

# Wyoming

## Nonpoint Source Program

### 2014 Annual Report

*The goal of the Wyoming Nonpoint Source Program is: To identify sources of nonpoint source pollution to surface water and ground water of the State of Wyoming and to prevent and reduce nonpoint source pollution such that water quality standards are achieved and maintained. The program works through a set of overarching principles that emphasize voluntary and incentive-based participation, locally-led projects, partnerships, measurable water quality improvement, and effective and efficient program administration.*



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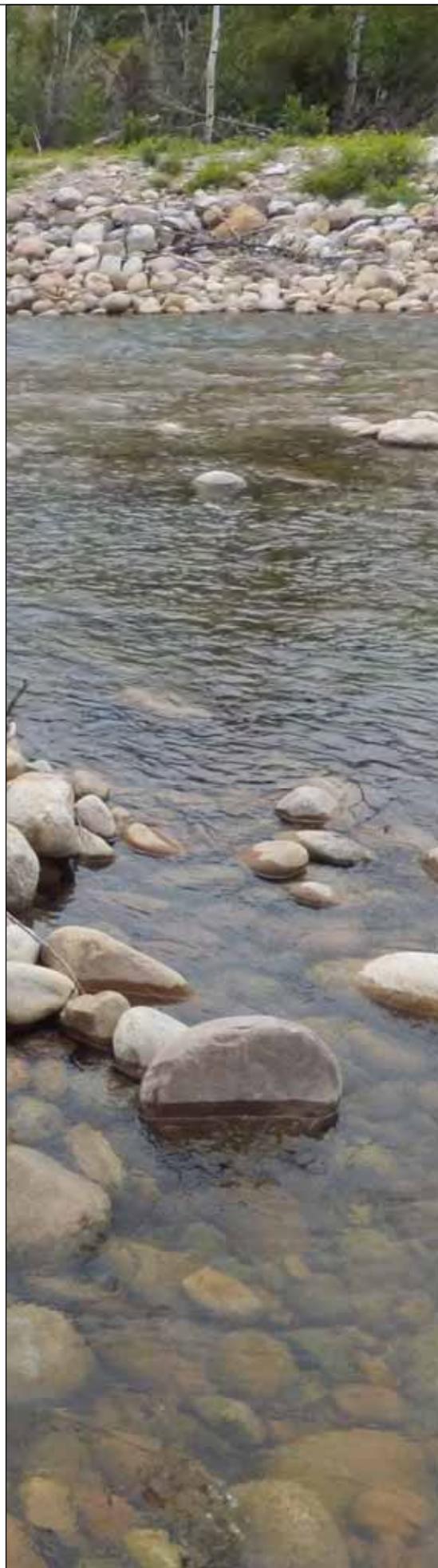
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## **Acknowledgements**

This report was prepared by Jennifer Zygmunt, Nonpoint Source Program Coordinator with the Water Quality Division (WQD) of the Wyoming Department of Environmental Quality (WDEQ). Input and review were provided by other WQD personnel, primarily Watershed Protection Program staff, as well as partnering agencies and organizations. Keith Guille, Public Information Officer for the WDEQ, provided assistance with formatting and publishing this report. Photos, maps, and graphics used in this report were provided by WDEQ staff unless otherwise noted.



