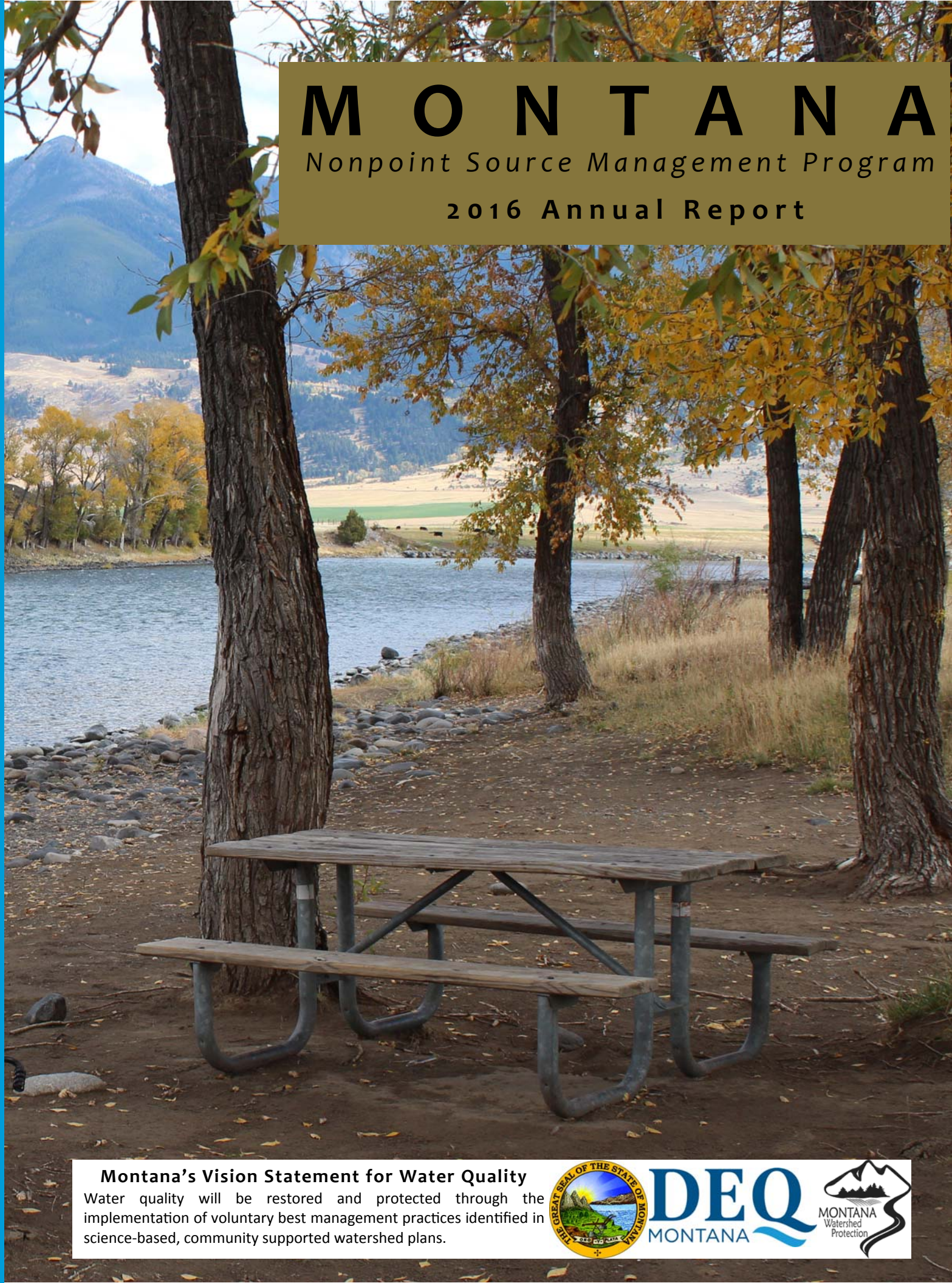

MONTANA

Nonpoint Source Management Program

2016 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

MONTANA Watershed Protection

Prepared By

Montana Department of Environmental Quality
Water Protection Bureau
Watershed Protection Section

Contributors

Water Protection Bureau
- Watershed Protection Section
- Pollutant Discharge Elimination System Section

Water Quality Planning Bureau
- Water Quality Standards Section
- Water Quality Monitoring and Assessment Section
- Information Management and Technical Services Section
- Quality Assurance and Quality Control Staff

Soil and Water Conservation Districts of Montana
Montana Watershed Coordination Council
Montana Wetland Council
Montana Watercourse
Montana State University Extension Water Quality

Acknowledgements

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Cover Photo: Yellowstone River at Mallards Fishing access site. Photo by Katie Steele

Montana Department of Environmental Quality
Water Protection Bureau
1520 E. Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901

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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 DEQ's NPS Management Program is to provide a clean and healthy environment by protecting and restoring 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 A). This approach seeks to involve all stakeholders through communication, cooperation, common goals, and consensus. 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 requires states to: 1) assess waterbodies for Nonpoint Source (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.

Each year, EPA awards federal Clean Water Act 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 October, the state fiscal year 2015 program grant was completed and closed. This two year grant for $1,050,854 included a state match contribution of $709,300. This funding covered 22 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 2011 projects grant was completed and closed. This five year grant for $1,137,240, allowed DEQ to support 28 NPS projects with local sponsors throughout Montana between 2011 and 2016. The sponsors contributed $1,274,894 in non-federal funds that was well above their required 40 percent match.

To demonstrate significant progress towards NPS program goals, the Montana Nonpoint Source Management Plan describes a set of focused, short term activities (5-year action plan) measured by achieving actions outlined in the Plan. The final year for completing this was 2016. This Annual Report highlights important and notable actions taken to achieve the NPS Plan's 5-year goals for 2016 (Appendix B). Program staff are reviewing and revising the 2012 plan to update it for 2017. A thorough review of the 5-year action plan will be provided in the 2017 NPS Plan update. The 2012 Montana Nonpoint Source Management Plan can be found on DEQ's website: http://deq.mt.gov/Portals/112/Water/WPB/Nonpoint/Publications/NPSPlan_Complete_07162012.pdf

Highlights from the 2016 Nonpoint Source Management Program

Goal: Provide support and promote watershed groups

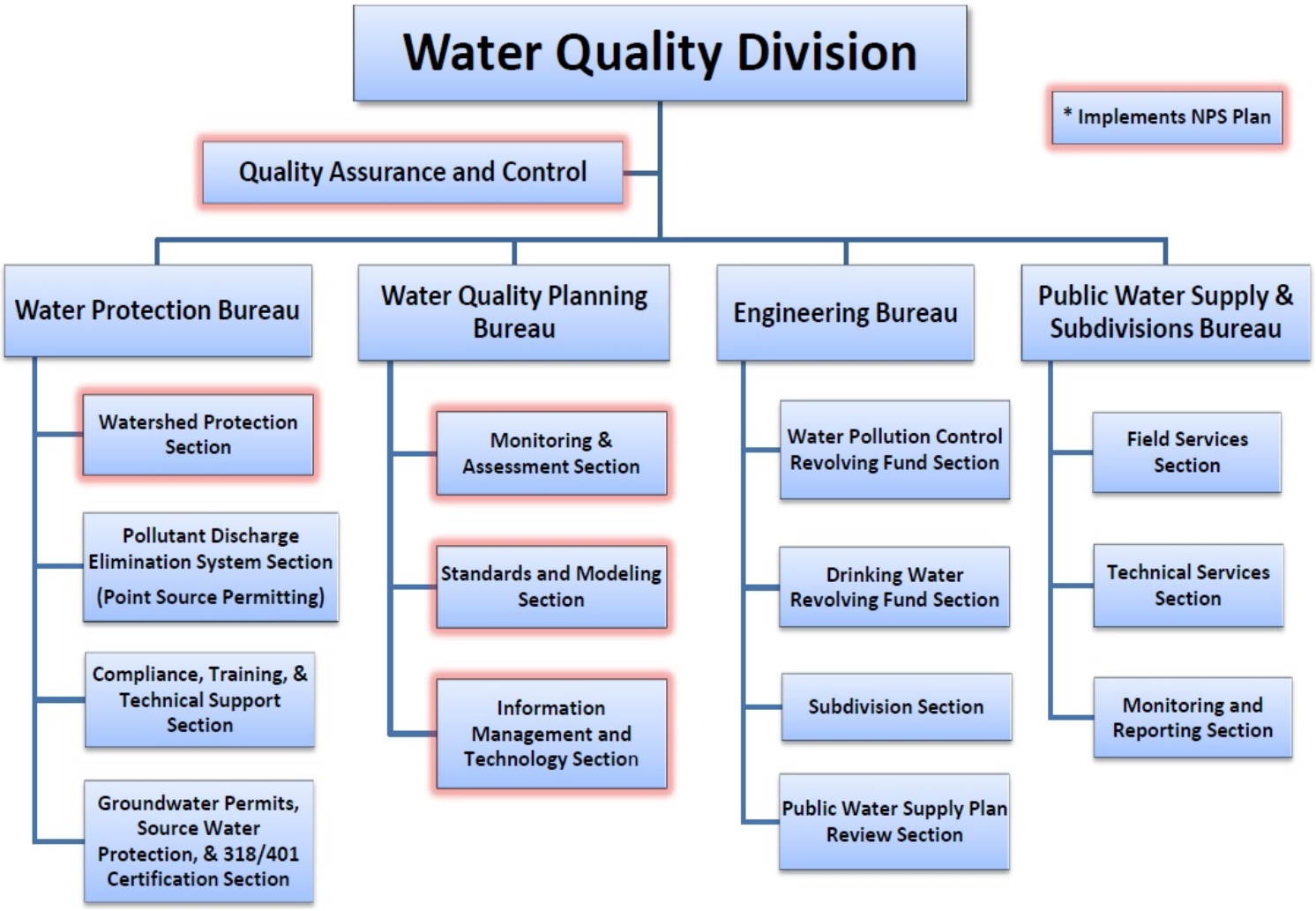
The NPS Management Program remains committed to supporting watershed groups throughout the state with technical, financial, and capacity resources. In 2016, $800,000 in 319 funding was awarded to watershed groups for implementing restoration projects and providing education and outreach efforts, furthering 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 2016, MWCC furthered its mission by hosting four webinar trainings, sub-granting over $150,000 dollars to capacity and professional development opportunities, and bringing together federal and state natural resource agencies, academia, and water quality professionals from across the state to the 2016 Watershed Symposium in Billings.

Goal: Continue to support the development of locally led Watershed Restoration Plans (WRPs)
In 2016, DEQ approved two WRPs (Lake Helena and Little Blackfoot) and supported the development of 4 WRPs (Flathead, Rock, Thompson, and Madison). DEQ also currently holds a contract with Soil and Water Conservation Districts of Montana (SWCDM) for the development of additional WRPs and the creation of a WRP guidance document.

Goal: Support DEQ's structural reorganization
Started in 2015 and completed in 2016, DEQ reorganized to bring all water programs into one integrated division. This new structure was designed with the guiding principles of organization optimization that are to:

- Improve effectiveness
- Provide for resource capacity and flexibility
- Promote a culture of continuous improvement
- Foster employee and program innovation
- Improve stakeholder and customer service
- Integrate related work units and enhance communication
- Fully utilize staff expertise across the agency
- Create ability to focus on outcomes without sacrificing the integrity of our processes

Goal: Continue to develop and Implement watershed-based TMDLs
One change that occurred as a part of DEQ's reorganization was the merging of TMDL planning, TMDL implementation/319 program, and the Wetland program into one section. This section, called the Watershed Protection Section was moved into the Water Protection Bureau. This move will provide a more coordinated effort between the NPS program and Point Source permitting in the creation and implementation of TMDLs.



