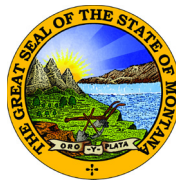


# Montana

## Nonpoint Source Management Program 2017 Annual Report

### **MONTANA'S VISION STATEMENT FOR WATER QUALITY**

Water quality will be restored and protected through the implementation of voluntary best management practices identified in science-based, community supported watershed plans.



**DEQ**  
MONTANA





## **Prepared By**

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## **Acknowledgements**

This report was prepared by Eric Trum, Water Quality Specialist with the Watershed Protection Section. Review was provided by Robert Ray, Watershed Protection Section. Individual updates were provided by collaborating partners, Water Quality Division supervisors, and staff. Photos, maps, and other graphics were provided by DEQ staff and partners. Work accomplished in 2017 could not have been done without the support of our partners and the people of Montana.

Cover Photo: French Creek, Mt Haggin Wildlife Management Area. Floodplain and channel restoration work. Photo by Pedro Marques, Big Hole Watershed Committee.

Background photo: Rock Creek, NE Montana. Photo by Mike Baker.

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**Suggested Citation: DEQ-PPA-WPB-WPS. 2016.  
Montana's Nonpoint Source Management Program  
2016 Annual Report. Helena, MT: Montana  
Department of Environmental Quality.**

**WQPBWPSTR-016**



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# Montana Nonpoint Source Pollution Management

Nonpoint Source (NPS) pollution is Montana's single largest source of water quality impairment. Unlike pollution from industrial and sewage treatment plants (point sources), NPS pollution comes from many widespread sources and can be generated by most land-use activities. NPS pollution is created when runoff water moves over and through the ground, delivering pollutants to lakes, rivers, wetlands, and groundwater. Common NPS pollutants include sediment, nitrogen, phosphorus, metals, pesticides, pathogens, petroleum products, and salts.

The goal of Montana's NPS Management Program is to protect and restore water quality from the harmful effects of NPS pollution. We believe this is best achieved through an approach that integrates water quality standards, monitoring and assessment, development and implementation of total maximum daily loads (TMDLs), and the voluntary implementation of best management actions outlined in Watershed Restoration Plans (Appendix G). This approach seeks to involve stakeholders through communication, cooperation, and common goals. Using this approach, DEQ, watershed groups, conservation districts, agencies, tribes, academia, and non-governmental organizations can effectively increase public understanding and participation in NPS pollution issues.

Section 319 of the federal Clean Water Act (CWA) requires states to: 1) assess waterbodies for NPS pollution effects, 2) develop programs to manage those effects, 3) implement those programs, and 4) report on NPS program implementation to the public and to the U.S. Environmental Protection Agency (EPA). Montana's NPS Management Program implements the Montana NPS Management Plan. The purpose of this report is to inform the public and EPA about annual progress in fulfilling the goals of the NPS Management Plan (Plan).

In order to demonstrate significant progress towards NPS program goals, the Plan describes a set of focused, short term activities (5-year action plan) measured by achieving actions outlined in the Plan. In 2017, DEQ staff worked with management and partners to complete 5-year updates to the Plan, which were submitted to EPA in November 2017. This Annual Report highlights accomplishments of our short term goals and activities presented in the 2012 Plan (Appendix B). The 2012 Plan and the new 2017 Plan can be found on DEQ's website:

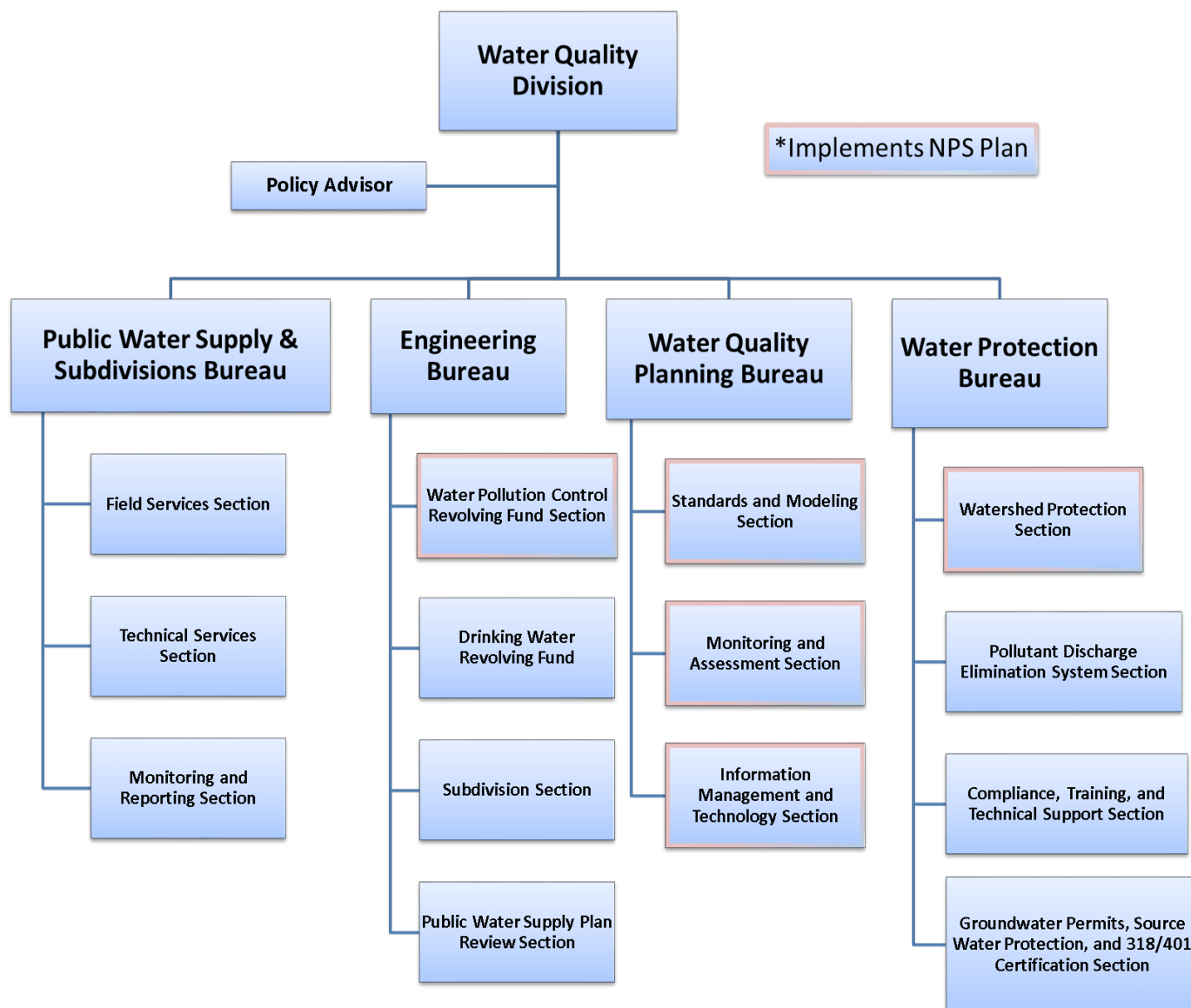
<http://deq.mt.gov/Portals/112/Water/WPB/Nonpoint/Publications>

Each year, EPA awards federal CWA Section 319 funding to DEQ to address NPS pollution in Montana. Of the two grants received, one funds NPS program staffing and support, the other funds water quality restoration projects. In September, the state fiscal year 2016 program grant was completed and closed. This two year grant for \$1,002,000 included a state match contribution of \$668,000. This funding covered 18 staff position salaries in DEQ's Water Quality Division to implement the NPS Management Plan. Restoration project funding is managed by DEQ but the projects are implemented by watershed groups, conservation districts, non-profits, and governmental agencies. In September, the fiscal year 2012 projects grant was also completed and closed. This five year grant for \$903,224, allowed DEQ to support 24 NPS projects with local sponsors throughout Montana between 2012 and 2017. The sponsors contributed \$1,162,626.61 in non-federal funds that was well above their required 40 percent match.

## TWENTY-YEAR VISION OF THE NPS MANAGEMENT PROGRAM

*Montana's citizens understand the consequences of nonpoint source pollution and are addressing concerns in a proactive manner. Watershed groups around the state are actively engaging local landowners and partners to address nonpoint source pollution in socially acceptable and economically beneficial projects and programs. Montana's riparian areas, floodplains and wetlands are healthy and managed in ways that protect our creeks, streams, rivers, ponds and lakes. Montana's indigenous fish and other aquatic life are sustainable through generations by well-managed and citizen-supported natural resource programs and conservation.*







# 2017 NPS Management Program Highlights

## **GOAL: PROVIDE SUPPORT AND PROMOTE WATERSHED GROUPS**

The NPS Management Program remains committed to supporting watershed groups throughout the state with technical, financial, and capacity resources. In 2017, \$800,000 in 319 funding was awarded to watershed groups for implementing restoration projects and providing education and outreach efforts, furthering goals outlined in the NPS Management Plan. Continued support was provided to Montana Watershed Coordination Council (MWCC), whose mission is to unite and support Montana's watershed communities. In 2017, MWCC furthered its mission by hosting a spring training on watershed planning, supporting the continued development of regional watershed organizations, and sub-granting over \$80,000 dollars to capacity and professional development opportunities.

## **GOAL: CONTINUE TO SUPPORT THE DEVELOPMENT OF LOCALLY LED WATERSHED RESTORATION PLANS (WRPs)**

In 2017, DEQ accepted a WRP for the Flathead River watershed and supported development of six additional WRPs in Rock Creek, Thompson River, Miller Creek, Beaverhead River, St Regis River, and Madison River watersheds. In support of these efforts, DEQ helped publish an introductory guide to watershed restoration planning completed by the Soil and Water Conservation Districts of Montana and Madison Conservation District. Appendix G includes a map of existing and in-progress WRPs.

