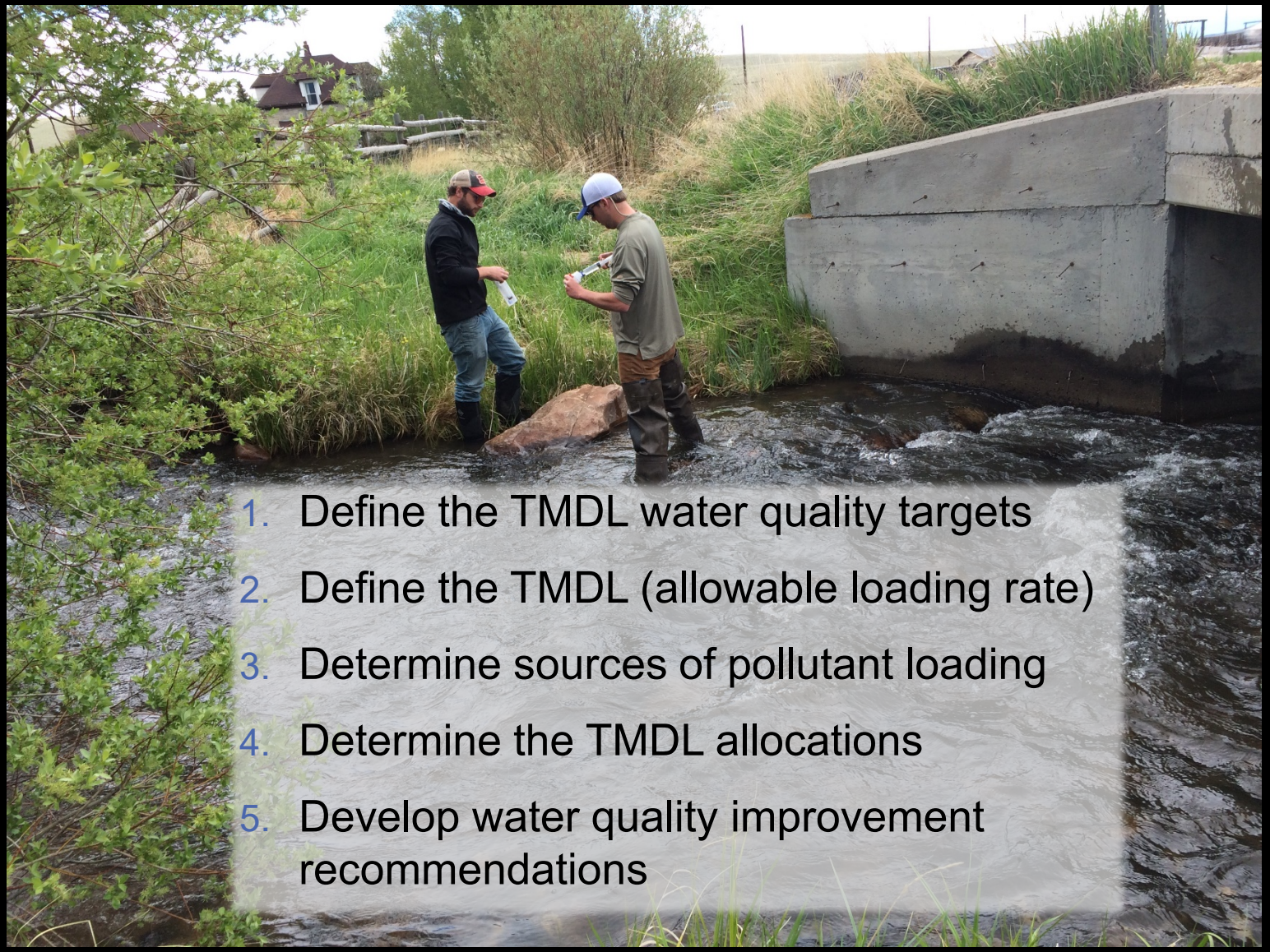
Nonpoint Sources

Natural Sources

Pollutant Allocations

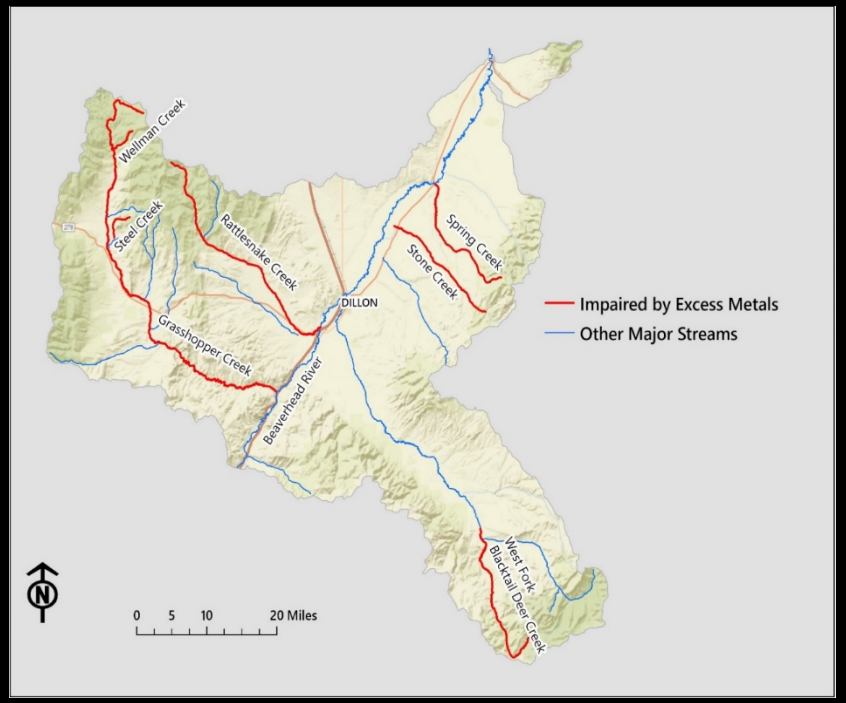


Beaverhead TMDL Development Steps



1. Define the TMDL water quality targets
2. Define the TMDL (allowable loading rate)
3. Determine sources of pollutant loading
4. Determine the TMDL allocations
5. Develop water quality improvement recommendations