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. WQMS does not receive Section 319 funding, however, WQSM's work is fundamental to the NPS Management Program in Montana.

DEQ hosted and co-chaired the Lake Koocanusa Monitoring And Research Working Group meeting with sessions for the Steering Committee, Monitoring and Research Committee, and the Technical Subcommittee in February 2016 in Helena, MT. From this meeting, research activities were planned of which DEQ helped to fund several, including the continuation of the USGS Selenium partition coefficient study, the continuation of the US Army Corps of Engineers baseline metals and nutrients study and the analysis of fish in Lake Koocanusa for selenium levels in tissue. DEQ also co-chaired a meeting in Cranbrook, British Columbia, Canada in October 2016, discussing results from the season and future activities in Lake Koocanusa toward the development of selenium standards and further understanding the system. DEQ plans to have draft numeric selenium standards for Lake Koocanusa by the end of 2017. For more information on the working group, visit http://lakekoocanusaconservation.pbworks.com/w/page/100633354/FrontPage

DEQ spearheaded an Association for Clean Water Administrators (ACWA) survey on how states use frequency and duration in their human health and aquatic life standards with regard to assessment, permitting, and TMDLs. A summary report was written for the ACWA survey and DEQ is currently working on a guidance document for using frequency and duration in human health assessments and permits, available in February 2017.

WQSM, and MAS worked on development of an assessment method for electrical conductivity and sodium adsorption ratio. We hope to finalize this document in 2017.

The 2015 Montana Legislature enacted Senate Bill 325, MCA 75-5-222, which states that DEQ cannot implement water quality standards that are more stringent than the pre-anthropogenic condition of a water body. In 2016, DEQ worked with a group of stakeholders to develop rules to implement this statute. We will continue working on development of these rules and plan to initiate rulemaking in 2017.

DEQ solicited comments on Montana's water quality standards as part of our triennial review. We received comments from five parties and responded to comments on behalf of the Board of Environmental review and proposed several changes to our water quality standards in response to the comments and in response to water quality standards changes at the federal level. Rulemaking was initiated by the Board of Environmental Review in December 2016.

Co-chairs Mike Sokal (BC Ministry of Environment) and Terri Mavencamp (MT DEQ) at the Lake Koocanusa Monitoring and Research Working Group meeting October, 2016 in Cranbrook, BC. Photo by Lana Miller

Water Quality Monitoring and Assessment

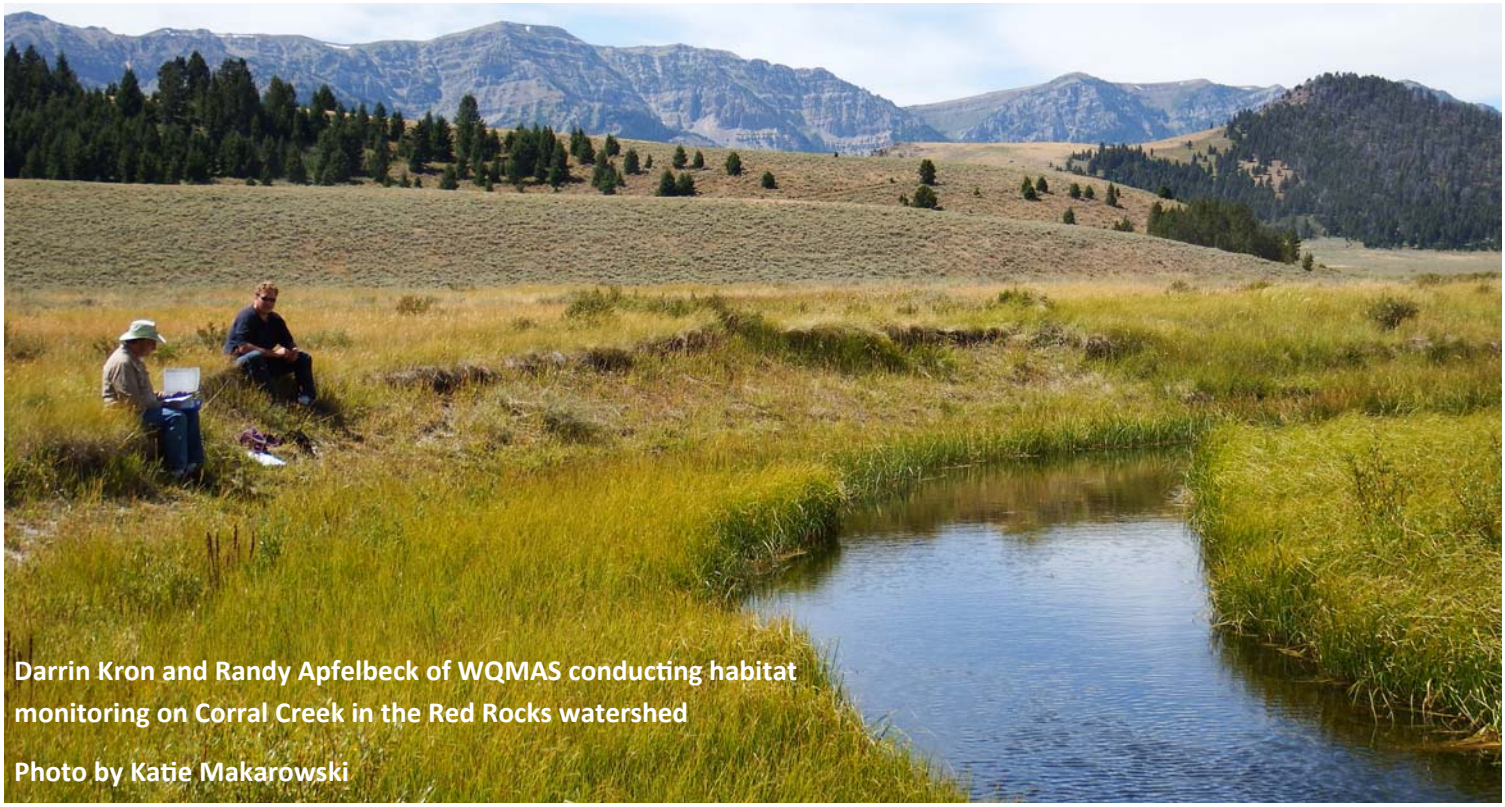
The Water Quality Monitoring and Assessment Section (WQMAS) monitors statewide water quality conditions. A variety of strategies are used to complete this task, including a targeted watershed approach that is used to assess water quality conditions, fixed station monitoring to detect trends, and monitoring in regions or basins with known or changing threats to water quality.

Water quality monitoring projects are completed using both a preplanned watershed rotation and also in areas of high need for immediate response. During 2016 WQMAS focused efforts in the Musselshell, Clark Canyon Reservoir, Beaverhead, and Red Rocks watersheds. Detailed sampling began this year to study the eutrophication and turbidity in Clark Canyon Reservoir and the Beaverhead River. Watershed characterization monitoring continued in the Red Rocks watershed at 28 sites. The Section wrapped up monitoring efforts in the Musselshell Watershed and has begun the reporting phase of this project. WQMAS staff also provided planning and field support during the Yellowstone Club spill response.

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. This past year's projects included: Clark Fork Basin nutrient monitoring, Lake Koocanusa trend monitoring, Musselshell watershed spatial trends analysis, Red Rocks watershed spatial analysis, and water quality monitoring in areas of oil and gas production.

After restoration or remediation efforts are completed WQMAS completes updated beneficial use assessments to determine if standards are being met. In 2016, staff worked on the following assessment projects: Jim Creek sediment, Tayler Fork sediment, and Soda Butte Creek metals remediation.

WQMAS provides training and support to DEQ staff and to volunteer monitoring efforts. To support volunteer monitoring efforts, WQMAS continues to provide training directly and through a contract with MSU Extension, funding is provided for chemistry lab analysis, and field equipment is lent to groups when they coordinate with our projects. WQMAS provided input on monitoring design, methods, field manual preparation, and field training to other DEQ staff. We continue to supply and maintain the majority of the DEQ Water Division field equipment and supplies.



Darrin Kron and Randy Apfelbeck of WQMAS conducting habitat monitoring on Corral Creek in the Red Rocks watershed

Photo by Katie Makarowski

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. WARD is available to the public via Montana's Clean Water Act Information Center (CWAIC), which is an interactive web application. IMTS works with DEQ staff to update and improve WARD and to also ensure compatibility between WARD and 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 the Montana Environmental Quality Information System (EQuiS), which includes a water quality monitoring results database. Information can be submitted to this database via the Montana EQuiS Water Quality Exchange. During 2016, IMTS processed water quality data from more than 36 unique monitoring projects into the water quality database. These include DEQ 303(d) monitoring projects as well projects from data providers outside of DEQ. The EQuiS data loads were subsequently transmitted to the national Water Quality Exchange database. Many of the more than 36 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 TMDL and water quality standards programs.

Petrolia Lake, Musselshell watershed

Photo by Katie Makarowski

Quality Assurance and Quality Control

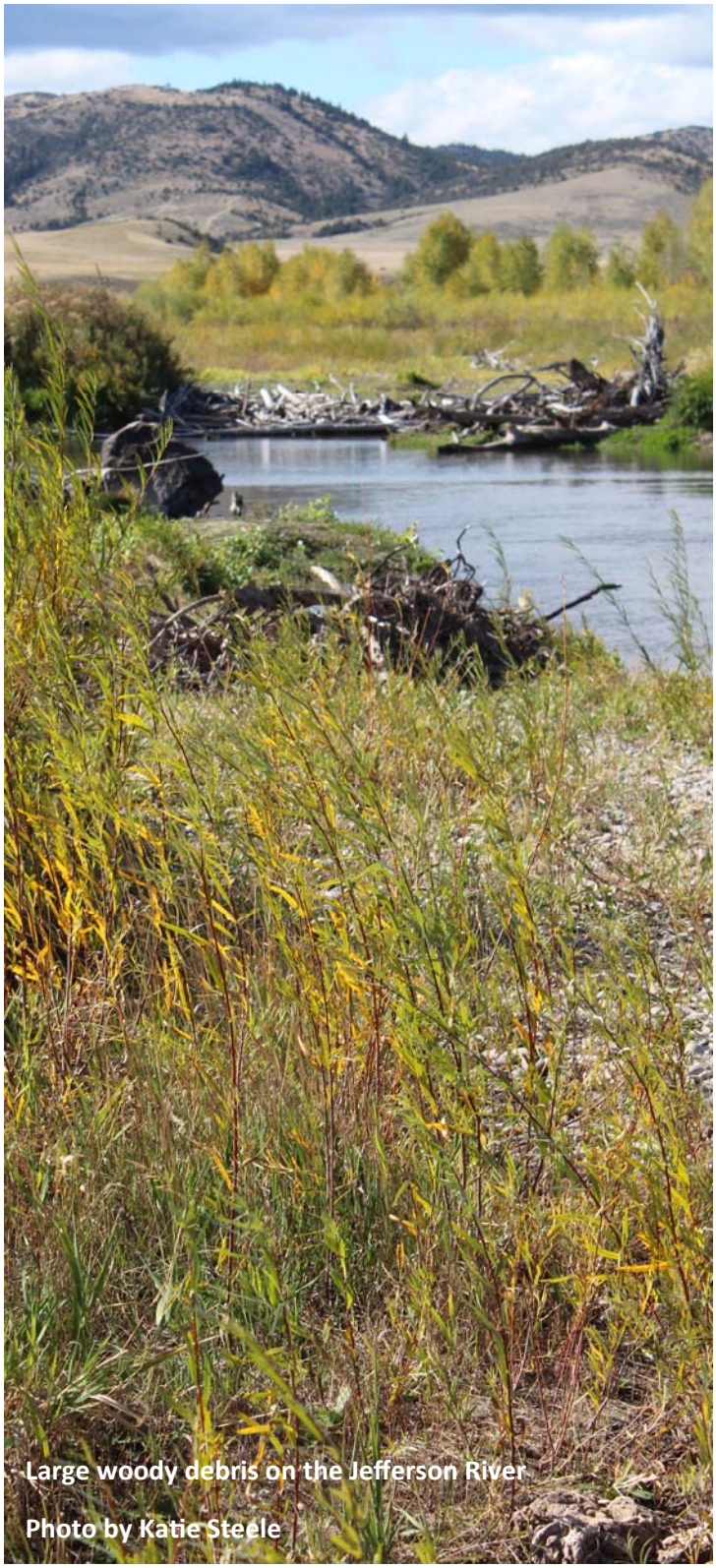
The Quality Assurance and Quality Control Program (QAQC) supports the Nonpoint Source Program and contractors by developing and describing the management and technical procedures that will assure the quality of environmental information used to support decisions. This is referred to as a "quality system." It provides a practical framework for managing the quality of activities, resulting in environmental determinations and controls.