## **GOAL: UPDATE NONPOINT SOURCE MANAGEMENT PLAN**

Started in 2016 and completed in 2017, the updated NPS Management Plan (Plan) will help guide the NPS program over the next five years. DEQ reviewed the 5-year accomplishments to the actions articulated in the 2012 Plan, and developed a new set of actions and measurable milestones to track over the next five years. These actions are organized by key interim outcomes representing the pathway toward achieving the long-term goal of improving water quality. These key interim outcomes are:

1. Water quality standards have been developed
2. Montana's waters have been assessed to determine compliance with water quality standards and compiled in updated Integrated Report
3. TMDLs have been completed for required waterbodies
4. Sources of pollutants identified are sufficient for local planning efforts
5. Plans are in place to ensure efficient and effective implementation
6. Public has knowledge and resources to address NPS issues
7. Projects and practices are implemented to address NPS issues
8. Project implementation and effectiveness is tracked and reported

## **GOAL: CONDUCT TMDL IMPLEMENTATION EVALUATIONS**

DEQ completed TMDL Implementation Evaluations (TIE) for the Swan Lake watershed and Lone Tree Creek. Development of these TIEs helped improve DEQ partnerships and understanding of local activities that are taking place to improve water quality. These TIEs resulted in updated recommendations for actions to address existing impairments and may serve as the impetus for conducting future impairment assessments. In the Swan Lake watershed, the TIE effort led to a DEQ assessment that Jim Creek is no longer impaired by sediment/siltation as a result of ongoing management efforts by the US Forest Service.

A detailed list of all NPS program accomplishments over the past five years under the 2012 Montana Nonpoint Source Management Plan is provided in Appendix B.



## Water Quality Standards and Modeling

**The Water Quality Standards and Modeling Section (WQSM) identifies the beneficial uses of stream, river, lake, and groundwater resources, and develops water quality criteria to protect those uses. Water quality beneficial uses include public water supplies, wildlife, fish and aquatic life, agriculture, industry, and recreation. WQSM does not receive Section 319 funding, however, WQSM's work is fundamental to the NPS Management Program in Montana.**



*Mike Suplee collecting data on Canyon Ferry Lake. Photo by Rosie Sada.*

DEQ is continuing to work on the development of nutrient criteria for Canyon Ferry Lake. Data collection for this project began in 2015 and it is expected to continue for at least one more year. This project is a multi-agency work effort to collect the necessary data to develop nutrient criteria using a CE-QUAL-W2 model.

DEQ is continuing to work on the development of site specific selenium standards for Lake Koocanusa. In 2017, this multi-agency and stakeholder process included research on the partitioning of selenium into the particulate phase in Lake Koocanusa and its movement through the food chain and into fish. In addition, routine sampling of selenium in the water column and other constituents of concern were monitored. The selenium technical subcommittee completed the Conceptual Modeling Framework that will support the development of site specific selenium criteria for Lake Koocanusa and it is available as a USGS open file report (USGS, 2017-1130). DEQ is planning to have draft numeric selenium standards for Lake Koocanusa by the end of 2018.

The 2015 the Montana Legislature enacted Senate Bill 325, MCA 75-5-222, which directs DEQ not to apply water quality standards more stringent than natural and to adopt rules to issue variances from water quality standards under certain conditions. DEQ continued working with a stakeholder workgroup to implement this statute and in December 2017 the Board of Environmental Review initiated the rule-making process for the variance provision

In April 2017, the Board of Environmental Review adopted updates to Montana's water quality standards as part of our triennial review. These updates included adoption of 82 new and updated water quality criteria for the protection of human health and aquatic life, 67 updated pesticide human health advisories, and adoption of 5 new pesticide human health advisories.

DEQ continues to work on the reference site project. In 2017, 27 reference sites were sampled. DEQ has established a rotational approach to re-visit these reference sites at least every three years since 2013. This project provides a long-term data set to determine if sites are still in a reference condition, enhance existing datasets and allow for long-term trend analysis. Reference site data is being used to refine or develop water quality standards, water quality assessments that have a narrative criteria and TMDL development.

DEQ completed the data collection for the dissolved oxygen project in 2017. This multi-agency and stakeholder process involved four counties in Eastern MT over 5 years. The aim of this long-term project is to evaluate if the current change in dissolved oxygen (DO) threshold of  $\geq 5.3$  mg/L is adequate for most of the wadeable prairie streams in Montana, and to modify if necessary the current DO numeric standard in prairie streams. In addition, periphyton data will be used to evaluate the periphyton nutrient increaser diatom metric performance that is currently used for prairie streams in the DEQ's nutrient assessment methodology.



# Water Quality Monitoring and Assessment

**The Water Quality Monitoring and Assessment Section (WQMAS) monitors statewide water quality conditions. Water quality monitoring projects are completed using a number of strategies including preplanned project rotation, tracking longer term trends, proving successful cleanup stories, and providing assistance in areas of high need for immediate monitoring response. During 2017 WQMAS focused efforts in the Musselshell watershed, areas of oil and gas development, Clark Canyon Reservoir, Beaverhead watershed, Armells Creek watershed, Camp and Godfrey Creeks, Smith River, Yellowstone River, New World Mining District, Jim Creek, and Red Rock watershed.**

Detailed sampling continued this year to study the eutrophication and turbidity in Clark Canyon Reservoir and the Beaverhead River where recreational and associated economic benefits have been diminished by turbid conditions. We have begun planning a monitoring project that will investigate why algae are growing more prolifically in the Smith River during the past few years. We are also developing a phone app that will engage floaters to document algae conditions along the Smith River as part of our volunteer monitoring program. The app will help DEQ with future app development projects that engage the public and is funded by an EPA science and technology grant.

Our goal of tracking and reporting Montana's water quality conditions involves working at different scales to assess status and trends in state water quality. Water quality characterization and condition monitoring continued in the Red Rocks watershed. The Section wrapped up monitoring efforts and is in the reporting phase of our Musselshell project. Nutrient trend monitoring in the Clark Fork Basin continued this year through state, federal, private and local partnerships. Selenium, nutrient, common ion and other metals monitoring continued on Lake Koocanusa to support trend monitoring due to water quality threats in Canada. DEQ is partnering with the Montana Bureau of Mines and Geology to provide a report about surface and groundwater quality conditions in areas of oil and gas production across Montana during early 2018.

MAS monitors or assesses data to determine existing conditions during pre or post restoration or remediation efforts. In 2017, staff worked on the following projects: post restoration Jim Creek sediment assessment, post remediation New World Mining District metals assessment, and pre restoration nutrient and E. coli Camp Creek NRCS NWQI efforts.

MAS provides training and support to DEQ staff, volunteer, or partnering agencies monitoring efforts. To support volunteer monitoring efforts, MAS provides technical training to collaborators, funding laboratory analysis, and loans of field equipment. MAS provided input on monitoring design, methods, field manual preparation, and field training to other DEQ staff. We also supply and maintain the majority of the DEQ Water Division field equipment and supplies.





# Information Management and Technical Services

**The Information Management and Technical Services (IMTS) Section develops and manages database and information systems in support of multiple programs including Montana's Nonpoint Source Program.**

IMTS manages and administers multiple databases and information management applications, including the Water Quality Assessment, Reporting and Documentation (WARD) System that tracks Clean Water Act section 305(b) water quality assessment results, 303(d) listing decisions, and TMDL development information. Information contained in the WARD system is publically available via Montana's Clean Water Act Information Center (CWAIC); an interactive web application. IMTS works with DEQ staff to update and improve WARD functionality and ensure its compatibility with EPA's Assessment, TMDL Tracking and Implementation System (ATTAINS). The WARD system is an important tracking and outreach component that supports DEQ's NPS program given the influence of nonpoint sources on water quality, associated impairment determinations, and subsequent TMDL development in Montana.

IMTS also manages and administers an Environmental Quality Information System (EQuIS) database that manages water quality monitoring data and is compatible with EPA's national Water Quality Exchange (WQX) database. The program has named this specific database MT-eWQX. Data in MT-eWQX is collected by staff in DEQ's Water Quality Division, contracted data partners, approved volunteer monitoring groups, and from staff or contractors responding to hazardous material spills in Montana's waters. IMTS staff receives, processes, and loads all result and metadata into MT-eWQX and then submits the majority of this data to EPA's national data database (WQX).

During 2017, IMTS processed data from over 162 monitoring events on 35 unique projects. These include DEQ monitoring projects for condition assessments (i.e., 305(b) reporting), water quality standards, and watershed/water quality modeling, as well as projects from data providers outside of DEQ. Many of the 35 projects involved monitoring of waterbodies where there was significant potential for water quality impacts from nonpoint sources of pollution.

Other IMTS activities in support of Montana's NPS program include: providing technical support and guidance to DEQ and other programs that use EQuIS or WARD; maintaining a water quality library; preparing and publishing the state's biennial water quality Integrated Report (IR); entering 319 contract information and load reduction estimates into EPA's Grant Reporting and Tracking System (GRTS); and providing administrative support for DEQ wiki sites maintained for the 319 Grant, TMDL and Water Quality Standards programs.



*Sign at Hell Roaring Creek, Red Rock Project Area  
Photo by Jordan Tollefson*



## Watershed Protection

The Watershed Protection Section (WPS) works to protect and restore water quality. Protection is largely achieved through informing the public on the importance of best management practices to minimize nonpoint source pollution. Restoration is achieved through the creation and implementation of Total Maximum Daily Loads (TMDLs), implementation of the State Wetland Plan and Nonpoint Source Management Plan, distribution of Section 319 project funding, and by working with many organizations and agencies on common goals.

## TMDL Development

Total maximum daily loads (TMDLs) are developed for Montana's streams, rivers, and lakes that have an identified pollutant impairment (contained on Montana's 303(d) list of impaired waters). A TMDL is the maximum amount of the pollutant that the waterbody can receive and still meet water quality standards. In Montana, TMDLs are developed at a watershed-scale to encompass the entire area that contributes a pollutant to a stream, river, or lake. This takes all tributaries and upland sources into account, and looks at the cumulative effects of both point and nonpoint sources of pollution. TMDLs are an essential component for planning watershed restoration activities, and Montana's TMDL documents typically include implementation and monitoring recommendations.

