Implementing Sediment TMDLs in Montana through Restoration of Natural Riparian and Stream Functions

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Outline

- Montana Sediment TMDL Approach
  - General Information
  - Sediment TMDL Targets
  - Sediment Source Assessment & Solutions
- Important Considerations When Implementing Sediment TMDLs
- Implementing Sediment TMDLs by Restoring Natural Processes
- Project Examples
Montana Sediment TMDL Development

Influenced by Lawsuit/Court Order/Consent Decree

• > 1300 TMDLs developed by MDEQ & EPA to eventually satisfy our plaintiffs

Sediment TMDLs completed for > 300 waterbody segments

• > 16 year period
• Predominately cold water aquatic life streams
• Use impact: predominately aquatic life/trout
• Mostly 2nd – 4th order (wadeable) streams
• About 250 sediment TMDLs also address one or more habitat alteration type impairment causes
Sediment TMDL Targets

- Based on narrative standard for sediment:
  - Greater than naturally occurring levels
  - Harmful to aquatic life or other uses (lot of literature on trout)
Sediment TMDL Targets

• Incorporate channel characteristics and geomorphology measures (% fines, pool measures, riparian health, cross sections)
• Influenced by EPA, USFS, other states
• Limited use of TSS and SSC
Sediment TMDL Targets: Based on Reference Conditions (usually least impacted vs. pristine)
Sediment TMDL Targets

Targets typically address the habitat alteration impairment causes (instream and riparian)
Typical Source Assessment Categories

• Upland erosion
• Roads
• General permits (construction, MS4)
• Bank erosion
Solutions (Basis for Allocations)

• Upland sources: typically addressed via improved stream buffering (riparian); land management BMPs
• Roads – BMPs
• Permits – Follow permit requirements
• Bank Erosion – Combination of BMPs to remove stressors and to achieve a stream’s geomorphic potential
Sources of Bank Erosion

- Sometimes obvious influences: Grazing, cropping practices, homes, roads, silviculture, flow modifications
- Sometimes less obvious influences: historical uses, beaver removal, upstream constrictions, invasive species
- Natural
- Often a combination of sources
Important Considerations When Implementing Sediment TMDLs

- Moving targets
- Variable source quantification methods
- The role of sinuosity
- The role of healthy riparian areas
Moving Targets

• Sediment TMDL targets evolve (improve) through time:
  o New reference information
  o Updated assessment methods
  o Staff experience

• TMDL documents acknowledge potential for updated methods/targets

• Goal is to satisfy the standard, if there is a newer approach that shows that the goal is met, than we are successful
Variable Source
Quantification
Methods

• Methods (bank erosion, roads, upland) are apples to oranges; or more like real dog to snow dog
• Allocations focus on percent reductions
• Impact on communications
Sinuosity Consideration

• Important habitat health indicator (critical component of shape, pattern and profile)
• May require period of elevated bank erosion before achieve dynamic equilibrium; possibly within an inset floodplain
Riparian Health Improvement as an Ultimate Indicator

- Healthy riparian areas often include wetlands
- Habitat for wildlife
- Easy landowner communication tool
- Addresses multiple pollutants
- Will often lead to a reference condition
Implementing Sediment TMDLs

It’s as much about the people as it is the projects

Denise Thompson, Broadwater Conservation District
Implementing Sediment TMDLs

• Requires significant education and outreach
• Stressor Identification - eroding banks are a symptom not the illness
• Translating load allocations to on-the-ground actions
• Identifying win-win opportunities
Restoring Stream Natural Processes

Primary Objectives for Restoration:

- Riparian vegetation
- Stream access to floodplain during runoff
- Proper shape, pattern, and profile
Restoring Stream Natural Processes

**Policy** - Stream restoration should promote and restore natural processes through measures that consider the physical, biological, and social context in which they occur.

**Guidance** – Educate and empower partners and landowners with knowledge and tools to implement good projects.
Restoration Approaches

Restoration approaches occur on a spectrum from no action to full stream reconstruction.

Approach is dictated by context including:
- historical or ongoing land use
- resource value
- available resources

Passive
Time

Risk

Active
$
Removing the stressor - East Fork Bitterroot River
Restoring native vegetation: Bull River
Rebuilding a Stream – Ninemile Creek
Restoring native fishery - French Creek
Creating a win/win - Braziel Creek

Downstream View

Upstream View

09/06/10  09/10/11  09/13/18
Forest Roads: Cedar Creek

- Moving Forest Service “gut” road
- Opening up floodplain where possible
- Adding LWD
- Beavers moving in
Bringing Beaver Back
Questions?