In 2016, the QAQC program continued to support in-house processes used to support the development of water quality criteria, reporting the condition of the state's waters, developing Total Maximum Daily Loads (TMDLs), implementing best management practices, and determining the effectiveness of implementation strategies.

DEQ receives data from local, state, and federal agencies; volunteer monitoring efforts; nonprofit organizations; private entities; and other groups or individuals who have an interest in water quality. This data must be defensible and its quality known before it is considered for use in DEQ projects that require a high level of rigor. Bureau staff coordinates with other agencies, conservation districts, watershed groups, and other entities to ensure the quality of data used in water quality assessments and TMDL development and implementation projects funded by Clean Water Act section 319 grants administered by DEQ.

DEQ has established the minimum quality requirements which require planning documentation, Quality Assurance Project Plans (QAPPs) and/or Sampling and Analysis Plans (SAPs), for data to be considered for assessment purposes when soliciting data under the Call for Data. QAQC may review this external data to ensure it meets the requirements for use by DEQ. All volunteer groups that receive funding through the Section 319 program are required to submit a SAP before collecting water quality monitoring data. Project-specific QAPPs are also developed for particular monitoring areas with specific goals and objectives. Volunteer monitoring groups are required to develop clear and thorough QAPPs or SAPs, which outline the goals and objectives of the project and document the design of the monitoring program, in turn increasing data validity.

In 2016, QAQC approved 5 SAPs/QAPPs focusing on monitoring Section 319 restoration activities for effectiveness and pollutant-load reductions, including the Bull River Riparian Restoration Project QAPP, the Willow Creek Watershed Quality Assurance Project Plan and the Tramway Creek Mining Project SAP. QAQC also collaborated with the Watershed Protection Section to develop six SAPs under the volunteer monitoring grant program.



Large woody debris on the Jefferson River

Photo by Katie Steele

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), distribution of Section 319 project funding, and by working with many organizations and agencies on common goals.

TMDL Development

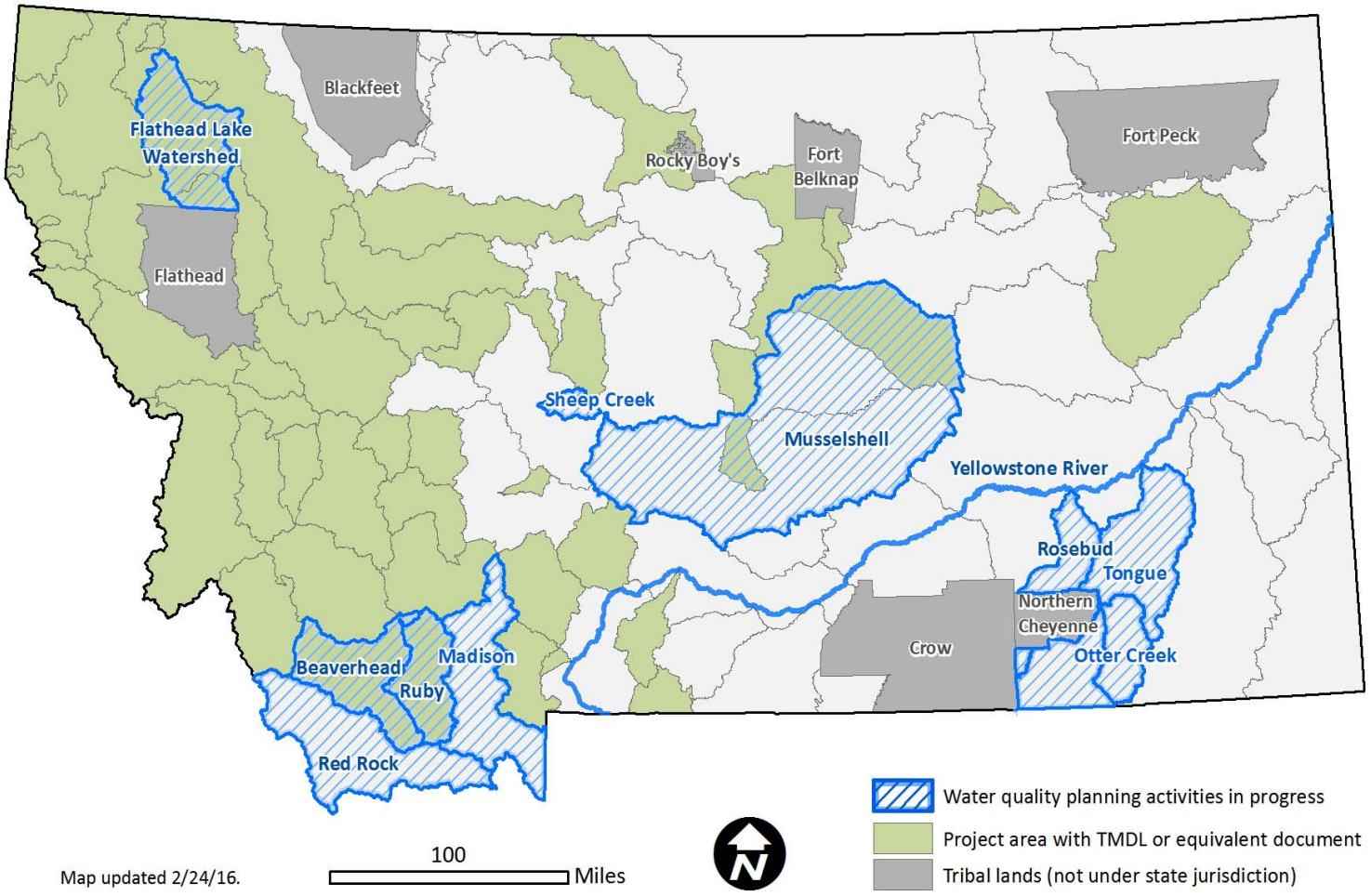
Total maximum daily loads (TMDLs) are developed for Montana's streams, rivers, and lakes that have an identified pollutant impairment (contained on Montana's 303(d) list of impaired waters). A TMDL is the maximum amount of the pollutant that the waterbody can receive and still meet water quality standards. A TMDL is sometimes expressed as a reduction in pollutant loading necessary to achieve 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. TMDLs are an essential component for planning watershed restoration activities, and Montana's TMDL documents typically include implementation and monitoring recommendations.

DEQ had prioritized 11 project areas for focusing resources toward monitoring and assessing water quality, and subsequently developing TMDLs by 2022. The project areas are shown in the map and are in various phases of planning. In 2016, initial salinity modeling and source assessment work was completed for the Tongue River and stakeholders were engaged in the process of developing solutions for water quality improvement. As data collection continues in the Musselshell and Red Rock project areas, DEQ is moving closer to initiation of TMDL development in those areas. TMDL development is nearing completion for the Sheep Creek, Otter Creek, and Madison project areas. Additionally, initial water quality planning has begun for the Yellowstone River.

TMDL Planner, Jordan Tollefson, conducting road sediment monitoring in the Madison TMDL Project Area

Photo by Lou Volpe

Montana DEQ Water Quality Planning / TMDL Priority Areas



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, and support in watershed restoration planning.

Water Quality Restoration and Protection

NPS program staff manage and distribute CWA Section 319 funding for water quality restoration projects. Projects must address nonpoint source pollution, address impairments identified on Montana's List of Impaired Waters, implement actions identified in the 2012 Montana Nonpoint Source Management Plan, and directly implement projects or activities identified in a DEQ-accepted Watershed Restoration Plan (WRP). Each year, project proposals are solicited from local watershed groups, conservation districts, non-profits, and governmental entities. Projects are competitively selected by program staff with the support and guidance from a state and federal agency review panel. In 2016, $892,706 was awarded to 9 projects (Appendix C). Contractors committed to $609,499 in non-federal match for these projects, exceeding the minimum 40 percent match requirement set by EPA. During 2016, NPS program staff managed 50 open 319-funded contracts. Thirteen Section 319 contracts were closed in 2016. See Appendix D for a complete list.

NPS program staff continues to seek ways to improve the efficiency and management of the 319 grant program. The continued use and improvement of electronic application forms has greatly reduced the amount of time necessary to

complete the application process for both applicants and reviewers. For 2017, reporting requirements and number of deliverables have been decreased. This will likely reduce the time it takes both Contractors and program staff to manage contracts.

With additional staff training and IT support, the NPS program transitioned away from using a wiki site to share information and now maintains several webpages on the DEQ website. Calls for applications, application forms, report templates, guidance documents, Watershed Restoration Plans, 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 2017.

Watershed Planning

The NPS program continued working with watershed groups to develop Watershed Restoration Plans (WRPs). WRPs are an important planning document for groups doing on-the-ground watershed restoration and a DEQ-accepted WRP is required in order to receive 319 funding. The NPS program has funded 24 groups to develop WRPs. In 2016, DEQ accepted a WRP for Lake Helena, and addendum to the Little Blackfoot WRP, and supported the development of 6 additional WRPs Flathead, Rock, Thompson, St. Regis, Three Mile, and Madison. Appendix G includes a complete list of WRP efforts, and Appendix H contains a map of areas with WRPs.

Supporting Our Partners

Program staff participated as an observer or reviewer on grant application review teams 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 provided support to DNRC's development and initiation of a new Watershed Management Grant program designed to fund water-related planning and management activities sponsored by local, state, and tribal organizations, and non-profit entities. Staff also 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. In 2016, Deep Creek was delisted for sediment impairment. 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 2016, the NPS program worked with the U.S. Forest Service's (USFS) Regional Hydrologist for Region 1, to plan and hold the annual DEQ–Forest Service coordination meeting in Helena. Topics at the April meeting included regional and forest-specific activities, USFS travel management planning, TMDL planning efforts, assessment procedures, monitoring activities, and opportunities for integrating processes among agencies for prioritizing watershed protection. WPS staff managed five 319 contracts focused on projects on Forest Service lands in 2016.

The NPS program continues to support nonpoint source pollution education and outreach efforts through partnerships with MACD, MWCC, 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 NPS Program's five-year action plan.

WQMAS crew conducting sediment monitoring on Flatwillow Creek in the Musselshell watershed

Photo by Katie Makarowski

Wetland Program

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 and identifies actions taken by the program 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 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".