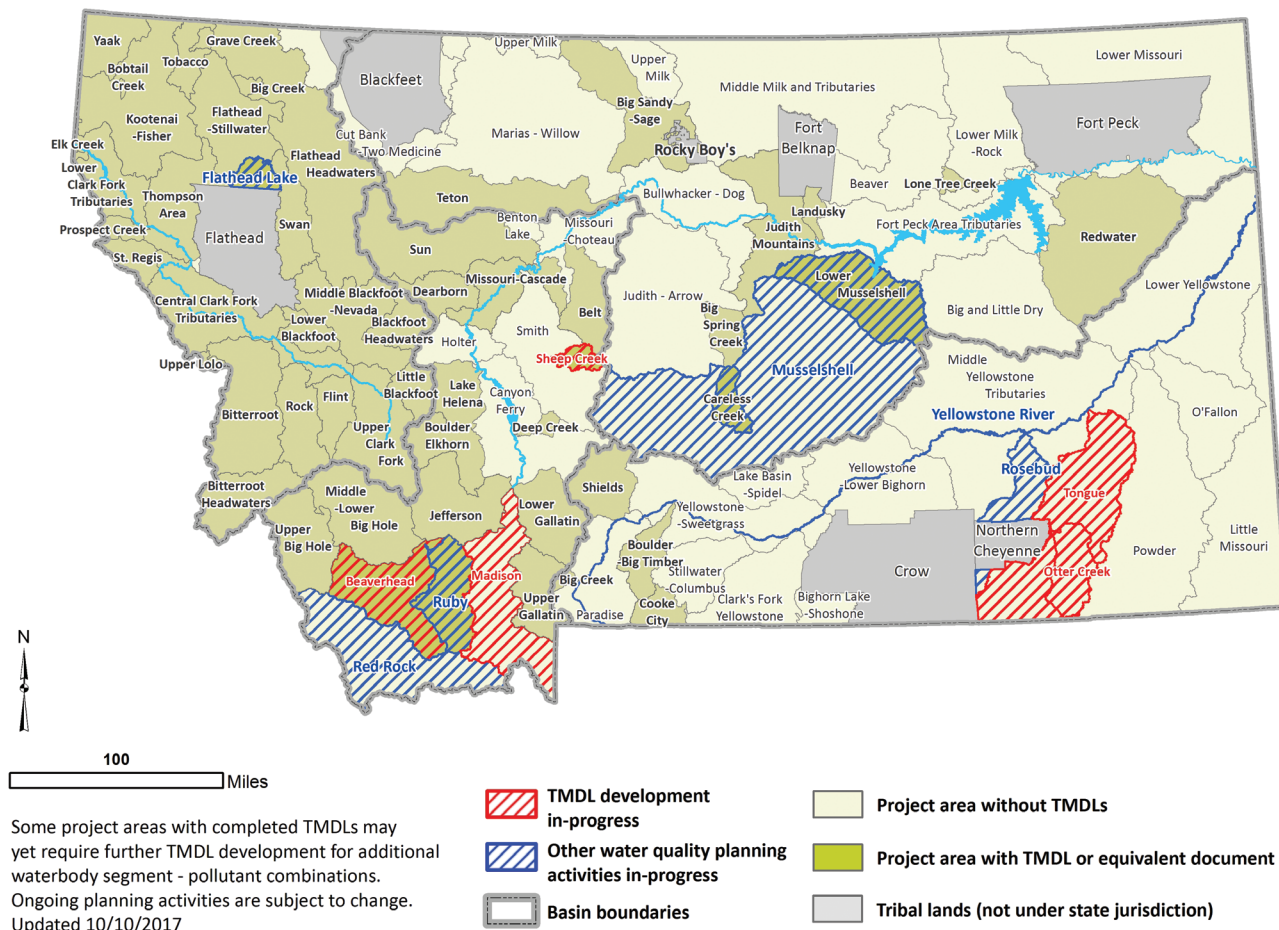
The TMDL Development map shows areas with completed TMDLs and DEQ's current focus areas for monitoring and assessing water quality, and subsequently developing TMDLs for waters determined to be impaired by a pollutant. Ultimately, a two-year project starting with water quality data collection in 2015, an E. coli TMDL was completed this year for Sheep Creek in Meagher County. Metal, nutrient, pathogen, sediment, and temperature TMDLs are nearing completion in the Madison TMDL Planning Area, a headwater watershed of the Missouri River. With two years of salinity data collection and development of a salinity water quality model completed by DEQ's IMTS section, TMDL development for salinity has begun for the lower Tongue River in Eastern Montana.

Part of the TMDL program's work includes the determination and quantification of major sources of a pollutant. During the summer of 2017, TMDL staff conducted field work in the Red Rock Project Area to collect streambank erosion and "greenline" riparian condition data to estimate sediment loads from eroding streambanks. When TMDLs are developed, this information will be used in determining necessary sediment reductions from human-caused sources of eroding streambanks in the project area.

Another part of TMDL work includes providing technical support for nonpoint source water quality restoration projects across the state. One project this year was providing training to Prickly Pear Land Trust staff on collecting streambank erosion and riparian greenline data to support a streambank restoration project on Sevenmile Creek in the Helena valley. Additionally, TMDL staff assist with determining sediment load reductions achieved from restoration projects funded by federal Section 319 grants (Appendix C).



## Montana TMDL Development



## Nonpoint Source Program

**TMDLs are implemented by our partners at a local level. Technical and financial assistance is provided by the Nonpoint Source Program in the form of Section 319 funding for on-the-ground restoration work, assistance in load reduction estimates to demonstrate improvements in water quality, development of TMDL Implementation Evaluations, and support in watershed restoration planning and implementation.**

### WATER QUALITY RESTORATION AND PROTECTION

NPS program staff manage and distribute CWA Section 319 funding for water quality restoration projects. Projects must address nonpoint sources (NPS) of pollution causing impairments identified on Montana's List of Impaired Waters by implementing actions identified in DEQ-accepted Watershed Restoration Plans (WRP). Each year, project proposals are solicited from local watershed groups, conservation districts, non-profit organizations, and governmental entities. Projects are competitively selected by program staff with the support and guidance from a state and federal agency review panel. In 2017, \$1,023,558 was awarded to 10 projects (Appendix C). Contractors committed to \$1,091,983 in non-federal match for these projects, exceeding the minimum 40 percent match requirement set by EPA. During 2017, NPS program staff managed 33 open 319-funded contracts, closing 3 by the end of the year (Appendix D). NPS program staff continues to improve the efficiency and management of the 319 grant program.

*Opposite: TMDL Planner, Christina Staten conducting greenline monitoring on Long Creek in the Red Rock Project Area. Photo by Kristy Fortman*





Lone Tree Creek  
Photo by Mark Ockey

NPS program staff completed TMDL Implementation Evaluations (TIE) for the Swan Lake watershed and for Lone Tree Creek. TIEs are completed to determine progress made toward implementing TMDLs and restoring beneficial uses to impaired waterbodies. The Lone Tree Creek TIE identified positive steps being taken by land managers to improve water quality and provided recommendations for further improvements. Future assessments will be necessary in order to determine the status of existing nutrient and riparian habitat impairment determinations. Monitoring and assessment efforts associated with the Swan Lake TIE found that aquatic life beneficial uses on Jim Creek are no longer impaired by sediment. This impairment delisting for sediment and siltation will be proposed in the 2018 Water Quality Integrated Report. This project was a collaborative effort between multiple partners and the delisting a result of effective best management practices by the USFS.

NPS program staff worked with stakeholders and agency partners to complete a five year update of the Montana Nonpoint Source Management Plan in November 2017. This document describes the NPS Management Program, identifies priorities and key partners, and provides a five year action plan for addressing NPS pollution.

DEQ and the NPS Program continue to improve information available online. Application information, report templates, guidance documents and other NPS information can be found on the NPS program webpage: <http://deq.mt.gov/Water/WPB/Nonpoint-Source-Program>. This site will continue to be updated and improved in 2018.



#### WATERSHED PLANNING

The NPS program continued working with watershed groups to develop Watershed Restoration Plans (WRPs). WRPs are an important planning document for groups implementing on-the-ground watershed restoration and a requirement for receiving 319 funding. In 2017, DEQ worked with Montana Watershed Coordination Council (MWCC) to provide training titled Creative & Effective Watershed Planning and supported the development of a WRP planning guide titled Watershed Restoration Planning in Montana: An Introductory Guide. In 2017, with support from Soil and Water Conservation Districts of Montana, DEQ accepted a WRP for the Flathead watershed and supported the development or update of six WRPs for Rock Creek, Thompson River, St. Regis River, Beaverhead River, Miller Creek, and Madison River watersheds. Appendix G includes a list and Appendix H contains a map of completed and ongoing WRP efforts.

*Jordan Tollefson and Kristy Fortman, TMDL Planners, conduct BEHI monitoring and training on Sevenmile Creek to support future restoration efforts. Photo by Christina Staten*



## SUPPORTING OUR PARTNERS

The NPS Program works with local, state, and federal partners to provide necessary resources to address NPS pollution. Program staff participated as observers or reviewers of grant applications for the Department of Natural Resources and Conservation (DNRC); the Montana Department of Fish, Wildlife & Parks; and Soil and Water Conservation Districts of Montana. Staff worked with the USDA Natural Resources Conservation Service (NRCS) and partners continuing financial and technical support for the National Water Quality Initiative efforts in the Deep Creek watershed outside of Townsend and the initiation of new efforts in Camp and Godfrey Creeks. Concurrently, staff worked with MWCC, the NRCS State Technical Advisory Committee, and local watershed groups to identify appropriate watersheds for future National Water Quality Initiative funding.

In 2017, WPS and MAS met with U.S. Forest Service's (USFS) Hydrologists from Montana to coordinate and inform activities. Topics at the April meeting included regional and forest-specific activities, USFS best management practice monitoring, TMDL planning efforts, and nonpoint source restoration projects. WPS staff managed 10 section 319 contracts focused on projects on Forest Service lands in 2017.



The NPS program continues to support nonpoint source pollution education and outreach efforts through partnerships with Soil and Water Conservation Districts of Montana (SWCDM), MWCC, Montana State University Extension Water Quality (MSUEWQ), and Montana Watercourse. Specific details of the programs offered through these groups can be found in the Partners and Highlights section as well as the Education and Outreach section of the Montana Nonpoint Source Management Plan (2017).