## Wyoming Nonpoint Source Program Fact Sheet—Federal Fiscal Year 2014

<b>Summary of FY14 Program Activity</b>	
Date FY14 Section 319 Project Grant Award:	<i>March 24<sup>th</sup>, 2014</i>
Amount of FY14 Section 319 Project Grant:	<i>\$807,000</i>
Amount FY14 Project Funds:	<i>\$765,930</i>
Amount FY14 Program Funds:	<i>\$41,070</i>
FY14 Third-Party Projects Awarded:	<i>Sheridan County Conservation District—Sheridan County Watershed Improvements #4</i>
	<i>Powell Clarks Fork Conservation District—PCFCD Water Quality Improvements</i>
	<i>Washakie County Conservation District—Bighorn-Slick Creek Watershed Implementation Program</i>
	<i>The Nature Conservancy—2<sup>nd</sup> Annual Cody Wild West River Fest</i>
	<i>Wyoming Natural Resource Foundation—Statewide Nonpoint Source Information/Education</i>
Total # Active 319 Projects in FY14:	<i>25</i>
FY14 Total Pollutant Load Reduction Estimates:	<i>Sediment: 362.8 ton/yr.</i>
	<i>Phosphorus: 822.9 lb./yr.</i>
	<i>Nitrogen: 7,176.0 lb./yr.</i>
	<i>E. coli: 8.86E+12 MPN/yr.</i>
Summary of BMPs implemented in FY14:	<i>34 off-channel water sources(including 11 solar or electric pumps, 7 springs developed, 37,470' pipeline); 6,206' riparian fence; 2 water gaps; 2.4 mi streambank stabilized; 15 acres aspen regeneration; 43 acres conifer encroachment treated; 4 septic system rehabilitations; 1 windbreak</i>
<b>Summary of Program Activity From FY99-FY14</b>	
Total number of third-party projects:	<i>141</i>
Total grant funds expended/obligated on third-party projects:	<i>\$16,742,142</i>
Total non-federal match expended/obligated on third-party projects	<i>\$15,587,500</i>
Total number of project sponsors:	<i>52</i>
Project Sponsor type with highest percentage of projects sponsored:	<i>Conservation Districts (52%)</i>
Funds spent/obligated on BMP Implementation projects:	<i>\$11,662,064 (58%)</i>
Funds spent/obligated on Planning/Assessment projects:	<i>\$1,957,571 (10%)</i>
Funds spent/obligated on Information/Education projects:	<i>\$1,925,481 (10%)</i>
Funds spent/obligated on Groundwater projects:	<i>\$1,162,679 (10%)</i>
Funds spent/obligated on TMDL development projects:	<i>\$2,026,262 (7%)</i>
Funds spent/obligated on WDEQ staffing and support projects:	<i>\$1,383,437 (5%)</i>
Number of EPA Approved Stream Restoration Success Stories To-Date ( <a href="http://www.epa.gov/owow/NPS/success/">http://www.epa.gov/owow/NPS/success/</a> )	<i>9 Full Restoration Success Stories for 12 stream segments plus 1 Ecological Restoration success story for 1 segment</i>

## **Purpose of this Report**

The purpose of this report is to provide a summary of the activities and accomplishments of the Wyoming Nonpoint Source (NPS) Program for federal fiscal year 2014 (FY14), which began October 1, 2013 and ended September 30, 2014. This report is also prepared to meet requirements of Section 319(h)(11) of the Clean Water Act (CWA) which requires that States report annually on (1) progress in meeting the schedule of milestones contained in their nonpoint source management programs, and (2) reductions in nonpoint source pollutant loadings and improvements in water quality resulting from program implementation. This report is also prepared to educate the public about nonpoint source pollution in Wyoming and actions being taken to address it at local, state, and federal levels.



## **Nonpoint Source Pollution and Wyoming**

Nonpoint sources of pollution continue to be recognized as the nation's largest remaining cause of surface water quality impairments. The effects of nonpoint source pollution can be seen within the lakes, streams, and rivers of Wyoming. The three nonpoint source pollutants causing the majority of Wyoming's surface water quality impairments are pathogens, sediment, and selenium.

## **What is Nonpoint Source Pollution?**

*Unlike point source pollution, which can be traced back to a single defined source, nonpoint source pollution is caused by surface water runoff that is diffuse in nature and often widespread, making it difficult to assess the source of the problem. Nonpoint source pollution occurs when runoff from rainfall or snowmelt travels over and/or percolates through the ground and picks up contaminants. These contaminants are deposited into streams, lakes, rivers, and ground water. Nonpoint source pollution is generally associated with human land-disturbing activities such as urban development, construction, agriculture, recreation, timber harvesting, and mineral exploration. Common nonpoint source pollutants include fertilizers and pesticides from agricultural and residential activity; oil, grease, and toxic chemicals from urban runoff; sediment from construction activity or stream bank erosion; and bacteria and nutrients from livestock and pet waste or failing septic systems.*

## **About the Wyoming Nonpoint Source Program**

As part of the Watershed Protection Program of the Wyoming Department of Environmental Quality (WDEQ), Water Quality Division (WQD), the goal of the Wyoming Nonpoint Source Program is: ***To identify sources of nonpoint source pollution to surface water and ground water of the State of Wyoming and to prevent and reduce nonpoint source pollution such that water quality standards are achieved and maintained.*** The program works through a set of overarching principles that emphasize voluntary and incentive-based participation, locally-led projects, partnerships, measurable water quality improvement, and effective and efficient program administration. Detailed information about Nonpoint Source Program management is available in the Wyoming Nonpoint Source Management Plan (2013 Update) which can be accessed on the [Nonpoint Source Program website](#). This report provides information about how the Nonpoint Source Program is making progress according to the objectives established in the updated Nonpoint Source Management Plan.