Wetland Program accomplishments in 2016 include:

- In conjunction with partners from the Montana Natural Heritage Program, MT FWP, USFWS, and Joint Ventures, developed a statewide map of priority areas to concentrate and coordinate efforts to protect and restore wetlands of ecological significance.
- Conducted 69 wetland ecological integrity assessments in the Musselshell watershed to better understand the impacts of anthropogenic land uses on wetland integrity and means to best protect and restore wetland resources.
- Conducted 80 wetland recon assessments in the Red Rock watershed as part of a joint Risk Assessment project with MDEQ's Monitoring and Assessment Program.
- Worked with Montana State University and The Trust for Public Land to better understand the effects and potential of wetland restoration for improving water quality in the East Gallatin watershed.
- Worked with Great West Engineering to develop a cost-benefit analysis for passive restoration projects, including sediment and water storage through beaver habitat restoration.
- Partnered with the Montana Watercourse to host two professional development courses focusing on bio-engineering and stream restoration techniques. These courses were attended by 80 resource professionals including engineers, ecologists, hydrologists, floodplain managers, watershed groups, and conservation district staff.
- Partnered with the Montana Natural Heritage Program to host five wetland plant identification courses for resource professionals. These courses were located across the state and included three beginner plant identification courses and two intermediate plant identification courses.
- Contracted the Montana Natural Heritage Program to complete and update wetland mapping for six USGS quads to help fill gaps on current wetlands mapping in Montana.
- Provided funding for a Big Sky Watershed Corps member at Montana Aquatic Resources Services to complete Compensation Planning Frameworks for three watersheds in Montana and give public presentations on this work.
- Provided funding for an educational video on managed riparian grazing titled "Ranching for Rivers", which was sponsored by the Soil and Water Conservation Districts of Montana and the Missouri River Conservation Districts Council. The video can be viewed here: https://www.youtube.com/watch?v=sIcobNmWHfs
- Contracted with The Flathead Audubon Society to provide a wetland education day in Kalispell for elementary and high school students.

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%20-Final%201.19.16.pdf

For more information visit the DEQ Wetland Program website at: http://Wetlands.mt.gov

Partners and Highlights

Section 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 various federal and Montana state agencies.

Volunteer Monitoring Partnership

Volunteer Monitoring (VM) continues to plays and important role in linking communities with water quality issues, building important datasets, and in the understanding and management of water resources. DEQ partners with a number of organizations, including Montana State University Extension Water Quality (MSUEWQ), Montana Watershed Coordination Council (MWCC), and Montana Watercourse to promote and support VM efforts across the state.

In 2016 DEQ continued to fund VM groups through DEQ's Volunteer Monitoring Lab Analysis Support program. Seven groups applied for and received a total of $10,442 in funding to cover the cost for laboratory sample analysis associated with water quality monitoring projects related to nonpoint source pollution (see program summaries in Appendix F). Groups were required to have a Sampling and Analysis Plan (SAP) to guide sampling efforts, and each group has been thorough in its QA/QC efforts, ensuring reliable data that will help meet project objectives and DEQ standards. Through this program, DEQ staff continued efforts to improve outreach to eligible groups, developed more comprehensive documentation on the DEQ Volunteer Monitoring webpage, refined the SAP template to meet the needs of DEQ and VM groups, and updated the 2017 application and call for applications.

SAPs have been integral in guiding VM sampling efforts, and in ensuring the reliability of data collected. Seven SAPs were submitted through the Lab Analysis Support Program and a review panel composed of DEQ staff provided feedback to applicants, and DEQ's approval of SAPs was required before funding was distributed. MSUEWC also assisted three groups (Madison CD, Musselshell Watershed Coalition, and the Bighorn Watershed Alliance) in updating or creating SAPs to guide their monitoring efforts.

Online resources continue to play an important role in the way VM groups manage and access data, share information, and seek assistance. MWCC is finalizing a contract with DEQ to create and maintain a Water Monitoring Resource Website that will be a central location to direct users to pertinent information about water monitoring entities and activities across Montana. MSUEWQ assists groups in the management and accessibility of data through the web. In 2016, they assisted the Musselshell Watershed Coalition in the creation of a website for data upload, storage and visualization, and a database and interface for storage and retrieval of stream photos. They are also working with the Madison CD to mesh their current website with a story map, incorporating photos. MSUEWQ worked with the Broadwater CD, NRCS, and DEQ to create a story map highlighting the water quality initiative project in Deep Creek.

Several trainings for VM groups were held in 2016. MSUEWC provided training for Big Sky Watershed Corp members to create story maps to tell the story of their monitoring efforts. MT Watercourse provided trainings to students and adults in the collection of physical and chemical water quality data for the Exploration Works/Clancy Stream Team, Broadwater CD/ Townsend Stream Team, and Earth Elements. And DEQ staff provided QAQC training to the Gallatin Stream Team.

At the end of 2016, DEQ staff worked on formalizing DEQ's Volunteer Monitoring program. This effort aims to improve efficiency and enable agency resources to better characterize water quality improvements statewide. DEQ staff are working to have this program formalized and a more comprehensive webpage on DEQ's website for 2017.

Soil and Water Conservation Districts of Montana

For more than 40 years, the Soil and Water Conservation Districts of Montana (SWCDM) has contributed to the success of its constituent conservation districts across the state. Created in 1970, SWCDM is a nonprofit association governed by a statewide board of directors who simultaneously serve as district supervisors in their own jurisdictions. In order to carry out the specific directives of the board, SWCDM and its affiliated organization, Montana Association of Conservation Districts (MACD), have an office in Helena.

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. 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.

SOIL & WATER CONSERVATION DISTRICTS of MONTANA

Montana Association of Conservation Districts

2016 was a productive year for SWCDM in supporting conservation and assisting with NPS pollution issues across the state. Program activities included:

- 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 2016, 11 mini-grant awards were given, totaling $20,500 (See Appendix E for a complete list). SWCDM will award a similar amount of funding for projects in 2017.
- Cooperated as a partner with Montana Conservation Corps and Montana Watershed Coordination Council to provide the Big Sky Watershed Corps (BSWC) program, which placed 20 AmeriCorps members with conservation districts, watershed groups, and other organizations in 2016. These members worked on local watershed issues and water quality improvement projects, including Watershed Restoration Plans. SWCDM will continue to support the BSWC program in 2017.
- Administered an Irrigation Water Management program to help producers efficiently manage their water resources, which in turn can improve water quality.
- 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 draft was completed in 2016, and funding for three others has been committed. SWCDM anticipates completion of four more WRPs in 2017.
- Coordinated with the Missouri River Conservation District Council to provide a pilot program called Ranching for Rivers. This program used DEQ 319 funding to provide 50% cost share to ranchers to construct riparian fencing and establish improved grazing plans adjacent to waterbodies with identified water quality concerns. The program provided support for five fencing projects and has been expanded with an additional DEQ 319 grant for 2017.
- 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. Workshops were well attended 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 2017.

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.

Montana Watershed Coordination Council

It was a busy year for the Montana Watershed Coordination Council (MWCC).

In February 2016, more than 100 water quality professionals attended MWCC's Annual Meeting held at the Fish Wildlife & Parks Wild Center in Helena. This event provides the opportunity for local watershed coordinators to meet with agency program personnel and grant managers to set the stage for current restoration projects. We heard from Lieutenant Governor Mike Cooney, and agency representatives from Montana Department of Environmental Quality; Department of Natural Resources and Conservation; and Fish, Wildlife, and Parks. We also heard a presentation on the Yellowstone River Cumulative Effects Study, which was completed in 2015. The event culminated with a ribbon cutting of the Ten Mile Creek Tile Mural, a collaborative effort between MWCC, Lewis & Clark Conservation District, Lake Helena Watershed Group, Prickly Pear Land Trust, and local businesses to remind the people of Helena of the city's unique place within the Ten Mile watershed ecosystem.

Along with its partners at the Montana Conservation Corps and the Soil and Water Conservation Districts of Montana, MWCC placed 20 Big Sky Watershed Corps members statewide providing over 25,000 hours of service. MWCC contributed $52,000 in 319 funds to host sites to assist in covering host site fees, professional development, and other service member related costs to increase local watershed group capacity and conservation outcomes.

MWCC launched its first webinar series as a cost and time-saving way to share information with watershed groups. Topics included: State Procurement Guidelines (Montana Department of Environmental Quality); overview of the Montana Water Information System (Montana State Library); accessing groundwater information (Montana Bureau of Mines and Geology); and accessing information on Montana's animals, plants, and biological communities (Natural Heritage Program). The webinars are available on the MWCC website.

Regional coordination is improving within the state. MWCC was able to provide funding for the Missouri Headwaters Partnership (MHP), a collective of the nine sub-basin watershed groups in the upper Missouri Basin upstream of Three Forks. In 2016, MHP formally revisited its organizational structure and articulate shared conservation objectives. MWCC also continued to assist in the re-visioning of the Clark Fork Basin Task Force as a basin-wide coordinating entity. Stakeholders have formed the Clark Fork Basin Council (CFBC), identified common conservation priorities, and developed a draft charter. In the spring, MWCC will support and facilitate the first annual CFBC meeting. These regional efforts provide a means for meeting common conservation objectives within the basins and a model for increased regional coordination across the state in the coming years.

In August, the Watershed Activities Work Group projects tour explored watershed activities in Butte and the Big Hole. Participants toured restoration projects at Browns Gulch, the Ueland Ranch, and Silver Bow Creek outside of Butte. The tour concluded with a visit to the Mt Haggin Wildlife Management Area, where the Big Hole Watershed Committee is focusing its restoration work within the Deep Creek drainage in an effort to address effects of historic mining and create a refuge for the arctic grayling.

MWCC continued its multi-year partnership with the Bureau of Land Management to assist conservation groups in eastern Montana who have watershed goals or ideas but need assistance building specific capacity to reach them. Grants were awarded to the Missouri River Conservation Districts Council to continue coordination of the Charles M Russell Working Group and Musselshell Water Coalition to implement a targeted education and outreach campaign.

MONTANA **WATERSHED**
COORDINATION COUNCIL

In an effort to connect watershed coordinators, water professionals, and agency personnel from east to west, MWCC held its 2016 Watershed Symposium in October in Billings. The event brought more than 150 people together including attendees from eastern Montana and conservation districts to discuss how partnerships can improve conservation efforts.

MWCC publishes the bi-weekly e-newsletter Watershed News, containing watershed highlights and water news, job openings, training, and grant opportunities specific to Montana or the region. The Watershed News reaches an audience of over 1,000 natural resource professionals statewide. With an open rate that nearly doubles the industry average and a 20% click through rate, the Watershed News provides information on Montana natural resource related activities.

MWCC brought on six new board members in 2016 to meet specific organizational needs and enhance board representation. In June, MWCC welcomed Emily Isaacson, Accountant at Wipfli; Torie Haraldson, Gallatin County Water Quality District; Ethan Kunard, Madison Conservation District; Jen Downing, Big Hole Water Committee; Laura Nowlin, Musselshell Water Coalition; and Keri Bilbo, Natural Resource Conservation Service.

MWCC staff grew this year with the addition of Jill Feldhusen as its Watershed Outreach Coordinator. Jill will focus her time on connecting regularly with MWCC members to assess capacity and training needs and opportunities as wells as provide enhanced support for Big Sky Watershed Corps program.

For 2017, MWCC will distribute the first ever State of the Watersheds report, begin the service of providing a Legislative Bulletin on water issues in 65th Montana Legislature, revise its website, and develop a clearinghouse for water monitoring information including information on water monitoring efforts statewide.