# Wetland Program

DEQ's Wetland Program is the lead state agency responsible for developing an effective, comprehensive wetland program for Montana, as well as developing the capacity of state and local governments to protect wetlands. DEQ's Wetland Program provides state leadership to conserve, protect, and restore wetlands for their water quality, water quantity, habitat, and flood risk reduction benefits. This work is guided by an EPA approved Wetland Program Plan that references the State Wetland Plan. It identifies the actions the Wetland Program takes responsibility for to collectively achieve the overall state goal of "no overall loss of the state's remaining wetland resource base (as of 1989) and an overall increase in the quality and quantity of wetlands in Montana". The Wetland Program currently leads the Montana Wetland Council to develop and implement the State Wetland Plan, "Priceless Resources: A Strategic Framework for Wetland and Riparian Conservation and Restoration in Montana 2013-2017".

In 2017 MDEQ's Wetland Program worked on five major topic areas. Accomplishments in these areas include:

## SUSTAINABLE FINANCING AND EFFECTIVENESS ACTIONS

- Received a \$225,000 US EPA Grant to support Wetland Program development in Monitoring and Assessment and Voluntary Restoration and Protection.
- Researching and developing alternative funding sources for aquatic restoration projects in Montana, in progress.

## MONITORING AND ASSESSMENT

- Conducted 68 wetland assessments in the Red Rock watershed as part of DEQ's watershed planning process.
- Contracted with the Montana Natural Heritage Program to assign coefficient of conservatism values to 315 wetland vascular plant species.
- Developed a DEQ rapid field assessment for calculating wetland Floristic Quality Index.

## VOLUNTARY RESTORATION AND PROTECTION

- Advised other DEQ programs on the potential for wetland restoration at brownfield sites within the Musselshell.

## PLANNING AND POLICY

- Continued to work with partners to help promote beavers and beaver mimicry as a viable option for restoring wetlands.

## VULNERABLE AND IMPACTED WETLANDS

- Worked with partners to identify areas of the most vulnerable ecologically significant wetlands to help prioritize DEQ's Wetland Program work and limited funding.
- Identified vulnerable and impacted wetlands in the Musselshell watershed, by both wetland type and impacts to ecosystem services provided by wetlands.



*Forested wetland, Red Rock Project Area*

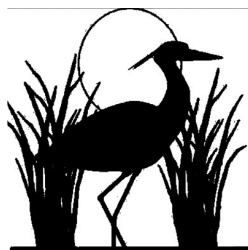
*Photo by Steve Carpenedo*

A copy of the wetland program plan can be found at: <http://deq.mt.gov/Portals/112/Water/WPB/Wetlands/StrategicFrameworkGroups/DEQ%20Wetland%20Program%20Plan%20Final%201.19.16.pdf>



## Partners and Highlights

Staff within the Water Quality Division have worked to meet NPS program goals by coordinating with and providing financial and technical resources to organizations such as the Montana Watershed Coordination Council, Montana Watercourse, Montana State University Extension Water Quality, Montana Association of Conservation Districts, Montana Wetland Council, and other federal and Montana state agencies.



## MONTANA WETLAND COUNCIL

The Montana Wetland Council is an active network of diverse interests that works cooperatively to conserve and restore Montana's wetlands and riparian ecosystems. The Council held two meetings in 2017, continues to maintain an active listserv and website, and welcomes all to participate in the collaborative work of wetland and riparian protection, restoration, and management. At an April event in the Capitol, the Council honored Montana Department of Transportation's Larry Urban with the 2017 Montana Wetland Award for his years of service protecting and restoring the state's wetlands. Finally, the Council and its partners help implement a State Wetland Plan titled "Priceless Resources: A Strategic Framework for Wetland and Riparian Area Conservation and Restoration in Montana 2013-2017". The State Wetland Plan is an action-oriented plan that prioritizes and directs collaborative efforts in conserving and restoring wetlands and riparian areas utilizing resources both internal and external to DEQ.

For more information visit the Montana Wetland Council website at: <http://Wetlands.mt.gov>



*Fen near Deadman Creek, Red Rock Project Area  
Photo by Steve Carpenedo*





2017 was a great year for MWCC and its partners. As our organization grows we seek to continue improving the quality of the services and benefits that MWCC is known for. MWCC publishes the bi-weekly e-newsletter Watershed News that contains watershed highlights and water news, job openings, training, and grant opportunities specific to Montana or the region. The Watershed News reached an audience of over 1,000 natural resource professionals statewide providing information on Montana natural resource related activities.

In February 2017, over 100 water quality professionals attended MWCC's Annual Meeting in Helena. This event provides an opportunity for watershed groups and agency personnel to convene in Helena for networking, information sharing, and brainstorming on the different issues affecting watershed management. The Annual Meeting set the stage for many of MWCC 2017 activities, including including the introduction of the Partnership Program, the release of MWCC's first State of the Watersheds Report, and launch of an online Legislative Bulletin. MWCC's Water Committee worked diligently throughout 2017 to complete a water monitoring webpage. The idea for this webpage was first discussed at the 2015 American Water Resources Association and MWCC's Joint Meeting, and this year there was enough internal capacity and partner funding to get the job done.

MWCC successfully funded and helped coordinate the inaugural annual meeting of the Clark Fork and Kootenai Basins Council (CFKBC), where members formed an executive committee and three working groups to leverage knowledge, funding, and resources to issues significant at a basin scale. The Missouri Headwaters Partnership (MHP), a collective of the nine sub-basin watershed groups in the upper Missouri Basin, continues to move forward with funding secured in partnership with MWCC. This fall, MWCC was asked to facilitate stakeholder discussions in the upper Yellowstone watershed. MWCC also hosted a facilitated training titled, Creative & Effective Watershed Planning, which provided watershed groups with tools and knowledge for engaging stakeholders, compiling information, and funding efforts to get successful conservation and restoration efforts on the ground.

2017 marked another successful year for the BSWC program, a partnership between the Montana Conservation Corps, Soil and Water Conservation Districts of Montana and MWCC. Twenty seven BSWC members were placed statewide providing over 25,000 hours of service to their host site. MWCC contributed \$50,000 in 319 funds to host sites to assist in covering host site fees, passive restoration projects, professional development, and other service member related costs to increase local watershed group capacity and conservation outcomes. Six former Corps members were hired on or advanced within local watershed groups in 2017.

The annual Water Activities Work Group projects tour headed to the Musselshell with over 60 participants, who saw the devastation left by the Lodgepole Complex fires and the 2011 flooding. They also saw the resolve of the



Musselshell River  
Photo by Eliza Wiley

people in that watershed who have come together to restore the damage and increase their resilience to future events. The tour kicked off MWCC's Watershed Stories initiative to highlight the efforts of watershed groups across the state. Three vignettes were published that focused on the work of the Musselshell Watershed Coalition and local leaders. These are the first pilot stories across six watersheds scheduled to be showcased at the 2018 Watershed Symposium in Whitefish. For more information visit our website at: <http://mtwatersheds.org>.



**Conservation districts have a decades-long history of conserving Montana's resources by matching the needs of local people with technical and financial resources, and initiating good conservation practices to benefit all Montanans. The Soil and Water Conservation Districts of Montana (SWCDM) exists to supplement the resources of conservation districts large and small across Montana with additional support, grant funding, technical support, knowledge sharing, and other resources.**

2017 was another productive year for SWCDM in supporting conservation and assisting with NPS pollution issues across the state. NPS-related program activities included:

- Further developed and expanded a new program called Ranching for Rivers, in partnership with the Missouri River Conservation District Council. This program is based on a 2016 pilot program and will use DEQ 319 funding to provide 50% cost share to ranchers to construct riparian pastures and establish improved grazing management plans along water quality impaired waterbodies. Two landowners received funding for riparian fencing and stockwater tanks in fall 2017, and we anticipate awarding 5-7 additional projects in 2018.
- Coordinated a mini-grant program through DEQ 319 funding for conservation districts, watershed groups, schools, and other organizations across the state to address NPS issues through education and outreach projects. In 2017, 13 mini-grants were awarded, totaling \$27,250. SWCDM will continue delivering this program to local groups in 2018.
- Supported local capacity building through the Big Sky Watershed Corps program in partnership with Montana Conservation Corps and MWCC. SWCDM will continue to support the BSWC program in 2018.
- Administered an Irrigation Water Management program to help producers efficiently manage their water resources, which in turn improves water quality along Montana's waterbodies.
- Coordinated a Watershed Restoration Plan program with DEQ 319 funding to assist conservation districts, watershed groups, and other conservation entities in developing Watershed Restoration Plans (WRPs). One WRP was completed in 2017, and funding for four others has been committed with completion of these WRPs expected in early 2018.
- Supported a full-time water resource specialist with assistance from DEQ and DNRC to work in the Upper Clark Fork basin to provide technical and coordination assistance to local groups on water quantity and water quality issues.
- Partnered with NRCS and others to host six soil health workshops across the state in fall 2016 and winter 2017. Over 600 participants attended the workshops and many of the practices discussed for improving soil resources will positively affect water quality through reduced need and use of fertilizer and pesticides. SWCDM will continue to work with NRCS and conservation districts to bring more soil health workshops and resources to producers in 2018.

Additionally, conservation districts across the state continue to carry out Montana's Natural Streambed and Land Preservation Act (310 permit) program that minimizes soil erosion and loss, and protects and preserves streams in their natural or existing state.



*Volunteers doing riparian planting at Swan River park during a Lake County Conservation District River Stewardship Workshop. Photo by Samantha Tappenbeck*



## Volunteer Monitoring Partnership

Volunteer Monitoring (VM) is a creative and effective way to link communities with water quality management. VM programs increase the amount of water quality information that is collected in Montana. VM programs also heighten awareness of water resource priorities within communities and provide meaningful educational opportunities for participants. For many years, DEQ has supported VM efforts across the state. In 2017, DEQ continued to formalize its VM support program by drafting a VM program plan, developing web content, and reaffirming partnerships. Through this support program, DEQ provided material and technical support to VM programs in a variety of ways in 2017.

