Nonpoint Source Pollution in Montana

Eric Trum Watershed Protection Section WPCAC 1/28/2022



Watershed Protection





NPS Management - Overview



- NPS pollution definition
 Overview of DEQ planning process
 Project examples
 - Ninemile Creek
 - Ruby River
 - Flathead septics
- Education and outreach
- Monitoring effectiveness



What is Nonpoint Source Pollution?

Point Source

 [A]ny discernible, confined and discrete conveyance... from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture. – Federal CWA



Nonpoint Source

 ...a diffuse source of pollutants resulting from the activities of man over a relatively large area, the effects of which normally must be addressed or controlled by a management or conservation practice. - ARM 17.30.702(18)





Types of Nonpoint Source Pollution







DEQ's Role and Authority

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.

Federal Clean Water Act (CWA)

- Montana DEQ has delegated authority under the federal CWA (Section 303d)
 - to identify **impaired** streams, rivers, and lakes
 - to develop a plan to address them
- Montana Water Quality Act (Title 75, chapter 5, MCA)
 - [DEQ] advises, consults, and cooperates with other states, other state and federal agencies, affected groups, political subdivisions, and industries in formulating pollution prevention and control plans (MCA § 75-5-213)
 - DEQ shall develop total maximum daily loads or TMDLs (MCA § -703)
 - DEQ shall support a voluntary program of reasonable land, soil, and water conservation practices to achieve compliance with water quality standards for nonpoint source activities (MCA § -703)



NPS Management

2017 Montana Nonpoint Source Management Plan



Goals

- Inform Montana citizens about NPS pollution
- Identify how NPS pollution is being addressed by local, state and federal programs and partners such as watershed groups and conservation districts.
- **Describe** how DEQ will work with partners and provide statewide leadership toward implementation
- Articulate strategies, programs and resources for protecting and restoring water quality affected by NPS pollution.



Steve Bullock, Governor Tom Livers, Director, DEQ

DEQ Water Quality Planning





NPS Management - TMDLs





NPS Management – Watershed Restoration Plans

- 1. Identification of causes of impairment and sources of pollution.
- 2. An estimate of the pollutant load reductions needed to achieve water quality standard
- 3. A description of the nonpoint source management measures needed to achieve pollutant load reductions.
- 4. An estimate of the technical and financial assistance needed to implement the management measures.
- 5. An education and outreach component to encourage public participation in designing and implementing the management measures.
- A reasonable schedule for implementing the management measures.
- Milestones to gauge progress in implementing the management measures.
- 8. Criteria for determining to what extent management measures are reducing pollutant loads and improving water quality over time.
- 9. A monitoring plan for collecting the data necessary to evaluate improvements based on the criteria above.





Planning leads to projects



Nonpoint Source 319 funded projects <u>https://gis.mtdeq.us/portal/apps/webappviewer/index.html?id=92</u> <u>67e33898664f95a5feba149b1e23a0</u>



Ninemile Creek Watershed



- Impairments Identified 1996
- TMDL Completed 2005
- Eustache Creek 2006
- McCormick Creek 2009
- Mattie V Creek 2010
- St. Louis Creek 2011
- Twin Creek 2012
- WRP Completed 2013
- Ninemile Creek 2014
- Sawpit Creek 2014
- Kennedy Creek 2015
- Martina Creek 2016
- Ninemile Creek Phase 2 2016
- Ninemile Creek Phase 3 2018
- Burnt Fork Creek 2020
- Ninemile Creek Phase 4 2020
- Ninemile Creek Phase 5 2021
- Soldier Creek 2021



Ninemile Creek

Heavily impacted by historical mining

- Channelized
- Disconnected floodplain
- High eroding banks
- Impairment Causes
 - > Sediment
 - Flow modification





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2020 Integrated Report - Impairments









Outcomes

Five Miles of Active Restoration

- Leveled 100 acres of floodplain
- Restored sinuosity
- Added floodplain roughness and habitat
- Reduce Sediment loading by over 1000 tons/mile
- Increase flood storage and late season flows by 1.01 acrefeet/mile restored/day