### **What Kind of Funding is Available through the Nonpoint Source Program?**

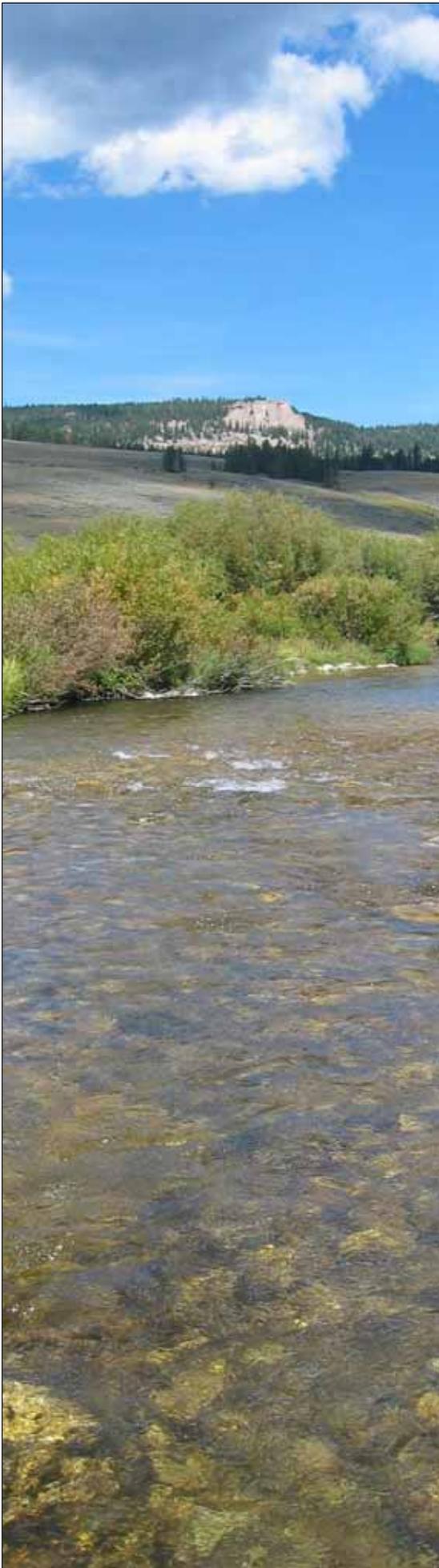
Through the NPS Program, CWA Section 319 grant funds can be made available to agencies and organizations to implement projects that prevent or reduce nonpoint source pollution and improve water quality. Section 319 grant funds are available each year on a competitive basis. Funds are awarded as reimbursement grants, meaning funds can be issued to the recipient only after proof of expenditure on eligible costs. All proposals submitted must identify at least 40 percent of the total project cost as non-federal cash or in-kind services match. An annual Request for Proposals is usually issued in the spring or early summer of each year. Additional information, including information about eligibility, program priorities, and the application process, can be obtained on the program's website at: <http://deq.wyoming.gov/wqd/non-point-source/> or by contacting the NPS Program at 307-777-6080.

### **The Nonpoint Source Task Force**

*The NPS Task Force is a 13 member board of Governor-appointed citizens representing various industries and public interest groups across the state. The Task Force provides oversight for the NPS Program by contributing valuable input for the program. Specifically, the Task Force assists with amendments to the Wyoming Nonpoint Source Management Plan, the revision and adoption of Best Management Practices, and the review, prioritization, and recommendation of funding for nonpoint source water quality improvement projects. Current members of the Task Force and their represented interests are as follows:*