In 2017, DEQ again funded VM groups through DEQ's Volunteer Monitoring Lab Analysis Support Program. Five groups applied for and received a total of \$9,998 to cover the cost of having water quality samples analyzed by an accredited laboratory. These monitoring projects all pertain to nonpoint source pollution (see summaries in Appendix F). Each group was required to have a sampling and analysis plan (SAP) to guide sampling efforts, and to build quality assurance and quality control elements into their SAP to ensure that the data they collect is reliable and will help meet their project objectives.

DEQ provided technical support to a variety of VM programs in 2017 to enhance their ability to collect high quality, credible data. DEQ staff reviewed and provided feedback on SAPs for at least seven VM programs. DEQ worked with partners in the Bitterroot watershed to support the development of a new VM program, and provided input on sampling design, funding for sample analysis, and in-person training on monitoring methods. DEQ trained volunteers in the Gallatin watershed on water quality monitoring procedures and quality assurance/quality control. DEQ also supported VM efforts in the Musselshell River (Musselshell Watershed Coalition) and Red Rock River watersheds (The Nature Conservancy and Centennial Valley Association) as DEQ currently has active water quality planning projects in these watersheds.

DEQ is a partner in a network of programs and agencies that promotes and supports volunteer water monitoring efforts across the state. Partners include Montana State University Extension Water Quality (MSUEWQ), Montana Watershed Coordination Council (MWCC), and Montana Watercourse. DEQ provided funding in 2017 to bolster MSUEWQ's activities pertaining to VM. In doing so, DEQ supported MSUEWQ's efforts to develop a user-friendly, web-based platform for viewing and managing water quality data and monitoring photos collected by VM programs. DEQ and MSUEWQ began to develop standard operating procedures for volunteers to collect sediment and riparian vegetation data. This partnership also supported the Madison Conservation District, Sun River Watershed Group, and Musselshell Watershed Coalition's VM and watershed planning efforts. Furthermore, MSUEWQ has worked with the Broadwater Conservation District to promote public education and outreach for ongoing VM and stream restoration projects in the Deep Creek watershed, the site of a National Water Quality Initiative.

Finally, MWCC, with technical and financial support from DEQ, DNRC, MSUEWQ, and Montana State Library developed and will maintain a water monitoring webpage that consolidates information about water monitoring programs and resources across Montana in an easy-to-access and user-friendly platform, including an interactive map and searchable library. It is intended to help connect people with the information they need to make monitoring efforts successful. This includes agencies, nonprofit organizations, VM programs, and aquatic invasive species programs, among others.

*Opposite: Poole Creek, Red Rock Project Area  
Photo by Steve Carpenedo*

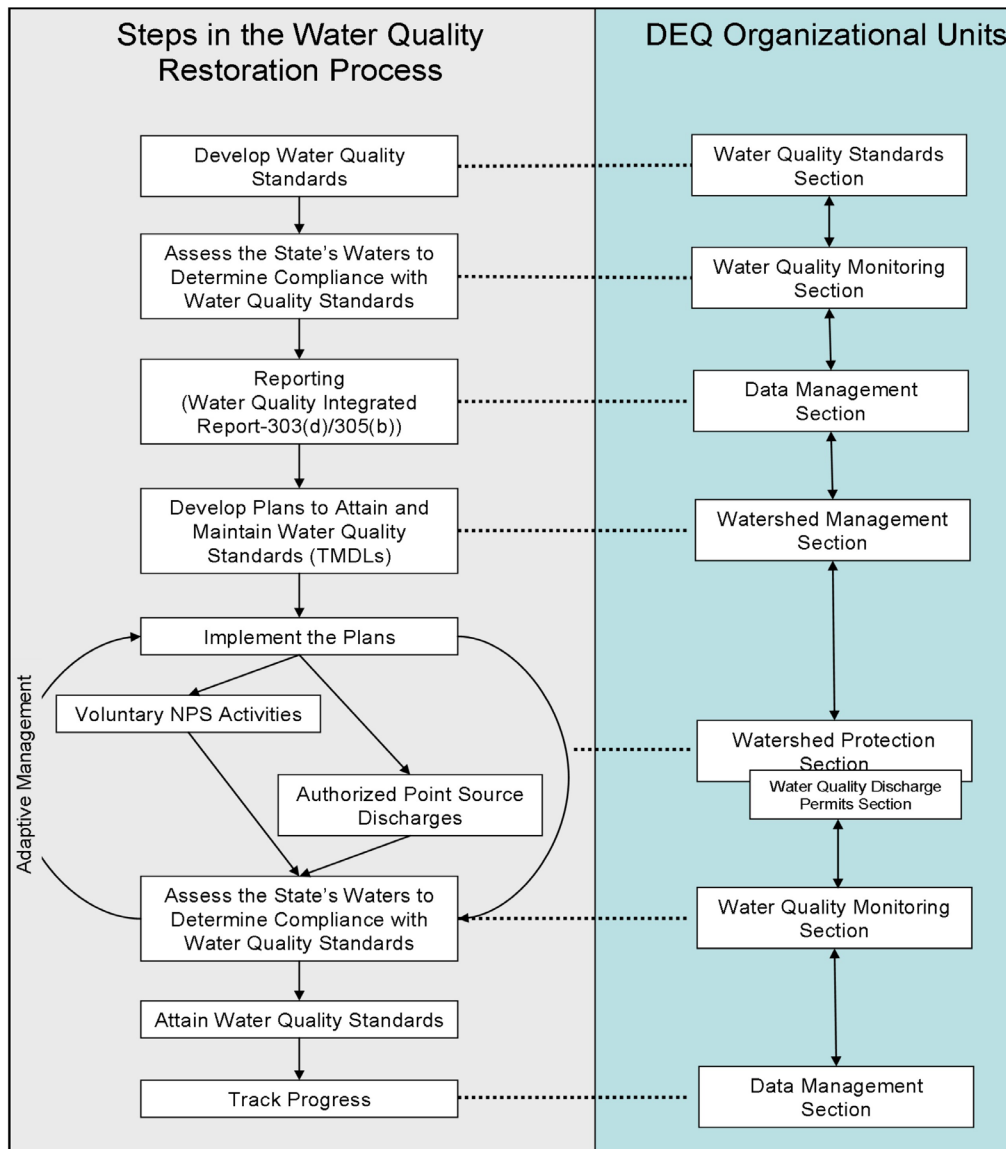






# Appendices

## Appendix A - Water Quality Planning Integrated Approach



1. The Water Quality Standards Section defines the goals for a waterbody by designating its uses, setting criteria to protect those uses, and establishing provisions to protect waterbodies from pollutants.
2. The Water Quality Monitoring and Assessment Section monitors water quality conditions and trends statewide and assesses the sources and severity of pollution problems.
3. The Data Management Section reports assessment findings.
4. The Watershed Protection Section develops TMDL plans for waters not meeting standards.
5. The Watershed Protection Section supports the NPS implementation of TMDLs.
6. Water quality standards developed by the Water Quality Standards Section are used throughout DEQ, such as in the Montana Pollutant Discharge Elimination System program, to ensure clean water protection by all permitted point-source dischargers.

## Appendix B - Montana Nonpoint Source Management Program's 5-year Action Plan and Priorities (2012-2017)

The Montana Nonpoint Source (NPS) Management Program's goal is to provide a clean and healthy environment by protecting and restoring water quality from the effects of nonpoint sources of pollution. The short-term (five-year) goal of Montana's NPS Management Program is to demonstrate significant progress in protecting and restoring Montana's water quality from nonpoint sources of pollution as measured by achieving the actions outlined in the 2012 NPS Management Plan. These actions focus on three specific areas: resource-specific goals (R), policy-specific goals (P), and education and outreach-specific goals (EO). The following table describes accomplishments for the action from 2012-2017.

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
R1*	DEQ, EPA	Complete Water Quality Improvement Plans (WQIPs) and necessary TMDLs.	At least 500 additional TMDL pollutant-waterbody combinations between 2012 and 2014.	641 TMDL pollutant-waterbody combinations were approved by EPA between 2012 and 2014. Through the end of 2017, 2 additional TMDL pollutant-waterbody combinations were approved by EPA.
R2*	DEQ	Conduct statewide water quality assessments.	130 water quality assessments completed by 2014.	Between 2012 and 2014, DEQ completed 303(d)/305(b) assessment for 250 waterbodies, with over 1,000 individual waterbody pollutant combinations assessed. Statewide water quality assessments continue on a watershed basis and are reported in the biennial Integrated Report.
R3*	DEQ	Review/update Water Quality Integrated Report (305(b)/303(d)).	Updated reports in 2014 and 2016.	The Water Quality Integrated Report was updated in 2012, 2014, and 2016. 2018 Integrated Report is in development. System development to allow for reporting (submitting draft & final reports) to EPA's new ATTAINS system using the Exchange Network is complete.
R4	DEQ	Re-evaluate the chemical, physical, and biological condition of reference sites.	At least 100 reference sites re-evaluated by 2017.	DEQ visited 124 established reference sites and 2 candidate reference sites from 2012-2017. In 2013, DEQ established a rotational approach to re-visit sites at least every three years. The objective of this approach is to have a long-term data set to determine reference condition, enhance existing datasets, and allow for long-term trend analysis. Data are being used to refine or develop water quality standards, water quality assessments that have a narrative criteria and TMDL development.