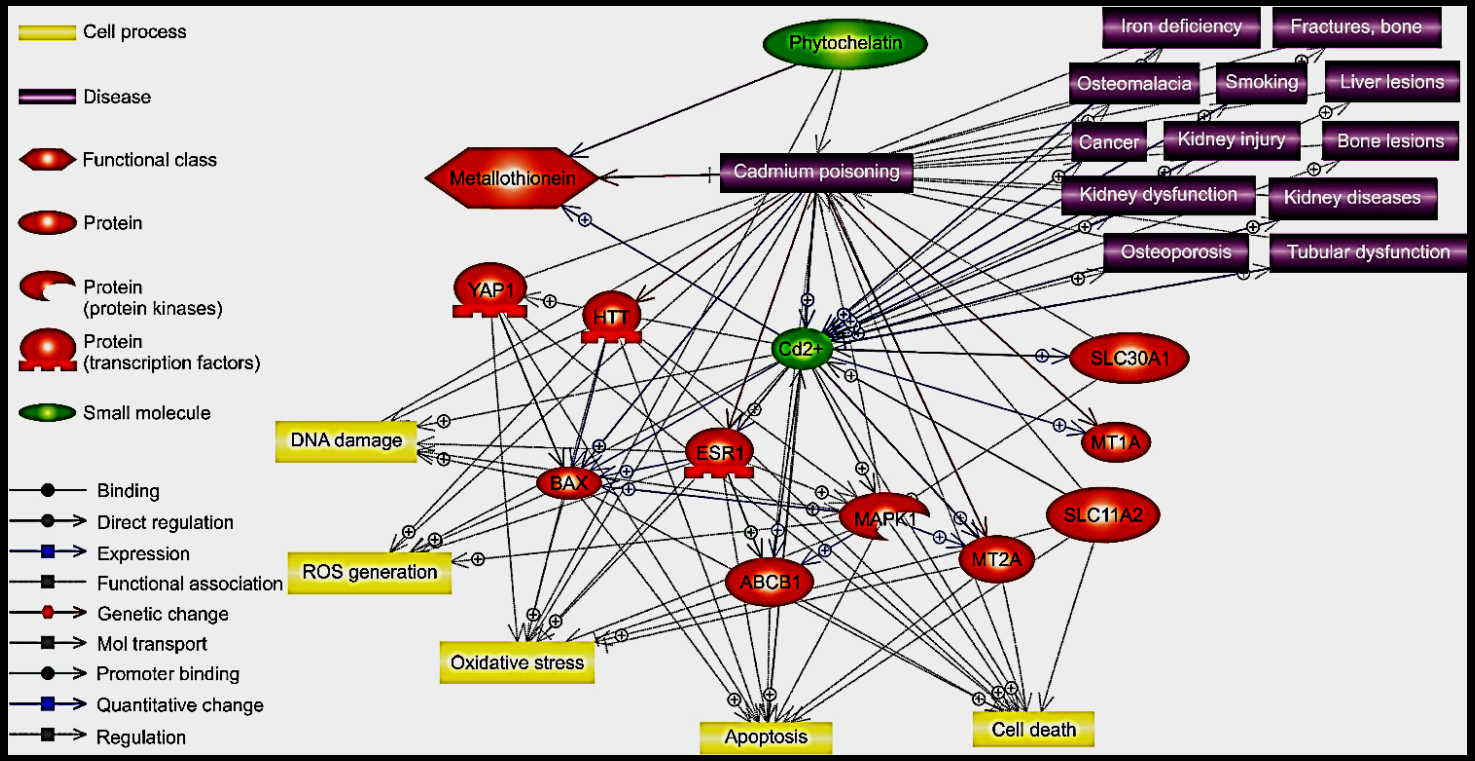
Beaverhead Metals TMDLs-Summary of FIndings



Some Effects on Aquatic Life and Humans

- Cancer
- Osteoporosis
- Impaired Kidney Function
- Decrease in metabolic function

Diagram of Effects of Cadmium on Proteins and Resulting Functions



Journal of Cancer Prevention, 2015

Metals Impairment Determination Factors

- **Water samples collected from 2014-2017 (DEQ) and 2009 (Beaverhead Watershed Committee)**
- **Aquatic Life: Harmful at short or long-term exposure**
  -only 10% of samples allowed to exceed standard
- **Human health standard: harmful to humans**
  -no samples can exceed standard