Funding









Ruby River – Miller Ranch

Impacts from Ruby Reservoir and agriculture practices

- Channelized
- Loss of riparian vegetation
- Eroding banks
- Corrals near stream channel

Impairment Causes

- > Sediment
- Temperature
- Total Phosphorous
- Flow regime modification
- Alteration in stream-side vegetation





Ruby River – Miller Ranch

Total Cost - \$839,084.89

DEQ 319 - \$117,000

Miller Cattle Company Miller Recreational Development NRCS TSP NRCS EQIP Montana FWP FFIP MT chapter of American Fisheries Society Sacajawea Audubon Private landowners Alder School

Montana Watershed Coordination Council





https://player.vimeo.com/video/135526456?autoplay=1



Flathead Watershed

Impacts from various sources

- Urban/suburban development
- Loss of riparian vegetation
- Eroding banks
- Small agriculture

Impairment Causes

- Sediment
- > Temperature
- Total Phosphorous
- Total Nitrogen
- Flow regime modification
- Alteration in stream-side vegetation





Flathead Septic Maintenance

Incentive-based Strategy to Reduce NPS Pollution from Septic Systems in the Flathead Basin

Total Cost – \$120,000 (est.)

DEQ 319 - \$70,000

- Flathead Basin Commission Onsite Wastewater Technical Committee
- Flathead Lakers
- Lake Conservation District
- Flathead Conservation District
- Friends of Lake Mary Ronan
- Flathead City-County Health Department







https://storymaps.arcgis.com/stories/9ff3e6c7 664d4f74a1e1d067ce69fa97

Flathead Septic Maintenance - TMDL

Watershed	No. of septic systems at specified distance (feet) from a stream				Total Number of Septic
	< 100	100 to 500	500 to 5,000	5,000 to 20,000	Systems
Upper	92	182	343	40	657
Middle	67	330	1,213	97	1,707
Spring	7	48	106	0	161
Lower	16	180	618	14	828
Sum	182	740	2,280	151	3,353

Table 5-15. Septic System Distribution in the Ashley Creek Watershed.



Figure 5-24. Contribution of TN Sources to Spring Creek during the Summer Growing Season Figure 5-25. Contribution of TP Sources to Spring Creek during the Summer Growing Season



Flathead Septic Maintenance





Flathead Septic Maintenance





Education and Outreach



Lake Conservation District



Lower Clark Fork Watershed Group







Sun River Watershed Group



MONTANA WATERSHED **COORDINATION** COUNCIL

BIG SKY WATERSHED CORPS Building the Next Generation of Conservation Leaders



Big Sky Watershed Corps (BSWC) is an AmeriCorps service program that places young professionals with local watershed partners to make a measurable difference in conservation across the state. Now in its 10th year, the BSWC program is jointly administered by MWCC, the Montana Conservation Corps, and the Soil and Water Conservation Districts of Montana.

Since 2011, BSWC has engaged 222 members who have contributed nearly 380,000 hours of conservation service. Dozens of members have gone on to work for local watershed conservation organizations, as well as state, federal, and tribal agencies working on natural resource issues in Montana, expanding the program's benefits to the next generation of conservation leaders.

BSWC members lead and support a wide array of conservation efforts, including:

- Preventing the spread of terrestrial and aquatic invasive species
- School- and community-based conservation education programs
- Leading and recruiting volunteers
- Grant writing and management
- Increasing access to markets for local agricultural producers
- Riparian and upland restoration projects
- Monitoring for water quality, water quantity, stormwater runoff, salinity, and other key watershed health factors
- Maintenance and monitoring of past restoration projects to ensure project success



Host Sites 58,000 + Total Service ✓ 4,500+ Community Members Engaged 160 Miles of Waterways

2020 BSWC

Member Impact ✔ 35 Members Served 30









Montana Department of Environmental Quality 31

Measuring Impact

Load Reductions

- Modeled for 319 projects Riparian mapping
 - Completed in Focus Watersheds

Project Effectiveness Reviews

- Track sustained success of
- Record project failures and lessons learned
- Capture landowner perspectives
- Inform TMDL Implementation Evaluations (TIEs)

Success Stories





Measuring Impact





Questions?

Eric Trum Watershed Protection Section

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