\* Indicates a high priority for the NPS Program



No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
R5*	DEQ	Work with watershed groups to develop Watershed Restoration Plans (WRPs).	20 DEQ-accepted WRPs by 2017	DEQ has accepted 23 WRPs. There are currently six additional WRPs being developed or updated for Rock Creek, Thompson River, St. Regis River, Beaverhead River, Miller Creek, and Madison River watersheds.
R6*	DEQ	Encourage and fund WQIP and WRP-directed NPS watershed restoration projects, including demonstration projects for adoption of new technology.	Annually fund on-the-ground watershed restoration activities.	DEQ has funded at least 8 distinct watershed restoration projects annually.
R7	DEQ	Identify the TMDL Planning Areas having WQIPs and TMDLs in which at least some implementation activity has occurred during the previous calendar year.	Annual reporting spreadsheet included in NPS Annual Report.	NPS Annual Report has included a list of active restoration projects. In 2017, projects were initiated in at least 10 TMDL Planning Areas.
R8*	DEQ	Develop and implement a monitoring strategy for Section 319 restoration activities for effectiveness and pollutant load reductions.	Approved monitoring strategy by 2017.	A monitoring framework and project effectiveness report was completed in 2014.
			100% of projects for nutrient and sediment reduction reported to EPA Grant Reporting and Tracking System.	All nutrient and sediment load reductions associated with 319 contracts have been reported to EPA through GRTS.
R9*	DEQ	Conduct TMDL implementation evaluations.	Complete 20 reviews by 2017.	Six TIE documents have been completed since 2012 - Deep Creek, Upper Lolo Sediment, Reimel Creek, Big Creek, Lone Tree Creek, Swan Lake watershed.
R10	DNRC	Work with forest agency partners (especially DNRC Forestry Assistance) to ensure effective forestry BMP and SMZ activities.	Biannual reports on forestry BMP audits.	Montana Department of Natural Resources and Conservation (DNRC) led field reviews and completed reports to evaluate whether forestry BMPs were being applied and if they were effectively limiting nonpoint source pollution from harvest operations in 2012, 2014, and 2016.

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
R11	DNRC	Work with forest agency partners to develop assessments to ensure BMPs and SMZs are protecting riparian and wetland functions.	Assessment of BMP and SMZ adequacy for riparian and wetland functions.	Results from 2012, 2014, and 2016 audits showed that SMZs and BMPs were properly applied and effective over 95% of the time. In the few cases where SMZ law violations occurred, notices or penalties were issued and settled.
R12	DNRC, Plum Creek	Assess the effectiveness of SMZ and HCPs.	Reporting from the resource agencies on SMZ and HCPs by 2017.	Montana Department of Natural Resources and Conservation Forested State Trust Lands HCP was applied in February 2012 and is a 50-year commitment. DNRC provides annual updates on HCP implementation to help assess success. Weyerhaeuser Timber conducts effectiveness evaluations of their Native Fish Habitat Conservation Plan (30-year agreement originally made between Plum Creek and US Fish and Wildlife Service) in a five year review, which was last completed in 2016.
R13*	DEQ	Provide reviews and comment on outside agency proposed projects that may have an effect on NPS pollution.	Reviews completed and comments provided as appropriate.	DEQ has reviewed and commented on over 50 projects proposed by outside agencies that may affect NPS pollution.
R14	DEQ	Develop, maintain, and enhance Clean Water Act Information Center (CWAIC online) to provide public access	System operable and available to public.	DEQ's IMTS developed and continues to maintain the Clean Water Act Information Center (CWAIC online) version 3, which provides information about the quality of Montana's surface waters, displays the results of water quality assessments, and provides access to Montana's biennial Water Quality Integrated Report.

\* Indicates a high priority for the NPS Program



*Bull River, Lower Clark Fork Watershed  
Photo by Eric Trum*



No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
R15	DEQ	Administer MT-eWQX water quality database system	Upload all ambient water quality monitoring data collected by DEQ, its contractors, or data partners to EPA National STORET/WQX water quality data warehouse.	IMTS Data Management processed water quality data packets from monitoring projects into its water quality database – Montana EQuIS (Environmental Quality Information System) for WQX (MT-eWQX). These data loads were transmitted to the national Water Quality Exchange database via the Exchange Network. 2012 (180 water quality data packets from 63 unique monitoring projects) 2013 (167 water quality data packets from 46 unique monitoring projects) 2014 (137 water quality data packets from 49 unique monitoring projects) 2015 (219 water quality data packets from 46 unique monitoring projects) 2016 (199 water quality data packets from 31 unique monitoring projects) 2017 (162 water quality data packets from 35 unique monitoring projects)
R16	DEQ	Administer electronic data deliverables (EDD) submittal process for non-DEQ eWQX data submittals using EQuIS data management tools.	Provide Web access to data submittal process information, data management tools and training, and technical assistance to data partners and contractors.	DEQ provided support data submittal and management annually. In 2017, IMTS Data Management processed 9 water quality data packets from 7 monitoring projects (as of November 9, 2017) into its water quality database – Montana EQuIS (Environmental Quality Information System) for WQX (MT-eWQX). All of the data packets were new data inserts. These data loads were transmitted to the national Water Quality Exchange database via the Exchange Network.
R17*	DEQ	Develop nutrient models for large rivers (e.g., Missouri, Yellowstone).	Models developed for at least 2 large river segments by 2017.	DEQ is developing nutrient criteria for large rivers using QUAL-2K model. Data collection has been completed the upper Yellowstone River (Livingston to the confluence of the Big Horn River); Middle Missouri R (Wolf Creek to Loma) and upper Missouri R (Toston dam to Canyon Ferry Lake). Nutrient criteria development for the upper Yellowstone and Middle Missouri Rivers is expected to be completed in 2018, whereas nutrient criteria for the upper Missouri River is expected to be developed after data collection has been completed.

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
R18*	DEQ	Protect, restore, and create riparian and wetland buffers designed to prevent or reduce NPS pollution.	3 miles of riparian and/or wetland buffers as part of Section 319 contracts.	DEQ contracted over 25 section 319 funded projects that protected, restored, and created over 15 miles of riparian and wetland buffers. Contracts include: 208030, 211069, 211072, 211073, 211083, 212055, 212056, 212058, 212060, 212061, 213023, 213033, 214008, 214009, 214012, 216001, 216002, 216003, 216004, 216005, 216008, 216030, 216035, 216038, 217006.
R19	DEQ	Identify watersheds where NPS pollution from AFOs can be reduced.	Identify 3 high-priority watersheds for restoration work by 2017.	DEQ identified 4 watersheds where NPS pollution from AFOs can be reduced through a CALO contract with SWCDM: Shields, Stillwater, Beaverhead, and Big Hole River watersheds. Projects have been completed in the Beaverhead and Stillwater River watersheds. DEQ also worked with NRCS to identify Camp and Godfrey Creeks as NWQI watersheds, where livestock related pollution will be addressed.
R20	DEQ	Encourage additional stormwater quality improvement projects funded through the state revolving fund program.	At least 4 stormwater projects funded by 2017.	Six stormwater projects have been funded through the state revolving fund program since 2012, including projects in Bigfork, Great Falls, Kalispell, Shelby, and Havre totaling over \$11 million.
R21*	DEQ	Manage and implement the NPS program in efficient and effective manner, including fiscal management.	Provide consistent guidance on state reporting requirements.	DEQ maintains guidance documents on reporting requirements on the nonpoint source webpage.
			Conduct contract "kick-off" meetings	WPS staff conducts contract kickoff meetings for all new contracts.
			Ensure 75% of 319 contracts are closed by the initially agreed-date	51% of contracts have been closed by the initial contract end date (50% in 2017). Contracts often need to be extended due to delays in permitting, planning, or match funding or are extended to ensure implementation is effective. DEQ has taken steps to ensure that these issues are considered prior to awarding funding but remains flexible to ensure projects are completed efficiently and effectively.
			Refine watershed project field evaluation form.	A watershed project field evaluation form was completed in 2013.

\* Indicates a high priority for the NPS Program



No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
P1*	DEQ, FWP, MWCC, USACE, USFS, NRCS, BLM, DNRC, Individual watershed groups, private consulting firms, USFWS, MACD, others	Develop an interagency policy for river restoration work, emphasizing restoration of natural processes.	Interagency policy supported by a wide range of government, nonprofit, and private entities by 2017.	DEQ continues to work to finalize this milestone. An interagency workgroup was formed including representatives from DEQ, DNRC, FWP, DOJ, USACE, MDT, NRCS, and conservation districts. The group sought out broad input from the field of stream restoration in Montana and developed draft policy for public review and comment. In addition to a policy, the work group has collaborated to update the Montana Stream Permitting Guide, providing resources and tools for effective stream restoration practices.
P2*	DEQ in collaboration with agencies, watershed groups, and other interested parties	Develop and implement a strategy for identifying priority watersheds on which to focus technical and financial resources leading to two 12-digit HUC watersheds achieving water quality standards.	Strategy document, set of action items, and at least 1 action item completed by 2017.	DEQ has not developed a strategy document. However, work with NRCS on the National Water Quality Initiative (NWQI) helped identify and support projects in Deep Creek. DEQ staff helped identify and conduct monitoring in new NWQI watersheds in Camp and Godfrey Creeks. DEQ has also worked with the National Forest Service staff on their Water Condition Framework.
P3*	DEQ	Develop, revise, and implement DEQ water quality improvement MOUs with agencies, including USFS, BLM, DNRC, MDT, NRCS, and MFWP.	3 MOUs established or revised by 2017.	In 2012, DEQ and NRCS signed an MOU to formalize collaboration between the two agencies to better protect and enhance Montana's water resources (APPENDIX?). In 2013, DEQ and the USFS revised their MOU to document the cooperation between the DEQ and USFS to implement the Montana Nonpoint Source Management Plan within Montana on USFS lands. DEQ continues to operate under a 2010 MOU with BLM in order to manage and control nonpoint source pollution from BLM managed lands and authorizations.