**Bill Alldredge**—Wildlife  
**Bob Baumgartner**—Conservation Districts  
**Robert Brug**—Conservation Districts  
**Paula Hunker**—Environment  
**Bob Dundas**—Oil and Gas Industry  
**Ben Wudtke**—Timber Industry  
**Linda Hamilton**—Sheep Industry  
**Brenda Schladweiler**—Environment  
**Carson Engelskirger**—Recreation and Travel  
**Mark Lindstrom**—Public at Large  
**Lisa Kimsey**—Cattle Industry  
**Mark Pepper**—Local Government  
**Corey Forman**—Cropland

*For more information about appointment to the Task Force, please contact the NPS Program at 307-777-6080 or the Governor's Office at 307-777-5461.*



## **FY14 Section 319 Project Summary**

The majority of water quality improvement work accomplished by the Nonpoint Source Program is funded through CWA Section 319 grants awarded to the State by the Environmental Protection Agency (EPA). Wyoming received \$807,000 of Section 319 funds in the FY14 allocation for project implementation. In addition, the WDEQ provided \$66,693 of state Supplemental Environmental Project (SEP) funds for nonpoint source pollution reduction projects in FY14. The Section 319 and SEP funds were passed through to third-parties to implement water quality improvement projects. Projects were selected through a competitive proposal process. Project proposals were reviewed by the Nonpoint Source Program and the Nonpoint Source Task Force. A total of five proposals were received; the Nonpoint Source Task Force recommended funding to all five projects:

- Powell Clarks Fork Conservation District—***PCFCD Water Quality Improvements***
- Sheridan County Conservation District— ***Sheridan County Watersheds Improvements #4***
- Washakie County Conservation District— ***Bighorn-Slick Creek Watershed Implementation Program***
- Wyoming Natural Resource Foundation—***Statewide Nonpoint Source Information/Education***
- The Nature Conservancy— ***2<sup>nd</sup> Annual Cody Wild West River Fest***

All of the five projects recommended for FY14 funding received a signed cooperative agreement and began project implementation in FY14. Summaries of each of FY14's new projects are provided throughout this report. In addition to the new projects in FY14, there were a total of 21 Section 319 projects that were already ongoing during FY14. Appendix A provides a summary of FY14 Section 319 project activity and notes the six third-party projects that closed in FY14. All closed third-party projects were completed successfully with a final report submission. Summaries of closed third-party projects are provided in Appendix B. Additional information on individual Section 319 projects can be found in the EPA [Grant Reporting and Tracking System](#) (GRTS).

## **Accomplishments of the NPS Program during FY14**

In the Wyoming Nonpoint Source Management Plan, the Nonpoint Source Program established nine objectives that specifically identify the strategies by which the program will achieve its goal of reducing nonpoint source pollution within the state. Through the accomplishments highlighted in the following sections, the Nonpoint Source Program worked during FY14 to make progress towards meeting each of the nine objectives.

## **Objective #1: Identification and Prioritization**

*The WDEQ will continue to gather and use credible data to accurately and efficiently identify those surface waters of the state whose designated uses are determined to be threatened or impaired due to nonpoint source pollution. Those waters determined to be impaired or threatened by nonpoint source pollution will then be prioritized by the Nonpoint Source Program for restoration efforts.*

- The WQD Monitoring Program continued to gather surface water quality data in accordance with the established [2010-2019 Monitoring Strategy](#). Information about work conducted during the 2014 monitoring season was outlined in the [2014 Water Quality Monitoring Annual Work Plan](#).
- The WQD Monitoring and Standards Programs completed a second year of collecting nutrient and associated response variable data on lakes and reservoirs within the Wyoming Basin. Data from this study will be used to develop numeric nutrient criteria for lakes and reservoirs within this ecoregion. A total of 41 lakes/reservoirs in the Wyoming Basin ecoregion were sampled in 2014. The Monitoring and Standards Program began analyzing available lake/reservoir nutrient data for development of numeric nutrient criteria in 2014.
- The WQD Standards Program held the first Wyoming Nutrient Work Group meeting in March 2014 to begin facilitation of stakeholder participation in the development of numeric nutrient criteria and potentially a nutrient reduction strategy.
- The WQD Monitoring Program completed assessment reports on North Fork Crazy Woman Creek, North Piney Creek, and South Fork Fish Creek in 2014.
- “Wyoming’s Methods for Determining Surface Water Quality Condition and TMDL Prioritization” were updated in April 2014. Important revisions were made to clarify Sampling and Analysis Plan (SAP) and Quality Assurance/Quality Control requirements for monitoring conducted to collect data for designated use support determinations. The Nonpoint Source and Quality Assurance/Quality Control Programs assisted Conservation Districts with updates to SAPs.
- For the last five years, WQD has been working with the public to develop a Categorical Use Attainability Analysis for Recreation to identify streams in the state where primary contact recreation is not an attainable or existing use. On August 20, 2014, the Water Quality Division Administrator made a final determination regarding the recreation designated uses changes. The designations have been submitted to the Environmental Protection Agency for approval.
- During FY14, the Nonpoint Source Program continued to work on the development of the Impaired Waters Index (IWI) database and mapping tool. The database was updated with best management practice information for select projects.