For more information on MWCC visit our website at: http://mtwatersheds.org

MWCC Board Members and staff: Maureen Cole, retired USFS; Ethan Kunard, Madison CD; Casey Hackathorn, TU; Erin Farris-Olsen, MWCC; Eric Trum, DEQ; Katie Makarowski, DEQ; Emily Isaacson, Wipfli; Heather Barber, BRWF; Lindsay Volpe, DNRC; Adam Sigler, MSUEWQ; Jill Feldhusen, MWCC; Amy Seaman, MT Audubon; Torie Haraldson, GCWQD. Not pictured: Keri Bilbo, NRCS; Jennifer Downing, BHWC; Sierra Harris, TNC; Laura Nowlin, MWC; Jennifer Schoonen, Blackfoot Challenge.

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 meets two to three times per year, has an active listserv and website, and welcomes all to participate in the collaborative work of wetland and riparian protection, restoration, and management. The Montana Wetland Council and its partners have developed 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.

A copy of the 2013-2017 State Wetland Plan can be found at:
http://deq.mt.gov/Portals/112/Water/WPB/Wetlands//StategicFramework2013-2017.pdf

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

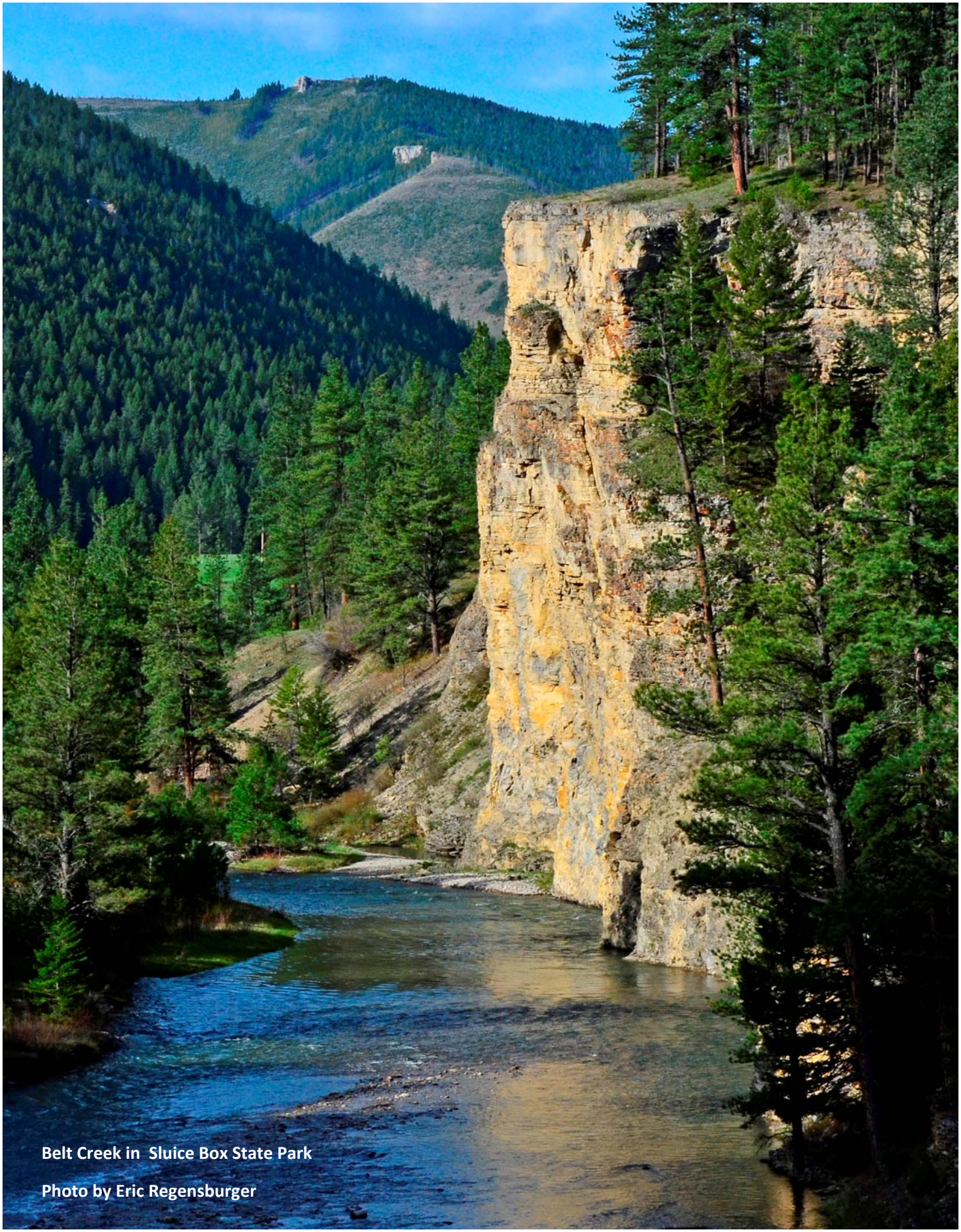
Looking Forward

Montana continues to demonstrate that the Nonpoint Source Management Program is committed to and capable of addressing nonpoint source pollution in Montana and that a voluntary, incentive-based approach works well in this state. The state has many dedicated partnering agencies, non-governmental organizations, and concerned citizens who participate in addressing nonpoint source water pollution.

Priorities for 2017 include:

- Promote the use of conservation and best management practices to protect water quality from nonpoint source pollution;
- Support local watershed groups' capacity building;
- Develop and implement watershed-based TMDLs;
- Support, promote, and accept watershed restoration plans;
- Support implementation of watershed restoration plans;
- Identify and promote nonpoint source success stories;
- Continue working with partners and the public to update the 2012 Nonpoint Source Management Plan in 2017.

A continuing program challenge is the decrease in federal Section 319 funding to Montana. These funds are essential for supporting a clean and healthful environment, and Montana's funds support substantial agency activities, coordination, planning and programs, and on-the-ground projects in communities throughout the state, creating jobs while protecting and restoring Montana's irreplaceable natural resources. Without this funding, the local economies and environments would suffer. Negative effects from the budget cuts for Section 319 may be compounded by possible decreased federal funding to other natural resource agencies, including the NRCS, USFS, and EPA.

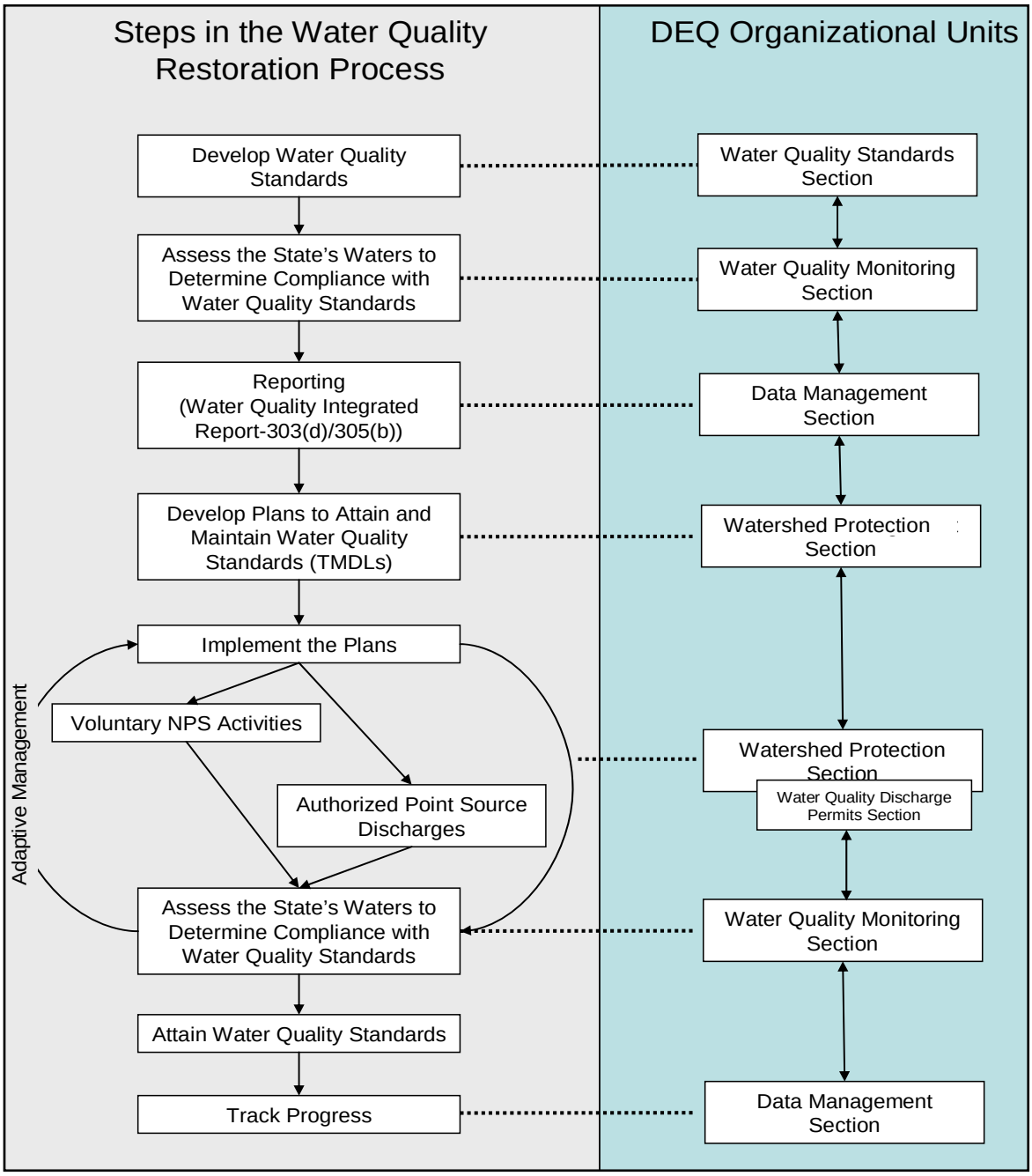


Belt Creek in Sluice Box State Park

Photo by Eric Regensburger

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

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 NPS Management Plan. These actions focus on three specific areas: resource-specific goals, policy-specific goals, and education and outreach-specific goals.

5-year Action Plan for addressing NPS Pollution – Resource Related Actions

No.	*Responsible Party*	*Actions (Outcomes/Objectives)*	*Measurable Milestones/ Outputs*	*2016 Accomplishments*
R1*	DEQ, EPA	Complete Water Quality Improvement Plans (WQIPs) and necessary TMDLs	• At least 500 additional TMDL pollutant-waterbody combinations between 2012 and 2014	• In 2016 TMDL effort was focused on drafting Sheep Creek, Madison, and Otter Creek TMDL documents.
R2*	DEQ	Conduct statewide water quality assessments.	• 130 water quality assessments completed by 2014	• Beneficial use assessment occurred on 40 waterbodies in western MT and appear in the 2016 IR. 303(d)/305b assessment for 350 waterbodies have been completed since 2012, with over 1,450 individual waterbody pollutant combinations assessed. Beneficial use assessment monitoring occurred on 30 waterbodies in the Musselshell watershed in 2016.
R3*	DEQ	Review/update Water Quality Integrated Report (305(b)/303(d))	• Updated reports in 2014 and 2016	• Final 2016 Integrated Report was submitted to EPA the first week of November. EPA approval is expected in January 2017.
R4	DEQ	Re-evaluate the chemical, physical, and biological condition of reference sites	• At least 100 reference sites re-evaluated by 2017	• DEQ continued work on the reference project, which entailed revisiting established reference stream sites around the state to determine if they are still in a reference condition, collecting additional data from established reference sites to enhance existing datasets and to refine water quality standards, carrying out systematic sampling of the network to allow for long-term trend analysis, and identifying a limited number of new reference streams on an as-needed basis. This project will continue in 2017.
R5*	DEQ	Work with watershed groups to develop watershed restoration plans (WRPs)	• 20 DEQ-accepted WRPs by 2017	• DEQ accepted 2 WRPs in 2016 (Lake Helena and Little Blackfoot), and through a contract with SWCDM, supported the development of 6 WRPs (Flathead, Rock, Thompson, St. Regis, Three Mile, and Madison), and the development of a WRP Guidance document.
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	• 8 projects implementing WRPs and 6 watershed restoration projects were funded in 2016. FY2017 319 project proposals were accepted, reviewed, selected, and scopes of work were initiated.