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
P4	DEQ	Assist in efforts to develop cumulative effects assessment strategies for groundwater in high-density septic/development areas.	Provide assistance with developing 5 assessment strategies.	The DEQ Method for Estimating Attenuation of Nutrients from Septic Systems (MEANSS) assesses the potential significance of nutrient loading from septic systems within watersheds. MEANSS has been used to assess nutrient loading in Bitterroot, Bison, Flint, Little Blackfoot, Lower Gallatin, Lake Helena, Flathead Lake, and Madison River watersheds since 2012.
P5	DEQ, DNRC, NRCS, irrigation districts, CDs, watershed groups, private landowners	Provide technical and/or financial support to efforts designed to reduce irrigation-induced NPS pollution.	Technical and/or financial support provided to at least 3 projects.	DEQ has provided technical and financial support to 10 projects since 2012 including: Big Pipestone Creek Restoration Project (212057); Lost Horse Creek Streamflow Enhancement (213023); Corder Ditch (211075); Big Hole Wise River (211081); Jefferson Canal (212057); Deep Creek Watershed Restoration Project (214008); West Fork Nitrogen Reduction (212056); Teton River Watershed-Riparian Improvements (213026), Muddy Creek Tribs Riparian Improvements (213028); Bitterroot Irrigation Water Distribution and Conservation Tour (214010 E&O Mini-grant). Between 2012 and 2017, SRF provided loans to DNRC for irrigators to change from flood irrigation to center pivots.
P6*	DEQ	Develop numeric nutrient water quality standards and implementation procedures for surface waters.	Standards and implementation procedures in place by 2012.	Criteria were developed and in 2014 standards and implementation procedures were adopted by the Board of Environmental Review.
P6*	DEQ	Develop numeric nutrient water quality standards and implementation procedures for surface waters.	BER-approved nutrient trading policy for point/nonpoint sources.	The Nutrient Trading Policy was approved by the BER in December 2012. DEQ has incorporated nutrient trades into 3 MPDES permits. All are municipal wastewater treatment plants that have connected septic systems into their plants.

\* Indicates a high priority for the NPS Program



No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
P7*	DEQ	Develop technical basis for a lake classification system based on nutrient status.	Lake classification system by 2017.	Lake classification system is not yet in place. Standards work on Canyon Ferry Reservoir in 2015 will support a classification system in the future.
P8*	DEQ	Develop and circulate numeric standards for all pesticides identified in Montana groundwater and surface waters.	Adoption of numeric standards for all pesticides within 4 years of DEQ notification of detection in state waters .	In April 2017, the Board of Environmental Review adopted updates to Montana's water quality standards as part of a triennial review. These updates included adoption of 82 new and updated National Recommended Water Quality Criteria for the protection of human health and aquatic life, 67 updated pesticide human health advisories, and adoption of 5 new pesticide human health advisories.
P9	counties, with DEQ support	Encourage the establishment of additional Water Quality Protection Districts (WQPD) within urban areas.	One additional WQPD established by 2017.	No new Water Quality Protection Districts (WQPD) have been formed in urban areas since 2012. While this action would be useful in some growing urban areas, it is beyond the scope of the NPS program.
P10*	cities and counties	Incorporate NPS pollution prevention into city and county planning processes.	By 2017, 3 additional communities have incorporated NPS pollution prevention into local planning processes.	Significant strides were made by the city of Bozeman by incorporating NPS pollution education and awareness into their stormwater planning process and implementing additional BMPs to their ongoing projects.



No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
P11	DEQ	Support improved urban stormwater management and information sharing through the MS4 task force.	Active MS4 task force by 2013.	The Municipal Separate Storm Sewer System (MS4) Task Force was formed at the 2012 Stormwater Conference and planned to meet at least annually to discuss MS4 Annual Reports, DEQ compliance evaluation inspection findings, MS4 audits, and other topics MS4s bring forth. The cities of Billings, Bozeman, Butte, Great Falls, Helena, Kalispell, and Missoula (all MS4s) held monthly meetings in 2016 with stakeholders regarding the MS4 Montana Pollutant Discharge Elimination System General Permit. DEQ worked cooperatively with the MS4 stakeholders at these meetings, which resulted in the authorization of an updated MS4 General Permit in 2017.
P12*	DEQ, MWCC, collaborate with other federal, state, and local agencies	Develop a system or network for long-term monitoring that will produce data to evaluate water quality trends in waterbodies with completed TMDLs.	Develop system/network architecture by 2015.	Montana DEQ assesses water quality status and trends in priority areas through fixed station monitoring or revisiting areas that have significant restoration or remediation efforts completed. Nutrients in the Clark Fork Basin are monitored yearly for trend analysis based on a QAPP developed in 2016 for the Clark Fork Basin Nutrients Monitoring Network (Avista, UM, and City of Missoula).

\* Indicates a high priority for the NPS Program





No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
P12*	DEQ, MWCC, collaborate with other federal, state, and local agencies	Develop a system or network for long-term monitoring that will produce data to evaluate water quality trends in waterbodies with completed TMDLs.	Begin implementation by 2017.	DEQ provides funding to partners for collection of nutrients in the Clark Fork Basin to support trend analysis and reporting. Metals monitoring and analysis in the Clark Fork River are being monitored by remediation and NRDP programs. Implementation includes annual staff support to Madison-Missouri River Monitoring (Northwestern). DEQ monitored forty sites on the Yellowstone River and tributaries during 2017 to assist in future spatial and temporal trend analysis. Jim Creek and Careless Creek sediment monitoring and reporting occurred in response to restoration activities.



*Leah Bellus and Christine Miller, Gallatin Local Water Quality District.  
Monitoring on Camp Creek, NRCS NWQI Watershed  
Photo by Katie Makarowski*

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
P13	DEQ	Develop guidance for water quality monitoring.	Guidance for monitoring under Section 319 contracts	DEQ developed and has subsequently updated a guide for estimating load reductions associated with restoration activities. Staff has provided direct guidance and monitoring support on projects including Ninemile Creek restoration, East Fork Bitterroot River grazing management, and Sevenmile Creek restoration projects in 2017.
			QAPP guidance	DEQ provides data quality requirements for the Integrated Report "call for data" if applicants want data to be used for reporting. A VM program plan is currently being finalized.
			SAP guidance	DEQ developed SAP guidance and template for internal use and review; supported SAP development and updates for volunteer monitoring efforts; and provided SAP guidance and review for restoration projects.
P14	DEQ, MWCC, MSUEWQ	Provide technical and financial support to volunteer monitoring groups.	Continue funding for laboratory analysis	DEQ continued to provide assistance for volunteer monitoring and funding for lab analysis. After improving assistance in the development of QAPP/SAPs in 2013, DEQ increased the number of groups with approved SAPs being funded - 2012 (4 groups; \$6,655); 2013 (7 groups; \$14,758); 2014 (6 groups; \$12,242); 2015 (4 groups; \$7,272); 2016 (7 groups; \$10,965); 2017 (5 groups; \$9,998). Seventeen different groups have been funded from 2012-2017.
			Provide on-going technical support for development of QAPPs and SAPs	DEQ provides technical support to all volunteer monitoring groups that have received lab analysis funds. In addition to that, staff supports data requests and guidance to many external requests, many from academic efforts.

\* Indicates a high priority for the NPS Program



No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
P15	DEQ	Develop a nutrient trading policy that encourages nutrient load reductions consistent with WQIP/TMDLs	Nutrient Trading Policy and demonstrated effective trades	Montana's Policy for Nutrient Trading (Circular DEQ-13) was approved by the Board of Environmental Review in 2012. The city of Helena developed a trade agreement, which was incorporated into the city's wastewater facility permit. Subsequent nutrient trades were incorporated into Billings and Missoula wastewater discharge permits. DEQ has been working with several watershed groups to evaluate nutrient trading opportunities and in 2017 a 319 project was selected for funding that has proposed to use nutrient trading funds from the City of Whitefish.
EO1*	MTWC, DEQ	Incorporate school lesson plans that address water resources and NPS pollution issues.	Incorporate up to 20 lessons into the appropriate units of study at 60 elementary schools, 30 middle schools, and 20 high schools	DEQ does not have a system for tracking the articulated milestones. However, reporting from partners indicates that programs reached over 3,000 students and 150 teachers across the state. Partners helping complete this action, include: Project WET; Montana Watercourse, Greater Gallatin Watershed Committee; Ruby Watershed Council; Flathead Community of Resource Educators Watershed Education Committee; Flathead Audubon Society; and Lewis and Clark County Water Quality Protection District Water Watchers Program.

\* Indicates a high priority for the NPS Program

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2012 - 2017
EO2*	MWCC	Provide support and promote the development and coordination of watershed groups through MWCC activities, training workshops, advertising campaigns, etc.	Annual watershed coordinator training	MWCC hosted watershed coordinator trainings every year on several salient topics: Effective Water Quality (2012); Watershed Science (2013); Demonstrating Change: Monitoring for Project Effectiveness (2014); Funding Panel Discussion and a Passive Restoration Workshop (2015); Four webinars including State Procurement Guidelines, Overview of the Montana Water Information System, Accessing Groundwater Information and Accessing information on MT's Animals, Plants, and Biological Communities (2016); and Watershed Restoration planning (2017).
			Annual watershed tour	MWCC hosted watershed project tours in the lake Helena watershed (2012); Sun and Teton Watershed (2013); Northwestern Montana (2014); Butte area (2016); and the Musselshell Watershed (2017).
			Bi-weekly newsletter	MWCC published a bi-weekly e-newsletters every year.
			Coordinate a volunteer water monitoring group to collect water quality data and human-effects info within specific watersheds.	MWCC completed this action through several activities including: reconvening the monitoring workgroup; developed profiles of various volunteer monitoring efforts across the state; held a training related to sediment data collection; connected local volunteer monitoring groups with Big Sky Watershed Corps volunteers; and developed online platform for water monitoring data and organizations.