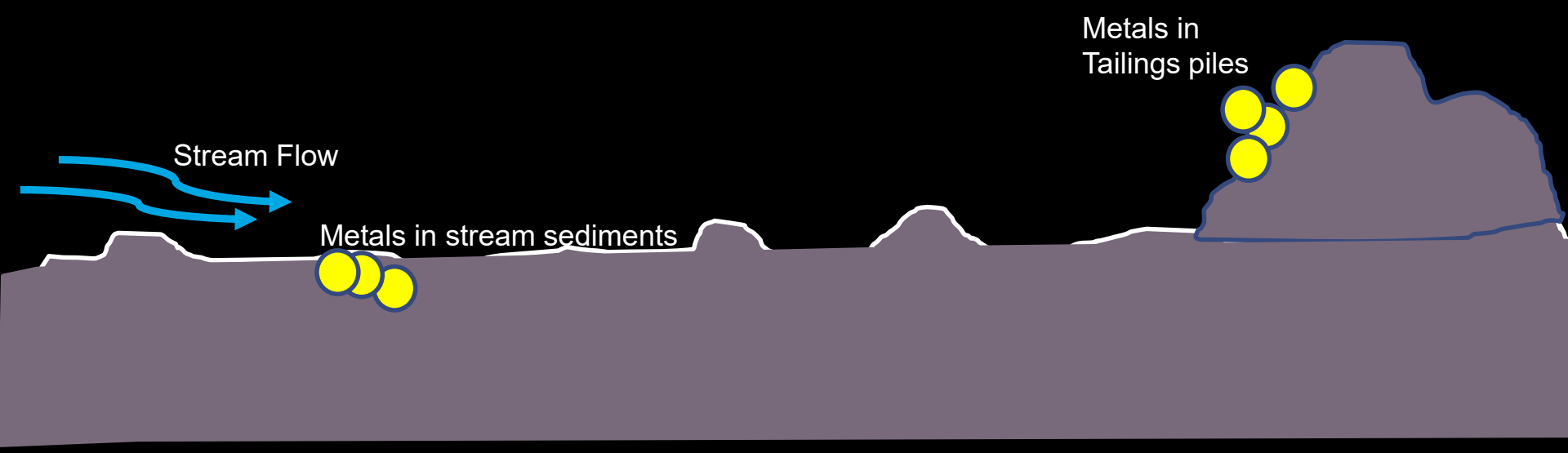
How do metals get into stream?

- Metals erode from rock when exposed to air and water
- They can bind to sediment and get resuspended later during storm events