** Indicates a high priority for the NPS Program*

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2016 Accomplishments
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	• Implementation activities occurred in at least 9 TMDL Planning Areas during 2016.
R8*	DEQ	Develop and implement a monitoring strategy for Section 319 restoration activities for effectiveness and pollutant load reductions	• Approved monitoring strategy by 2017	• The Project Effectiveness Report was completed in March 2014.
			• 100% of projects for nutrient and sediment reduction reported to EPA Grant Reporting and Tracking System	• All projects reported for 2016. Created document to facilitate load reduction reporting to GRTS. 4 staff attended GRTS demonstration of current database processes and updates that were implemented in the fall.
R9*	DEQ	Conduct TMDL implementation evaluations	• Complete 20 reviews by 2017	• Two TIE documents in completed in 2016.
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	• DNRCs Forestry BMP 2016 Monitoring Report provides a summary of BMP/SMZ audits and can be found on their website.
R11	DNRC	Work with forest agency partners to develop assessments to ensure BMPs and SMZs are protecting riparian and wetland functions	• Assess BMP and SMZ adequacy for riparian and wetland functions	• DNRC conducted BMP/SMZ audits at 40 sites in the summer of 2016.
R12	DNRC, Plum Creek	Assess the effectiveness of SMZ and HCPs	• Reporting from the resource agencies on SMZ and HCPs by 2017	• Plum Creek's Native Fish Habitat Conservation Plan (30 year agreement between Plum Creek and US Fish and Wildlife Service) completed effectiveness evaluations with the 5 year review that occurred 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 reviewed and commented on 8 outside agency projects in 2016 to request consistency with NPS BMPs.
R14	DEQ	Develop, maintain, and enhance Clean Water Act Information Center (CWAIC online) to provide public access	• System operable and available to public	• CWAIC continues to be maintained and was updated to include the 2016 Integrated Report data.
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 199 water quality data packets from 31 unique monitoring projects 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.

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2016 Accomplishments
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	• IMTS Data Management processed 8 water quality data packets from 6 unique monitoring projects 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	• In 2016, data collection in Canyon Ferry Lake to develop nutrient criteria using a CE-QUAL W2 model was completed. Some additional data will still be collected in 2017 and 2018. Data collection has been completed for the development of nutrient criteria for the upper Yellowstone (Livingston to the confluence of the Big Horn), Middle Missouri (Wolf Creek to Loma) and upper Missouri (Toston dam to Canyon Ferry Lake). A final report for the three-year (2009-2011) nutrient -addition field study carried out in Carter County is complete and available at http://deq.mt.gov/Portals/112/Water/WQPB/Standards/NutrientWorkGroup/PDFs/BoxElderTechRprt_FNL.pdf
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	• Multiple active projects in 2016 include protecting, restoring, or creating riparian buffers to reduce NPS pollution. These projects 214008, 214009, 214012, 216001, 216002, 216003, 216004, 216005, 216030, 216035, 216038 will eventually create 73,460 feet (14 miles) of buffer. Contracts 211072, 215011, 216020, 216022, 216023, 216024 were completed creating 61,205 feet of buffer. (15 miles between 2012 and 2016).
R19	DEQ	Identify watersheds where NPS pollution from AFOs can be reduced	• Identify 3 high-priority watersheds for restoration work by 2017	• No activity in 2016.
R20	DEQ	Encourage additional stormwater quality improvement projects funded through the state revolving fund program	• At least 4 stormwater projects funded by 2017	• Three projects were funded between 2012 and 2016: two in Great Falls, one in Flathead County.
R21*	DEQ	Manage and implement the NPS program in efficient and effective manner, including fiscal management.	• Provide consistent guidance on state reporting requirements	• DEQ uses template language for SOW for contract tasks, this was updated in 2016.
			• Conduct contract "kick-off" meetings	• WPS conducted 14 kick-off meetings with contractors in 2016.
			• Ensure 75% of 319 contracts are closed by initially-agreed date	• 77% of 319 contracts closed in 2016 were completed by the initial contract end date.
			• Refine watershed project field evaluation form	• Completed in 2013.

** Indicates a high priority for the NPS Program*

Beaver influenced wetland complex along Athern Creek, a tributary to the South Fork McDonald Creek, Mussleshell watershed

Photo by Caroline Gill

5-year Action Plan for addressing NPS Pollution – Policy Related Actions				
No.	***Responsible Party***	***Actions (Outcomes/Objectives)***	***Measurable Milestones/ Outputs***	***2016 Accomplishments***
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	• The interagency workgroup developed draft policy for public review and comment, which will be finalized in 2017. In addition to a policy for stream restoration that emphasizes natural stream processes, the work group has advised on an update to the Montana Stream Permitting Guide. The work to update this guide is being funded jointly by DEQ, FWP, and DNRC.
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	• Continued work with NRCS on the National Water Quality Initiative (214008, Deep Creek). Met with NRCS to discuss potential future recipients of NQWI funding.
P3*	DEQ	Develop and implement DEQ water quality improvement MOUs with agencies, including USFS, BLM, DNRC, MDT, NRCS, and MFWP	• 3 MOUs established or revised by 2017	• No new MOUs developed in 2016. Worked with USFS, NRCS, and BLM to implement existing MOUs.

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/ Outputs	2016 Accomplishments
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 with the watershed. MEANSS was not used in 2016 but is available for use in 2017.
P5	DEQ, DNRC, NRCS, irrigation districts, CDs, watershed groups, private landowners	Provide technical and/or financial support for efforts designed to reduce irrigation-induced NPS pollution	• Technical and/or financial support provided to at least 3 projects	• Work in the Musselshell in 2016 will provide future technical support. And 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	• Nutrient standards are being implemented though point source permitting and MAS/TMDL development process.
			• BER-approved nutrient trading policy for point/nonpoint sources	• DEQ has incorporated nutrient trades into 3 MPDES permits. All are municipal wastewater treatment plants that have connected septic systems into their plants.
P7*	DEQ	Develop technical basis for a lake classification system based on nutrient status	• Lake classification system by 2017	• No activity in 2016.
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	• Department of Agriculture identified 5 new pesticides in groundwater in 2016. DEQ and EPA developed proposed criteria for these 5 pesticides and it is currently available for public comment at http:// deq.mt.gov/Water/WQPB/ Standards to be adopted into rule in 2017.
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 activity in 2016.
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	• None reported for 2016.
P11	DEQ	Support improved urban stormwater management and information sharing through the MS4 task force	• Active MS4 task force by 2013	• The cities of Billings, Bozeman, Great Falls, Helena, Kalispell, and Missoula held monthly meetings with stakeholders regarding the Municipal Separate Storm Sewer System (MS4) Montana Pollutant Discharge Elimination System General Permit. DEQ attended these meetings to work cooperatively with the MS4 stakeholders in developing an updated General Permit.

** Indicates a high priority for the NPS Program*

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/ Outputs	2016 Accomplishments
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	• DEQ assesses water quality status and trends in priority areas through fixed station monitoring. QAPPs were developed for the Clark Fork Basin Nutrients Monitoring Network (Avista, UM, and City of Missoula) and Status and Spatial Trend monitoring within Targeted Project Areas (Musselshell and Red Rocks Project Areas).
			• Begin implementation by 2017	• Implementation includes Madison-Missouri River Monitoring (Northwestern); Flathead Basin Monitoring Network (FLBS); Clark Fork Basin Nutrients Monitoring Network (Avista, UM, and City of Missoula); Upper Clark River Metals Monitoring (DEQ Remediation); Status and Spatial Trend monitoring within Targeted Project Areas (Musselshell and Red Rocks Project Areas); Oil and Gas Monitoring in Eastern Montana; Lake Koocanusa and Kootanai River Selenium and Nutrient monitoring (COE and USGS); New World Mine District Metals Monitoring (USFS); Powder River, Rosebud Creek and Tongue River Surface Water Monitoring Network (USGS); Fork Peck Water Quality Monitoring (COE); East Fork of the Poplar River Water Quality Monitoring at the Canadian Border (USGS); USFS Water Monitoring Network that administers their on-the-ground activities; Continuous Water Temperature Monitoring (USGS); Northwest Lakes Volunteer Monitoring Network; and effectiveness monitoring that characterizes water quality improvement resulting from the implementation of restoration projects.
P13	DEQ	Develop guidance for water quality monitoring	• Guidance for monitoring under Section 319 contracts	• DEQ's Guide for Estimating Load Reductions was updated in 2016.
			• QAPP guidance	• No activity in 2016.
			• SAP guidance	• SAP template was updated and an associated guidance document was created.
P14	DEQ, MWCC, MSUEWQ	Provide technical and financial support to volunteer monitoring groups	• Continue funding for laboratory analysis	• DEQ funded lab analysis support for 7 volunteer monitoring groups with DEQ approved SAPs.
			• Provide on-going technical support for development of QAPPs and SAPs	• DEQ staff reviewed 7 SAPs to guide volunteer monitoring efforts. MSUEWC provided support to the Bighorn River Alliance to develop a SAP for their monitoring efforts.
P15	DEQ	Develop a nutrient trading policy that encourages nutrient load reductions consistent with WQIP/TMDLs	• Nutrient Trading Policy and demonstrated effective trades	• DEQ is currently working with several watershed groups in evaluating nutrient trading opportunities.

** Indicates a high priority for the NPS Program*

Wetland program staff preparing to conduct a wetland assessment along Big Sheep Creek near Dell, MT