### **New FY14 Project: Powell Clarks Fork Conservation District Water Quality Improvements**

This project, sponsored by the Powell Clarks Fork Conservation District (PCFCD), was awarded \$264,375 to begin implementing best management practices (BMPs) outlined in the Shoshone River TMDLs Implementation Plan. PCFCD will work to reduce bacteria loading to the Shoshone River and tributaries by addressing failing rural septic systems, small acreage irrigation practices, and small acreage livestock watering. This project will also conduct surface water quality monitoring to evaluate long term trends and, where possible, evaluate the effectiveness of specific BMP types. The project will also provide education regarding septic system maintenance, small acreage rural living, irrigation practices, and small acreage animal feeding operations.



*Photo credit: Powell Clarks Fork Conservation District*

## Objective #2: Planning

*The WDEQ will continue to work with local stakeholders to develop and promote the development of tools that provide an accurate, efficient, and comprehensive plan on how the impairments to priority waters identified in Objective #1 will be addressed. This includes the development of EPA-approved Total Maximum Daily Loads (TMDLs) and the development of watershed-based plans that meet all of EPA's Nine Key Elements for Watershed-Based Planning.*

- The Nonpoint Source Program continued to support TMDL development during FY14 with Section 319 funding and technical assistance. TMDLs help provide the nine key planning elements required by EPA before the majority of Section 319 funds can be allocated to restoration projects. The WQD continued to require that TMDLs funded through Section 319 grants include an implementation plan that incorporates these nine planning elements. The TMDL Program continued to facilitate significant public involvement throughout TMDL development and to outreach to local organizations and agencies to encourage participation in the process. Table 1 provides the current status of nonpoint source TMDL development in Wyoming. Additional information about TMDL development is available on the [TMDL Program Website](#).
- The Blacks Fork/Smiths Fork TMDL project was completed. *E. coli* TMDLs were developed for two segments of the Blacks Fork River and two segments of the Smiths Fork River. An implementation plan meeting watershed-based planning requirements was completed as part of the project.
- The Bear River TMDL Project was completed. One sediment TMDL was developed for a segment of the Bear River. An implementation plan meeting watershed-based planning requirements was completed as part of the project.
- *E. coli* TMDLs for four additional waterbodies in the Big Horn River Basin were completed.
- The Salt River TMDL Project was initiated. This project will develop *E. coli* TMDLs for one segment of the Salt River and one segment of Stump Creek.
- The Nonpoint Source Program also continued to support development of watershed-based plans that local watershed groups chose to write in advance of TMDL development. Table 2 provides a current summary of watershed-based plan development in Wyoming.
- Nonpoint Source, TMDL, and Monitoring Program staff assisted the Wyoming Association of Conservation Districts (WACD) and Sublette County Conservation District with the development of the Little Sandy River Watershed-Based Plan. This included providing assistance with data analysis, modeling, and evaluating potential restoration activities.
- TMDL Program staff continued training on the Hydrologic Simulation Program Fortran/Better Assessment Science Integrating Point and Nonpoint Sources (HSPF/BASINS) modeling system for TMDL development.
- TMDL Program staff began development of *E. coli* TMDLs for Bitter and Killpecker Creeks using HSPF/BASINS.
- The WQD Monitoring and TMDL Programs implemented a project to evaluate past restoration efforts in the Willow Creek watershed (Green River Basin) to gather credible data to determine whether an impaired segment of Willow Creek is now meeting water quality standards.
- The NPS Task Force recommended one water quality management planning project for funding in FY14 (see page 22). Campbell County Conservation District was awarded CWA 205(j) grant funding to pilot Microbial Source Tracking monitoring techniques in the Little Powder River watershed.
- Funds were provided to Wyoming Wildlife—The Foundation to prepare a stream restoration plan on a segment of the East Fork Wind River near Dubois, WY.
- Two planning and assessment Section 319 projects were active in FY14 (see Appendix A). One of these projects was successfully completed in FY14 (see Appendix B).