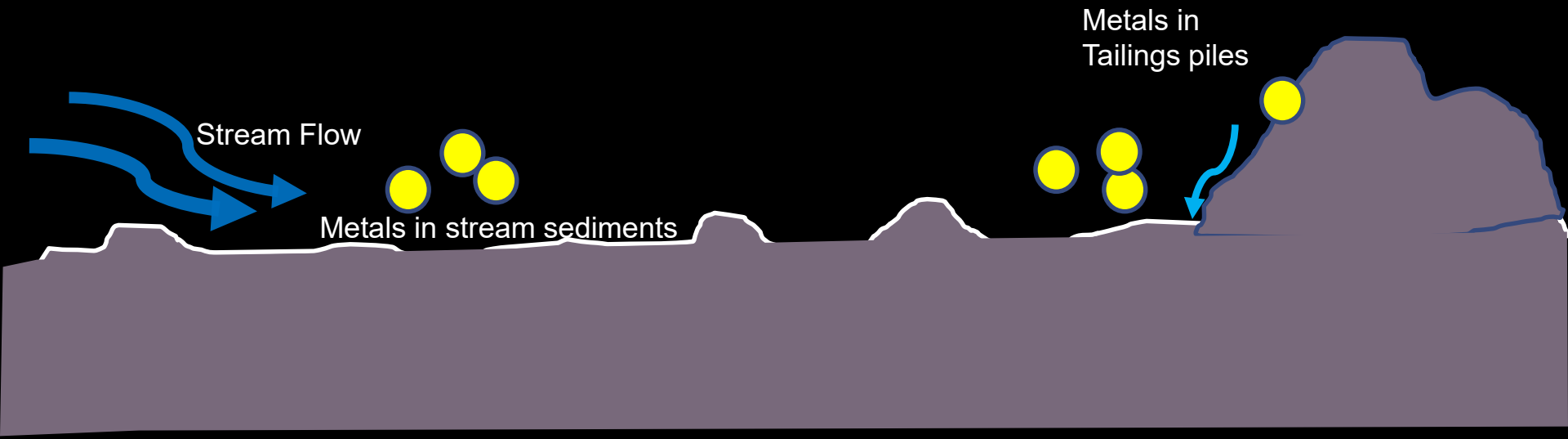
Tailings Piles-Grasshopper Creek

Turbid Waters-Stone Creek

Evaluate at High and Low Flow

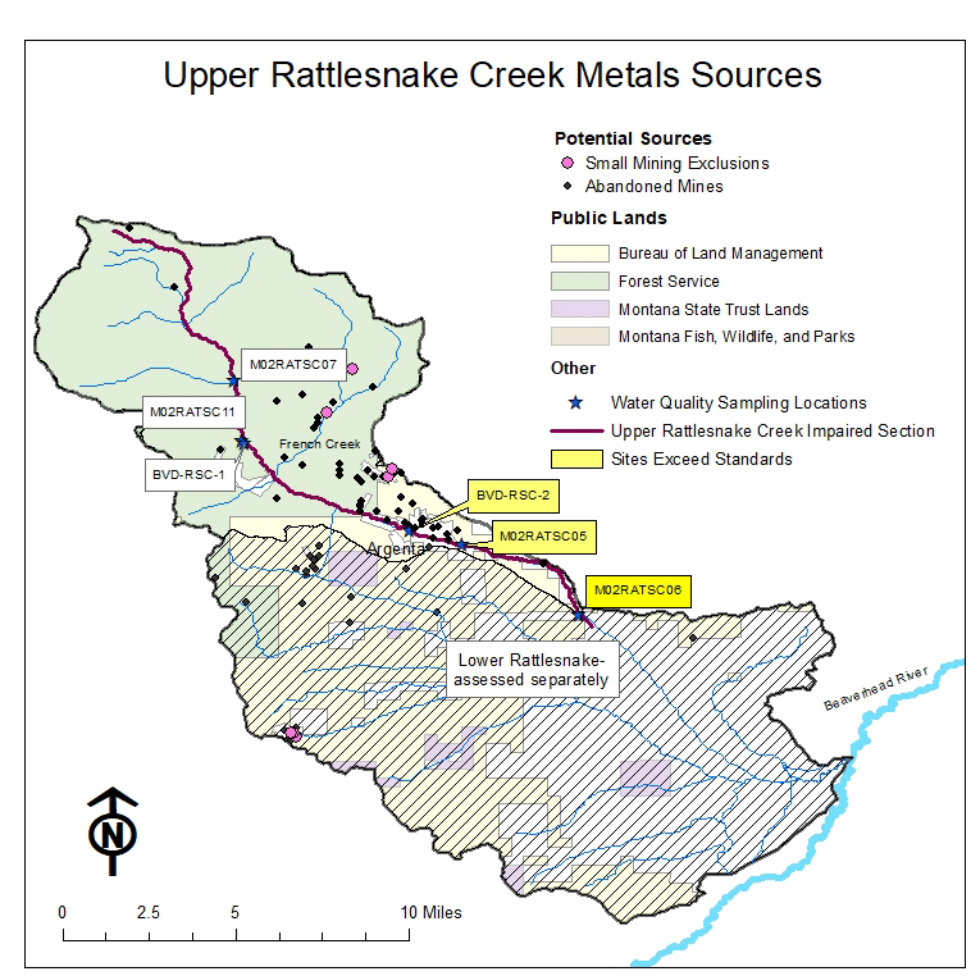


Evaluate at High and Low Flow



Metals Water Quality Exceedances

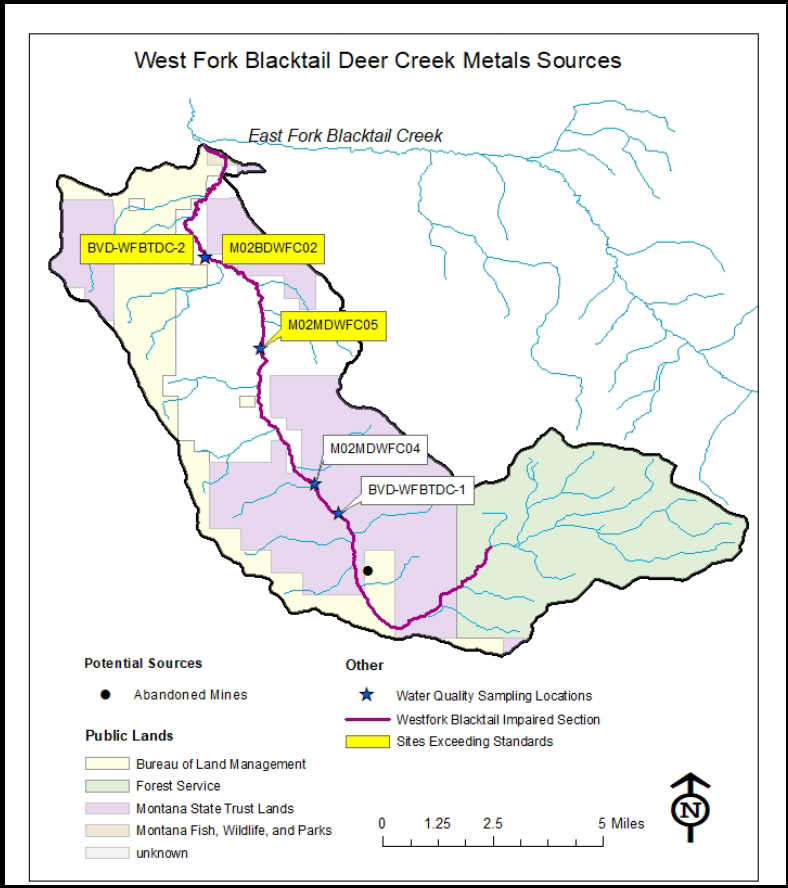
`	Lead	Copper	Iron	Cadmium	Aluminum	Zinc	Arsenic
Grasshopper Creek	X						
Upper Rattlesnake Creek	X						
Lower Rattlesnake Creek	X	X					
Spring Creek			X				
Upper Stone Creek			X				
Lower Stone Creek		X	X		X		
Steel Creek							X
Wellman Creek	X	X		X	X	X	
West Fork Blacktail Deer Creek							X