Photo by Caroline Gill

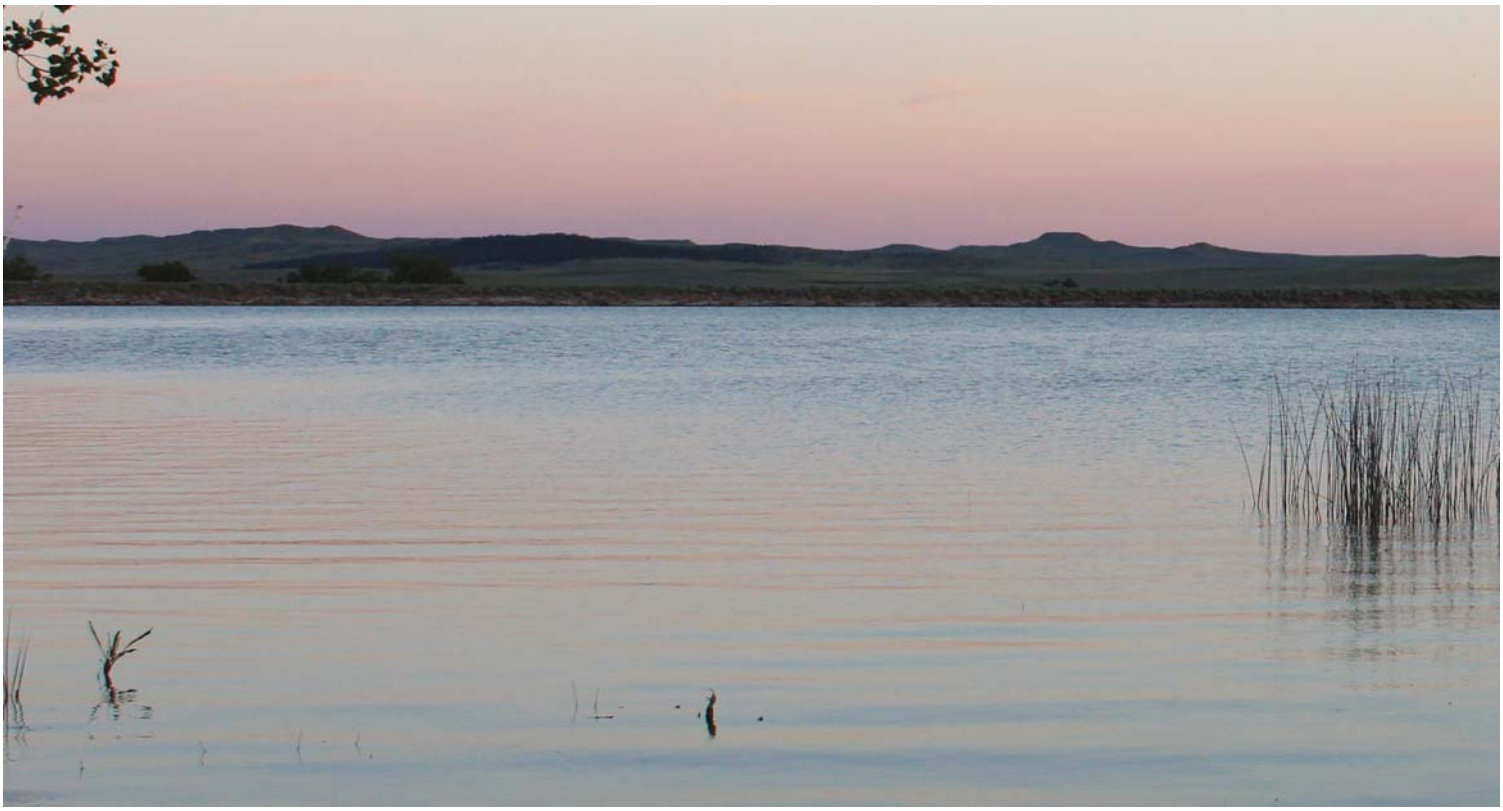
Five-year Action Plan for addressing NPS Pollution – Education and Outreach Actions

No.	*Responsible Party*	*Actions (Outcomes/Objectives)*	*Measurable Milestones/ Outputs*	*2016 Accomplishments*
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	• Funded by the Wetland program, the Flathead Audubon Society held an education field day in Kalispell. 28 high school students worked one-on-one with elementary school students to teach them how to inventory plants and animals at wetlands. The Lewis and Clark County Water Quality Protection District, Water Watchers Program brought nonpoint source pollution education to 11 elementary schools in 2016, reaching 650 students and 91 adults.
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 launched a webinar series as a cost and time saving way to share information. Topics included: State Procurement Guidelines (DEQ), Overview of the Montana Water Information System (MT State Library), Accessing Groundwater Information (MBMG) and Accessing information on MT's Animals, Plants, and Biological Communities (NHP). Webinars are archived on MWCC's website.
			• Annual watershed tour	• DNRC and MWCC Water Activities workgroup hosted a tour of restoration sites near Butte, MT in August.
			• Bi-weekly newsletter	• MWCC published weekly e-news throughout 2016.
			• Coordinate a volunteer water monitoring group to collect water quality data and human-effects info within specific watersheds	• MWCC's Water Committee and Monitoring Work Group advanced the development of a web-based water monitoring resource that will include a summary of entities who perform water monitoring statewide, including volunteer efforts, as well as a Monitoring Resource Library. DEQ wetland program in conjunction with the Natural Heritage Program held 5 wetland plant ID courses across the state to educate professionals. DEQ wetland program in conjunction with Montana Watercourse hosted 2 stream restoration workshops focusing on permitting, techniques, and field exercises.

** Indicates a high priority for the NPS Program*

No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2016 Accomplishments
EO3*	DEQ	Support riparian and wetland buffer education campaigns	• Support 5 county-wide campaigns by 2017	• DEQ funded three videos to promote riparian buffer restoration and protection: Flathead Lakers: Riparian Restoration Promotion, SWCDM and Missouri River CD Council: Ranching for Rivers, MARS: Yellowstone River channel migration zone protection.
EO4	DEQ, MDT, MSU	Promote and support BMP training for road maintenance personnel.	• Compile library of training materials	• No activity in 2016.
			• Bi-annual training for road maintenance personnel	• No activity in 2016.
EO5	DEQ	Develop and deliver multi-media presentations that teach basic concepts in reducing NPS pollution from agricultural sources.	• Develop at least 2 presentations	• No activity in 2016.
			• Deliver each presentation twice by 2017	• No activity in 2016.
EO6	DEQ	Support conferences that address stormwater pollution prevention and control strategies	• Two stormwater conferences held between 2012 and 2017	• No activity in 2016.
EO7	DEQ	Identify and/or develop monitoring and assessment methods for private landowners to inform land management decisions	• Develop self-assessment tool for private landowners by 2017	• Continued to distribute the On-Site Guide for Livestock Operators at NRCS offices, State Water Plan meetings and the MACD Annual Convention.

** Indicates a high priority for the NPS Program*



No.	Responsible Party	Actions (Outcomes/Objectives)	Measurable Milestones/Outputs	2016 Accomplishments
EO8	DEQ, MWCC, MSUEWQ	Provide training opportunities for volunteer monitors	• Training provided to 10 watershed groups by 2017	• Montana Watercourse provided trainings to: Exploration Works/Clancy Stream Team - trained middle school students to collect physical and chemical water quality data and conducted a river cleanup, Broadwater CD/Townsend Stream Team - trained middle school students to collect macroinvertebrate data, Earth Elements - trained adults to collect physical and chemical water quality data and conducted a river clean up. DEQ provided QAQC training to the Gallatin Stream Team.
EO9	DNRC, Montana Logging Assoc., and MSU Forestry Extension	Promote and conduct forestry BMP and stewardship educational workshops and programs	• Annual BMP/SMZ education workshops for loggers and landowners	• The Montana Logging Association held 4 BMP/SMZ workshops. Together, 198 participants learned about forestry best management practices, and how to apply Montana's Streamside Management Zone laws.
			• Forest stewardship program targeting small landowners throughout Montana	• The Montana DNRC employs 16 service foresters around the state who are available for free, one-on-one consultations with landowners. Service foresters can help landowners develop a forest stewardship or management plan, understand and comply with forest practice laws and rules, identify insects, diseases and treatment options, learn forest fire prevention and the importance of defensible space, connect with cost-share assistance, plan and complete a timber sale, and market timber and non-timber forest products.

Petrolia Lake near Winnett, MT

Photo by Caroline Gill

Appendix C – Fiscal Year 2016 Section 319 Project Awards

Project Name	Project Sponsor	DEQ Project Officer	DEQ Contract Number	319 Funds	Non-Federal Match Funds	Total Project Cost
Watershed Restoration Projects						
Big Sky Watershed Support	Montana Watershed Coordination Council	Robert Ray	216028	$ 83,000	$ 56,000	$ 139,000
Lake Helena WRP Implementation Project	Lewis & Clark County Water Quality Protection District	Mark Ockey	216029	$ 65,750	$ 43,835	$ 109,585
Mandeville Creek Restoration and Education	Bozeman School District No. 7	Mark Ockey	216030	$ 146,000	$ 100,000	$ 246,000
Tobacco River Restoration Project Phase 1	Lincoln Conservation District	Eric Trum	216031	$ 288,996	$ 192,664	$ 481,660
Dyce Creek Stream Crossing Replacement	Beaverhead Conservation District	Mark Ockey	216032	$ 10,000	$ 7,000	$ 17,000
Upper Lolo Creek Sediment Reduction Project Phase 2: Implementation	Clark Fork Coalition	Katie Steele	216033	$ 117,960	$ 81,000	$ 198,960
FY 2016 Education and Outreach Mini-Grants	Soil and Water Conservation Districts of Montana	Katie Steele	216034	$ 30,000	$ 20,000	$ 50,000
Lilly Orphan Boy Reclamation and Telegraph Creek Restoration	Trout Unlimited	Eric Trum	216035	$ 32,000	$ 29,000	$ 61,000
Ramshorn Creek Restoration Project	Ruby Valley Conservation District	Mark Ockey	216038	$ 120,000	$ 80,000	$ 200,000
			Total	**$ 892,706**	**$ 609,499**	**$1,503,205**

Appendix D – Section 319 Projects Closed in 2016

Contract Number	Contractor	Project Name	Amount Expended	Final Payment Date	Closed on initially agreed date
211072	Lewis & Clark County Water Quality Protection District	Lake Helena Watershed Restoration Project	$ 180,370	3/1/2016	No
212058	Ruby Valley Conservation District	Miller Ranch Ruby River Channel Restoration	$ 103,728	6/21/2016	No
212063	Montana Salinity Control	Belt Creek Acid Mine Discharge-Recharge Area Identification	$ 104,408	6/21/2016	No
213033	Trout Unlimited	Upper Ninemile Creek Mine Reclamation	$ 361,251	8/8/2016	Yes
214010	Soil and Water Conservation Districts of Montana	319 Education and Outreach Mini-Grant Program, FY2014	$ 25,000	6/21/2016	Yes
215008	Kootenai River Network	Kootenai River Basin WRP	$ 20,000	1/13/2016	Yes
215043	Trout Unlimited	Developing Little Blackfoot WRP	$ 12,629	3/21/2016	Yes
216006	Clark Fork Coalition	Upper Lolo Creek Sediment Reduction Project Phase 1—Project Planning and Design	$ 25,450	10/4/2016	Yes
216020	Madison Conservation District	Reducing Sediment/Siltation to Jack Creek through Construction of Bioengineered Bank Stabilization Project	$ 20,000	6/9/2016	Yes
216022	ZooMontana	Bank Stabilization Demonstration at ZooMontana	$ 24,667	6/9/2016	Yes
216023	Soil and Water Conservation Districts of Montana	Ranching for Rivers Pilot Program	$ 50,000	8/4/2016	Yes
216024	Judith Basin Conservation District	Judith Basin County Stream Health Project	$ 73,600	6/29/2016	Yes
216025	Trout Unlimited	Tramway Creek Mining Complex Source Assessment	$ 30,000	8/5/2016	Yes

Appendix E – Section 319 Mini-Grant Projects Awarded in 2016

Contract	Project Sponsor	Project Title	Award
Mini-Grants Awarded in Spring 2016 by SWCDMI (DEQ contract #216007)			
SWCDMI-MG15-07	Bitterroot College University of Montana	Bitterroot Water Symposium 2016	$1,992
SWCDMI-MG15-08	Blackfoot Challenge	Blackfoot Citizen Science & Stream Monitoring Program	$2,000
SWCDMI-MG15-09	Flathead Lakers	Riparian Restoration Promotion Video	$2,000
SWCDMI-MG15-10	Green Mountain Conservation District	"Working for Your Watershed" Educational Handout	$2,000
SWCDMI-MG15-11	Lolo Watershed Group	Settling of Sediments: Educating Students about Lolo Creek Sediment	$2,000
SWCDMI-MG15-12	Petroleum Conservation District	Musselshell River Citizen-Based Water Quality Monitoring	$2,000
Mini-Grants Awarded in Fall 2016 by SWCDMI (DEQ contract #216034)			
SWCDMI-MG16-01	Bitter Root Water Forum	Drought Resiliency Dialogue	$2,000
SWCDMI-MG16-02	Lake County Conservation District	The SENSE-sational Sandbox: Watershed Visualization Project	$2,000
SWCDMI-MG16-03	Madison Conservation District	Watershed Unit, Ennis Schools	$1,000
SWCDMI-MG16-04	Petroleum Conservation District	Musselshell River Citizen-based Water Quality Monitoring	$2,000
SWCDMI-MG16-05	Whitefish Lake Institute	Filling the Conservation Educators Toolbox	$2,000
Calendar Year 2016 Total			**$20,992**