## Appendix C - Fiscal Year 2017 Section 319 Awards

Project Name	Project Sponsor	DEQ Project Officer	DEQ Contract Number	319 Funds	Non-Federal Match Funds	Total Project Cost
Mud Creek Restoration Project	Lincoln CD	Eric Trum	217008	\$110,000.00	\$76,000.00	\$186,000.00
Big Sky Watershed Host Site Support	Montana Watershed Coordination Council	Robert Ray	217009	\$65,000.00	\$43,350.00	\$108,350.00
Lower Swan Valley Road Sediment Reduction Project	Swan Valley Connections	Robert Ray	217012	\$70,000.00	\$69,170.00	\$139,170.00
Middle & Upper Blackfoot Stream Restoration	Blackfoot Challenge	Christina Staten	217006	\$110,605.00	\$157,050.00	\$267,655.00
Riparian Fencing & Grazing Management on the East Fork	Bitter Root Water Forum	Kristy Fortman	217007	\$30,000.00	\$22,080.00	\$52,080.00
Upper Ninemile Placer Reclamation	Trout Unlimited	Eric Trum	217010	\$300,000.00	\$337,500.00	\$637,500.00
Ontario and Monarch Creek Floodplain Road and Culvert Removal	Helena-L&C Nat. Forest	Lou Volpe	217011	\$50,000.00	\$183,000.00	\$233,000.00
FY 2017 Education and Outreach Water Quality Mini-Grants	Soil and Water Conservation Districts of Montana	Christina Staten	*216007	\$26,000.00	\$13,333.00	\$39,333.00
Ranching for Rivers	Soil and Water Conservation Districts of Montana	Robert Ray	217013	\$100,000.00	\$82,500.00	\$182,500.00
Tryan Restoration Project	Lewis & Clark County Water Quality Protection District	Mark Ockey	*218003	\$161,953.00	\$108,000.00	\$269,953.00
			<b>Total</b>	<b>\$1,023,558.00</b>	<b>\$1,091,983.00</b>	<b>\$2,115,541.00</b>

## Appendix D - Section 319 Projects Closed in 2017

Contract Number	Contractor	Project Name	Amount Expended	Final Payment Date
213023	Clark Fork Coalition	Lost Horse Creek Streamflow Enhancement	\$134,240.00	12/4/2017
214009	Big Hole Watershed Committee	California Creek-reducing sediment & associated heavy metals delivery	\$60,000.00	8/24/2017
214011	Montana Watershed Coordination Council	Big Sky Watershed Corp program of Montana Partial Funding	\$105,000.00	8/14/2017
216008	Bitter Root Water Forum	Watershed improvement through sediment reduction in Upper Sleep Child Creek and Rye Creeks	\$105,000.00	10/12/2017





## Appendix E - Section 319 Mini-Grant Projects Awarded in 2017

Contract #	Sponsor	Title	Awarded
Mini-grants Awarded in Spring 2017			
SWCDM MG 15-13	Gallatin Valley Land Trust	Gallatin Headwaters Riparian Buffer Enhancements	\$2,000
SWCDM MG 16-06	Big Hole Watershed Committee	Connecting the Public to Water & Drought in the Big Hole River Watershed	\$1,153
SWCDM MG 16-07	Bitterroot College	Bitterroot Water Symposium 2017	\$2,000
SWCDM MG 16-08	Bitter Root Water Forum	Tour of Irrigation and Restoration in the Bitterroot	\$2,000
SWCDM MG 16-09	Clark Fork Watershed Education Program	Blacktail Watershed Restoration and Monitoring	\$2,000
SWCDM MG 16-10	Lolo Watershed Group	Dirt & Dewatering: Educating Students about the Amplification of Sedimentation's Detrimental Effects	\$2,000
SWCDM MG 16-11	Montana Aquatic Resources Services	Yellowstone River Symposium	\$2,000
SWCDM MG 16-12	Missoula Valley Water Quality District	Groundwater/Surface Water Education Tools	\$1,847
SWCDM MG 16-13	Yaak Valley Forest Council	Yaak River Restoration and Watershed Education Camp	\$2,000
Mini-Grants Awarded in Fall 2017			
SWCDM MG 17-01	Blackfoot Challenge	Irrigation and Soil Health Training and Outreach	\$2,420
SWCDM MG 17-02	Flathead Lakers	Riparian Restoration Outreach	\$3,000
SWCDM MG 17-03	Lake County Conservation District	The Watershed Visualization Project	\$3,000
SWCDM MG 17-04	Yaak Valley Forest Council	Yaak River Watershed Education Camp	\$1,830
<b>Total Awarded in 2017</b>			<b>\$27,250</b>

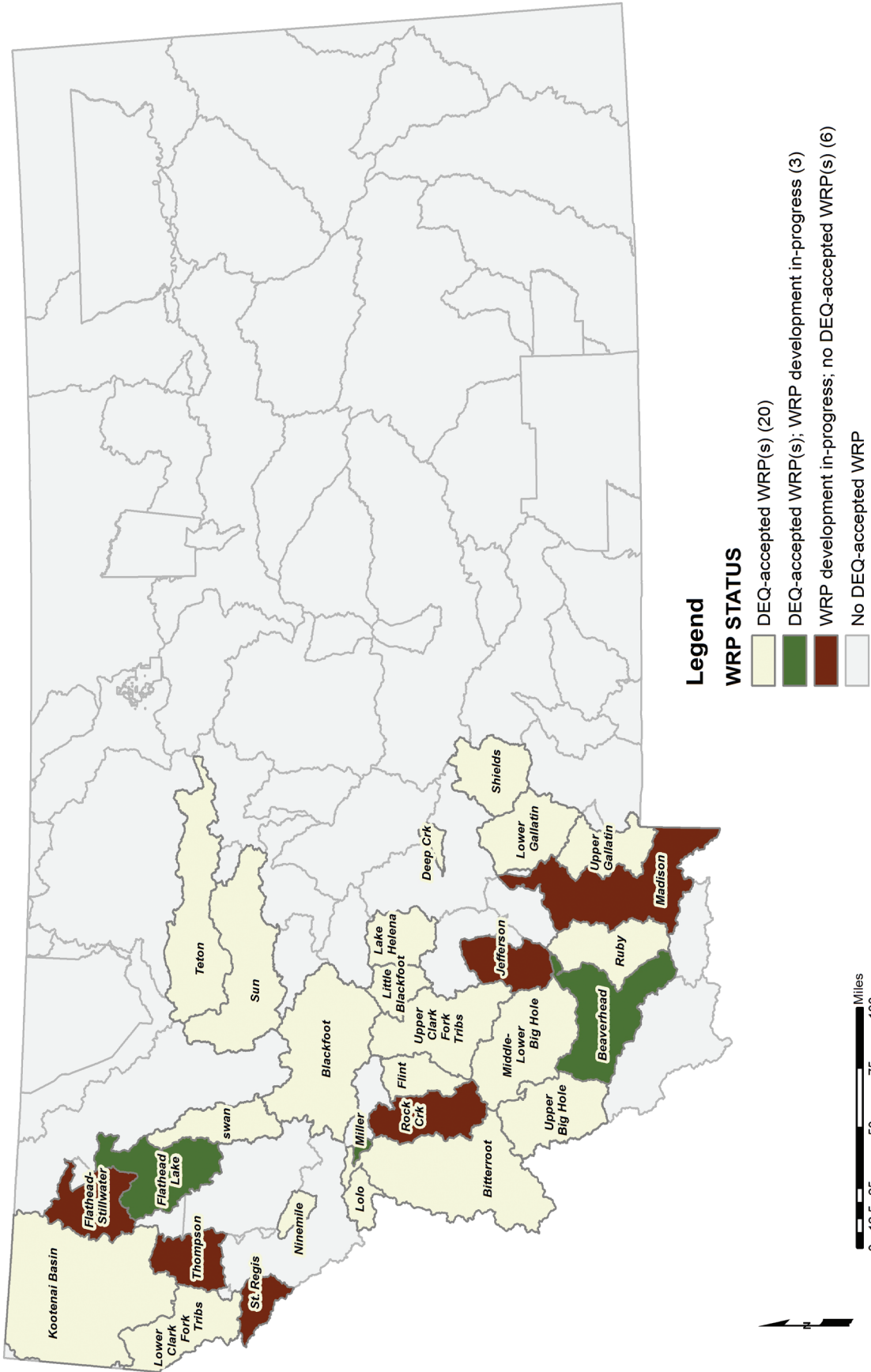
## Appendix F - Volunteer Monitoring Lab Analysis

Sponsor	Project	Project Description	Award
Gallatin River Task Force	Gallatin River Task Force Community Water Quality Monitoring Program	The goals of this project are to: 1) record routine water quality and macroinvertebrate data on the Gallatin River to assess trends and unforeseen events such as nuisance algae growth, elevated chloride, and impacts of a wastewater effluent spill, 2) assess the successes and failures of the Upper West Fork Nitrogen and Sediment Reduction Project and future restoration projects on streams with TMDLs in the Upper Gallatin Watershed, and 3) determine if road salt and sand from winter maintenance activities has an impact on the water quality of the Upper Gallatin River and its tributaries.	\$2,527
Little Bitterroot Lake Association and Water & Environmental Technologies	Little Bitterroot Lake Eutrophication Study, 2017	This project involved water quality and algae sampling on Little Bitterroot Lake to answer questions about spatial and vertical variability of algae and nutrient concentrations and how they are affected by land-use, climatic, and watershed conditions. Little Bitterroot Lake was sampled during the mid-summer including spatial and depth profile sampling for field parameters, nutrients, and chlorophyll-a.	\$1,608
Smith River Habitat Project	Smith River Habitat Project Volunteer Water Monitoring Program	SRHP collected baseline data to enable future comparisons and determine impacts of herbicide treatments, variation in riparian vegetation, grazing, recreational uses, and resource development to the Smith River.	\$2,160
Upper Missouri Watershed Alliance	Study of the Mainstem of the Upper Missouri River's Aquatic Macroinvertebrates, Aquatic Plants and Water Chemistry	This project involved collection of water quality data to answer questions about how changes in water chemistry (esp. nutrients) can explain differences in community structure of benthic macroinvertebrates and aquatic plants in the river, and how concentrations water quality parameters vary spatially or seasonally.	\$1,323
Sun River Watershed Group	Sun River Watershed Group 2017 Volunteer Monitoring Project	The goal of this sampling project is to add to the existing Sun River water quality monitoring dataset that will subsequently be used to assess trends in water quality and track progress towards reaching the goals of the Sun River TMDL, the Sun River Watershed Restoration Plan, and to determine the effects of the improvement projects since those plans were developed. Water quality data is collected in the mainstem river as well as select tributaries.	\$2,380



Appendix G - Watershed Restoration Plan Status Map

Montana Watershed Restoration Plan Status



Created 10/25/2017 by DEQ Watershed Protection Section





Wetland in an Ephemeral Channel. Musselshel Project Area.  
Photo by Steve Carpenedo





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<http://deq.mt.gov/Water/WPB/Nonpoint-Source-Program/Guidance-Documents-and-Resources>.