Table 1. Current status of TMDL development in Wyoming (only TMDLs involving nonpoint source pollution are shown).

TMDL Project	# TMDLs	Status
<i>Ocean Lake</i>	<b>1</b>	<i>Completed; EPA approved 12/09</i>
<i>Goose Creek Watershed</i>	<b>13</b>	<i>Completed; EPA approved 9/10</i>
<i>Belle Fourche River Watershed</i>	<b>7</b>	<i>Completed; EPA approved 12/13</i>
<i>North Platte River Selenium</i>	<b>11</b>	<i>Completed</i>
<i>Crow Creek</i>	<b>10</b>	<i>Completed; EPA approved selenium TMDL 8/13; EPA approved E. coli TMDLs 2/14</i>
<i>Big Horn River</i>	<b>20</b>	<i>Completed; EPA approved 16 TMDLs 4/14</i>
<i>Gillette Fishing Lake</i>	<b>2</b>	<i>Completed; EPA approved 7/13</i>
Hams Fork	1	Data analysis prior to TMDL development
Bitter/Killpecker Creek	3	TMDL development in process
<i>Bear River</i>	<b>1</b>	<i>Completed</i>
<i>Shoshone River</i>	<b>8</b>	<i>Completed; EPA approved 7/14</i>
<i>Blacks Fork/Smiths Fork</i>	<b>4</b>	<i>Completed</i>
Salt River	2	TMDL development in process

Table 2. Current status of watershed-based plan development in Wyoming.

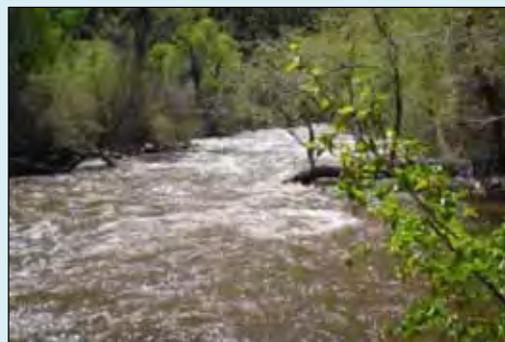
Watershed-Based Plan	# Impaired Segments Addressed	Sponsor	Status
<i>Flat Creek Watershed-Based Plan</i>	<b>1</b>	<i>Flat Creek Watershed Steering Committee/Teton Conservation District</i>	<i>WDEQ Approved</i>
<i>Prairie Dog Creek Watershed-Based Plan</i>	<b>5</b>	<i>Sheridan County Conservation District</i>	<i>WDEQ Approved</i>
<i>Tongue River Watershed Based Plan</i>	<b>7</b>	<i>Sheridan County Conservation District</i>	<i>WDEQ Approved</i>
Little Sandy River Watershed-Based Plan	1	Sublette County Conservation District	Development In-Process

### **New FY14 Project: Sheridan County Watershed Improvements #4**

This project, sponsored by the **Sheridan County Conservation District**, was awarded \$274,750 to implement action items from watershed-based plans and TMDL Implementation Plans in the Tongue River, Prairie Dog Creek, and Goose Creek watersheds. This project will reduce bacteria and sediment loads through watershed improvement projects that address contributions from livestock, septic systems, irrigation diversions, unstable stream channels and banks, and urban/residential run-off. SCCD will also provide more focused education to encourage participation in improvement programs and/or changes in land-use practices. Continued monitoring will allow SCCD to evaluate long-term changes in water quality.