Appendix F—Volunteer Monitoring Lab Analysis Support Grants in 2016

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: continue to record baseline data on the Gallatin River and its tributaries; assess the success and failures of the Upper West Fork Nitrogen and Sediment Reduction Project and future restoration projects; determine if road salt and sand from winter maintenance activities have an impact on water quality, and to; determine if algal uptake during the growing season may be masking any potential long term effects of nutrient loading as a result of the Yellowstone Club Wastewater Effluent Spill. The following	$852

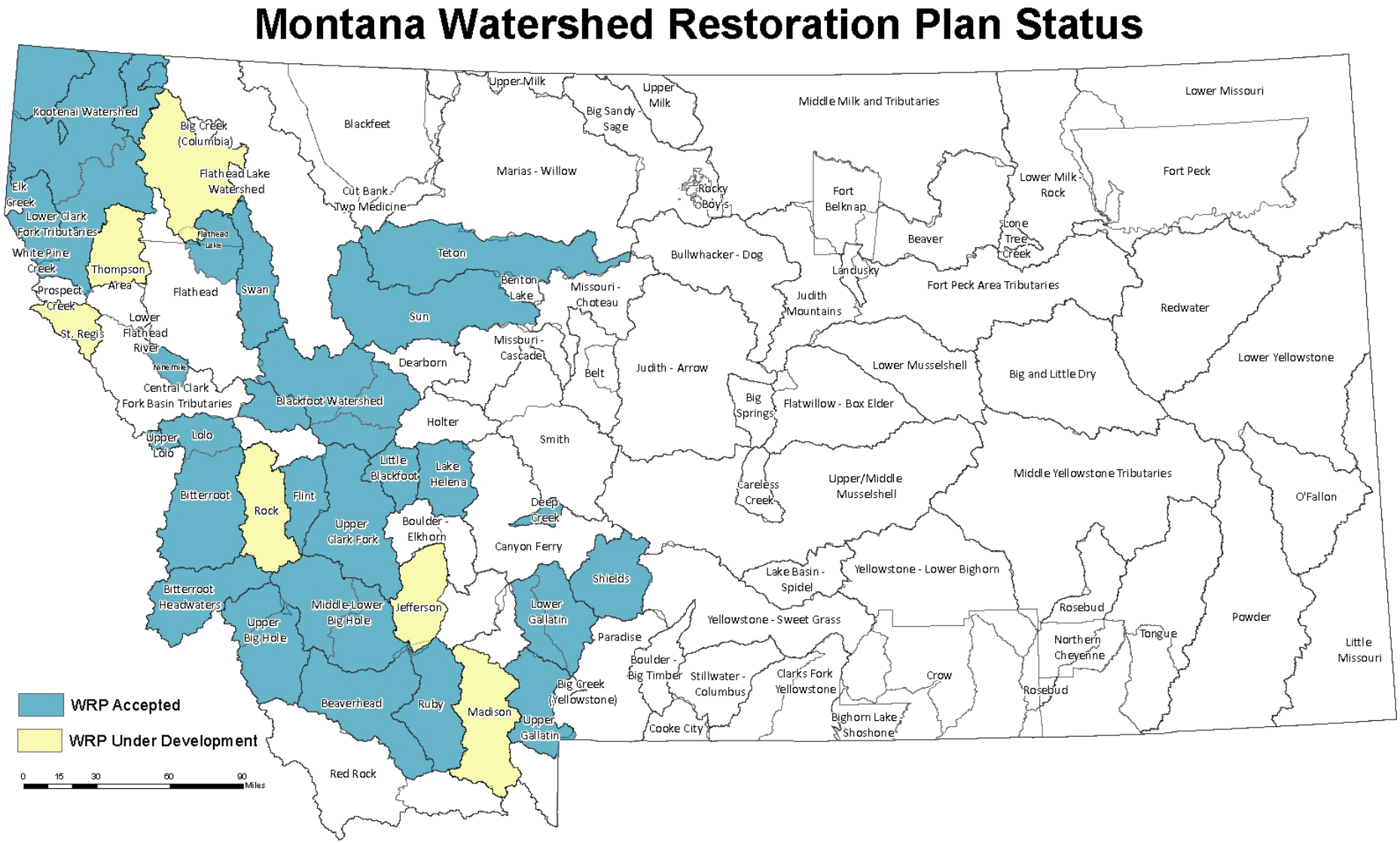
		parameters were monitored at 16 sites within the watershed: temperature, conductivity, turbidity, pH, chloride, total nitrogen, nitrate + nitrite, total phosphorus, sediment, total coliform, E. coli, and dissolved oxygen. Chlorophyll-a was collected from 6 sites.	
Little Bitterroot Lake Association and WET	Little Bitterroot Lake Eutrophication Study of 2016, Marian, MT	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 during the month of August.	$1,535
Lake Helena Watershed Group	Lake Helena Watershed Volunteer Monitoring	Nine sites were sampled in the spring and fall for the following parameters: TSS, TDS, Hardness, Total Persultate Nitrogen (TPN), Nitrate+Nitrite –Nitrogen, Metals Digestion, Total Recoverable Metals (AS,Cd, Ca,Cu, Pb, Mg, and Zn). The parameters were selected to address water quality questions such as excess nutrients, metals, and to fill data gaps associated with TMDL's in the watershed.	$1,010
Madison Conservation District	Madison Stream Team	Three streams were selected based on their impairment status on the most recent 303(d) list, as well as the historic nature of the monitoring that has occurred on the streams. The sites selected bracket particular areas that are suspected to be sources of nutrients from DEQ and Madison Stream Team monitoring in previous years. The water chemistry parameters collected included total persulfate nitrogen, nitrate + nitrite-nitrogen, and total phosphorus. Field parameters collected included temperature, dissolved oxygen, conductivity, pH, turbidity, and discharge.	$1,923
Smith River Habitat Program	Smith River Habitat Project Volunteer Water Monitoring Program	SRHP's 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. Eight sites were sampled in the spring and 5 sites were sampled in the fall for the following parameters: TSS, TDS, TPN, P, Nitrate-Nitrite as N, As, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Zn, Se, and Ag.	$2,375
Sun River Watershed Group	2016 Volunteer Monitoring Project	The project was based on maintaining a long running data set and is based on previous monitoring efforts. Monitoring was performed at 6 sites on the Sun River and tributaries. Sites were sampled in August, September, and October for TSS, Nitrate+Nitrite, Total Nitrogen, and Total Phosphorus.	$1,020
Upper Missouri Watershed Alliance	Study of the Mainstem of the Upper Missouri River: Macroinverte-brates, Aquatic Plants, and Water Chemistry	The goal of this project was to collect baseline data in macroinvertebrate populations, aquatic flora, and water quality to assess trends affecting the overall health of the river. Seven sites were sampled three times for the following parameters: TSS, TDS, TPN, P, Nitrate-Nitrite as N, As, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Zn, Se, and Ag.	$2,250

Appendix G—Watershed Restoration Plan Status

WRP	Sponsor	Funding	WRP Status
Beaverhead	Beaverhead Watershed Committee	2010 TMDL 319 (contract 210140)	ACCEPTED (February 2014)
Big Fork	Flathead County	2009 319 (contract 209064)	NOT ACCEPTED. Completed, however, county unable to address DEQ's comments on addressing area sources & actions.
Big Spring	Fergus County Conservation District and Big Spring Creek Watershed Council	2008 319 (contract 208028)	NOT ACCEPTED. Not intended to be a complete WRP; final product submitted does not meet all 9 minimum elements.
Bitterroot	Bitter Root Water Forum	2012 319 (contract 212054)	ACCEPTED (April 2014)
Blackfoot River	Blackfoot Challenge	2012 319 (contract 212055)	ACCEPTED (December 2014)
Clearwater River	Clearwater Resource Council	2009 319 (contract 209066)	Not complete WRP; preliminary research done; no plans for writing actual WRP yet.
Deep Creek	Broadwater Conservation District	2013 Purchase Order	ACCEPTED (January 2014)
Flathead	Flathead Conservation District	2016 319 (contract 216009 with SWCDM)	Under development
Flathead Lake	Flathead Lakers	2012 319 (contract 212061)	ACCPETED (December 2014)
Flint Creek	Flint Creek Watershed Group	2009 TMDL 319 (contract 209074)	ACCEPTED (June 2014)
Kootenai River Basin	Kootenai River Network, Inc.	2010, 2012, 2013 319 (contract 215008)	ACCEPTED (December 2015)
Lake Helena	Lake Helena Watershed Group/Lewis & Clark Water Quality Protection District	2011 319 (contract 211072)	ACCEPTED (January 2016)
Little Blackfoot	Trout Unlimited	2010, 2011 319 (contract 215043), 2013 319 (contract 213029)	Metals: ACCEPTED (November 2014) Sediment and Nutrients addendum: ACCEPTED (February 2016)
Lolo Creek	Lolo Watershed Group	2009 TMDL 319 (contract 209075)	ACCEPTED (March 2013)
Lower Clark Fork TMDL Planning Area	Lower Clark Fork Watershed Group	2005, 2009 319, 604(b) funding	ACCEPTED (October 2010)
Lower Gallatin	Greater Gallatin Watershed Council	2013 319 (contract 213025)	ACCEPTED (December 2014)
Madison River	Madison Conservation District	604b	Under Development
Middle and Lower Big Hole Watershed	Big Hole Watershed Committee	2010 319 (contract 210109)	ACCEPTED (September 2013)
Ninemile Creek TMDL Planning Area	Trout Unlimited	2011 319 (contract 212059)	ACCEPTED (February 2013)
Rock	Trout Unlimited	2016 319 (contract 216009 with SWCDM)	Under Development
Ruby	Ruby Watershed Group	2007 319 (contract 207042)	ACCEPTED (July 2015)
Shields River Watershed	Park Conservation District	2009 319 (contract 209063)	ACCEPTED (September 2012)
Sun River	Sun River Watershed Group	2009 319 (contract 209065)	ACCEPTED (February 2012)
St. Regis	Trout Unlimited	2016 319 (contract 216009 with SWCDM)	Under Development
Swan Basin	Swan Ecosystem Center	2007, 2008, 2009 319 (contract 209068)	ACCEPTED (October 2010)
Teton River	Teton Watershed Group	2009 319 (contract 209062)	ACCEPTED (October 2012)
Three Mile Watershed	Missoula Water Quality Protection District	2016 319 (contract 216009 with SWCDM)	Under Development
Thompson	Lower Clark Fork Watershed Group	2016 319 (contract 216009 with SWCDM)	Under Development

Thompson	Lower Clark Fork Watershed Group	2016 319 (contract 216009 with SWCDM)	Under Development
Upper & North Fork Big Hole Watershed	Big Hole Watershed Committee	2009 319 (contract 209061)	ACCEPTED (December 2012)
Upper Clark Fork River Tributaries	Watershed Restoration Coalition	2007 TMDL 319	ACCEPTED (December 2012)
Upper Gallatin River	Blue Water Task Force	2009 TMDL 319 (contract 209078)	ACCEPTED (September 2012)
Upper Jefferson	Jefferson River Watershed Council	2010 TMDL 319 (contract 210128)	Final Draft Submitted. In draft form spring 2011

Appendix H—Watershed Restoration Plan Status Map



1520 East Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901
Phone: 406.444.6697
Fax:406.444.6836
www.deq.mt.gov

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