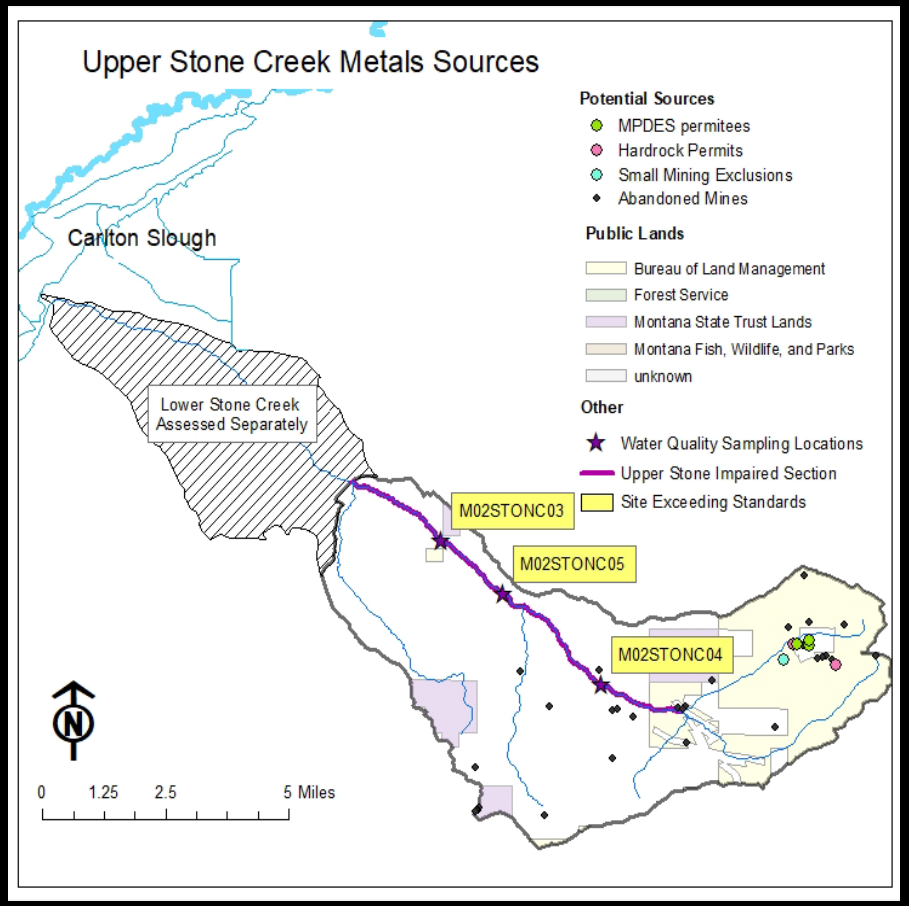
Upper Rattlesnake Creek

- Impaired for lead
- Findings suggest source downstream of French Creek
- 92% reduction needed at low flows
- 96% reduction needed at high flows

West Fork Blacktail Deer Creek



- Impaired for arsenic
- Exceeded human health standard
- 38% reduction needed at high and low flows



Upper Stone Creek

- Impaired for iron
- Two individual point source permits and one general permit
- ~80% of iron is from abandoned mines and 20% is from point sources
- Permittees are required to meet water quality
- standards
- 22% reduction needed at low flows
- 75% reduction needed at high flows

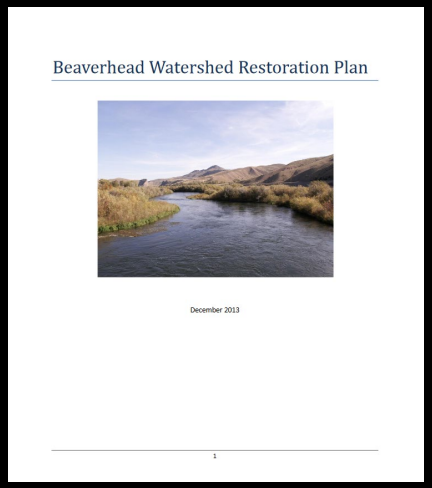
How Do We Get to a Healthy Stream

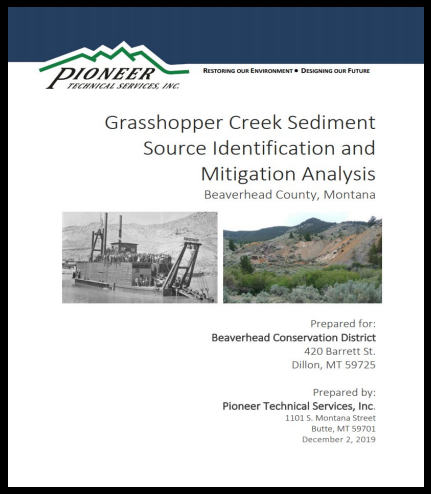
- Removal of mine tailings
- Maintaining tailing ponds from abandoned mines
- Monitoring and permits to ensure point discharge is meeting standards

- Other practices:
  - Streamside vegetation management
  - Reduce erosion from banks
  - Irrigation water management

Next Steps

- Metals TMDL can be used to inform watershed restoration objectives and priorities
- DEQ staff from Abandoned Mine Lands and Nonpoint Source Pollution Programs can provide technical and financial support for project planning and implementation
- Most projects are initiated and accomplished through local partnerships with organizations like the Beaverhead Watershed Committee, Beaverhead Conservation District, Trout Unlimited, and the Nature Conservancy
- Contact Beaverhead Watershed Committee or Beaverhead Conservation District to get involved





Questions?

How to Submit Comments

http://deq.mt.gov/Public/publiccomment

http://comment.cwaic.mt.gov/

Questions:

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DEQ Montana Department of Environmental Quality