*Photo credits:  
Sheridan County  
Conservation  
District*





### **Objective #3: Implementation**

***The WDEQ will provide financial and technical assistance to implement efficient and effective watershed restoration projects in accordance with the watershed planning tools established in Objective #2 above. The purpose of the restoration projects will be to implement best management practices that reduce or eliminate nonpoint sources of pollution such that surface water quality standards are achieved and maintained.***

- Three new projects were recommended for funding in FY14 that will implement best management practices (BMPs) to address impaired waterbodies. Powell Clarks Fork Conservation District, Sheridan County Conservation District, and Washakie County Conservation District all received funding to address pathogenic and/or sediment impairments in their respective watersheds. Ninety-five percent (95%) of the FY14 Section 319 project budget went to projects to restore impaired waterbodies.
- Section 319 funds allocated to the Washakie County Conservation District for BMPs to reduce bacterial and sediment loading to Sage Creek and Slick Creek (see page 8) will be used in coordination with NRCS National Water Quality Initiative funding that has been targeted to the same watershed in both FY13 and FY14.
- In addition to the three new projects recommended in FY14, six projects were active in FY14 under previous grants that implemented BMPs to address impaired waters (see Appendix A). One of these projects was successfully completed in FY14 (see Appendix B).
- The Nonpoint Source Program continues to focus on providing funding to implementation projects that address water quality impairments. Since 1999, 58% of Section 319 project funds have been awarded to BMP implementation projects.
- 10 of the 13 completed nonpoint source TMDLs/Watershed-Based Plans (WSBPs) have received Section 319 funding to begin BMP implementation: Belle Fourche River TMDLs, Goose Creek TMDLs, Gillette Fishing Lake TMDLs, North Platte River TMDLs, Crow Creek TMDLs, Flat Creek WSBP, Prairie Dog Creek WSBP, Tongue River WSBP, Big Horn River TMDLs, and Shoshone River TMDLs. A ninth completed nonpoint source TMDL (Ocean Lake TMDL) received funding for implementation under the FY12 National Water Quality Initiative through the Natural Resources Conservation Service (NRCS). Thus, Wyoming has had significant success in being able to implement its TMDLs and WSBPs. Figure 1 shows a map of restoration projects relative to water quality impairments and the status of planning efforts for those impairments.
- The Nonpoint Source Program worked to spend returned funds from closed projects towards additional BMPs on impaired waterbodies. Crook County Natural Resource District received an additional \$50,000 to expand BMP implementation in the Belle Fourche River watershed in FY14.



## **Objective #4: Documenting Environmental Improvement**

***The WDEQ will develop and implement methods to accurately and efficiently monitor and/or evaluate project effectiveness in terms of water quality improvements realized from watershed restoration project implementation.***

- Third party project sponsors continued to collect water quality data to evaluate project effectiveness and/or gather baseline data in FY14 (see Table 3).
- Monitoring Program staff continued to provide oversight for the Grass, Enos, and Lefthand Creeks Nonpoint Source Reduction projects (The Nature Conservancy) and assisted with monitoring protocols and refresher training.
- Monitoring Program staff continued project management responsibilities for the North Platte River Watershed Segment I Project, Natrona County Conservation District (NCCD), including assistance with monitoring protocols. Due to improving water quality trends being detected in the North Platte River (see page 16), WDEQ and NCCD discussed monitoring strategies for determining if the impaired segment of the North Platte River is now meeting water quality standards. New monitoring sites on the North Platte River were added in 2014 to better make this determination.
- Monitoring Program staff continued project management responsibilities for the Belle Fourche Watershed Plan Phase III Project, Crook County Natural Resource District. Assistance was provided to plan and implement the 2014 monitoring season and Monitoring Program staff conducted a field audit for the District.
- Monitoring Program staff assisted Teton Conservation District with the collection of physical and biological data at sites on Flat Creek to continue evaluating water quality trends following restoration efforts.
- Monitoring Program staff assisted the City of Gillette with the collection of water quality samples from Gillette Fishing Lake to evaluate the effectiveness of BMPs implemented in recent years. Data collected to-date suggest the wetlands complex constructed at the inlet to the lake is improving water quality (see page 16).
- Monitoring Program staff assisted Popo Agie Conservation District in collecting split samples on the Middle Fork of the Popo Agie River, conducting an audit, and providing general technical assistance on monitoring protocols.
- Restoration work led by Little Snake River Conservation District has improved the water quality of Muddy Creek. The repair of a major wetland complex in the watershed has decreased peak stream flows in a threatened segment of Muddy Creek. This has greatly reduced the occurrence, magnitude, and duration of scouring streamflows and has allowed streambanks to stabilize and re-vegetate. A restoration success story for Muddy Creek was approved and published by EPA in FY14 (see page 21).
- Data collected by Teton Science Schools for the Flat Creek Restoration Project indicate that restoration efforts are improving water quality (see page 15).
- WDEQ worked with NRCS, Washakie County Conservation District, and the Wyoming Association of Conservation Districts to evaluate monitoring strategies for Sage Creek and Slick Creek as part of the National Water Quality Initiative.
- Table 4 provides a summary of BMPs implemented for watershed restoration projects active in FY14 and estimated pollutant load reductions for BMPs implemented in FY14.



**Table 3.** Surface water monitoring planned, conducted, or completed by Section 319 projects active in FY14.

Project No.	Project Title	Waterbodies	Monitoring Effort
NPS2010A	Laramie River Restoration Phase 2 and 3—Laramie Rivers Conservation District	Laramie River	Sediment (Bank Erosion Hazard Index and Near Bank Stress), Cross Sectional Data, Riffle Stability Index, photopoint monitoring, WGFD fisheries monitoring
NPS2010B	Flat Creek Restoration—Teton Science Schools	Flat Creek	Sediment (total suspended sediment and bedload), macroinvertebrates, riffle embeddedness, channel cross-sections and profile, WGFD fisheries monitoring, vegetation surveys
NPS2011A	Sheridan County Watershed Improvements #3—Sheridan County Conservation District	Tongue River Goose Creek Big Goose Creek Little Goose Creek Prairie Dog Creek	Temperature, pH, conductivity, dissolved oxygen, discharge, turbidity, and <i>E. coli</i> . Macroinvertebrates and habitat assessments at select sites.
NPS2011B	Grass Creek/Enos/Lefthand Creek Nonpoint Source Reductions Phase II, The Nature Conservancy	Grass Creek Enos Creek Lefthand Creek	Sediment (Bank Erosion Hazard Index and Near Bank Stress), macroinvertebrates, habitat assessments, Field Parameters
NPS2010D	Goose Creek Watershed TMDL Implementation—City of Sheridan	Goose Creek Little Goose Creek Big Goose Creek	<i>E. coli</i> , sediment (TSS and turbidity), dry period flow detection, optical brighteners
NPS2010E/ 2012E	North Platte River Watershed TMDL Implementation Segment I—Natrona County Conservation District	North Platte River Casper Creek Poison Spider Creek Oregon Trail Drain Johnson Reservoir Drain Poison Spring Creek Six Mile Drain	Selenium, field parameters, discharge
NPS2011D/ NPS2012B	Belle Fourche River Watershed Plan, Phase III—Crook County Natural Resource District	Belle Fourche River Donkey Creek	<i>E. coli</i> , field parameters, Pilot Microbial Source Tracking
NPS2012A/ ON70I	Bitter Creek Sampling and Analysis—Sweetwater County Conservation District	Bitter Creek Killpecker Creek	<i>E. coli</i> , field parameters, flow
NPS2013B	Grass Creek/Enos/Lefthand Creek Nonpoint Source Reductions Phase III—The Nature Conservancy	Grass Creek Enos Creek Lefthand Creek	Sediment (Bank Erosion Hazard Index and Near Bank Stress), macroinvertebrates, habitat assessments, Field Parameters
NPS2013C	Lower Capitol Basin Sediment Trap/Wetland—The Nature Conservancy	Crow Creek	Sediment evaluation through annual surveys of accumulated sediment <i>E. coli</i> monitoring in Crow Creek
NPS2014A	PCFCD Water Quality Improvement—Powell Clarks Fork Conservation District	Shoshone River Bitter Creek	<i>E. coli</i> , field parameters, velocity, inorganic chemistry
NPS2014B	Sheridan County Watershed Improvements #4—Sheridan County Conservation District	Tongue River Goose Creek Big Goose Creek Little Goose Creek Prairie Dog Creek	Temperature, pH, conductivity, dissolved oxygen, discharge, turbidity, and <i>E. coli</i> . Macroinvertebrates and habitat assessments at select sites.



**Table 4.** Summary of BMPs implemented under projects active in FY14 and estimated pollutant load reductions for BMPs implemented in FY14 (for select pollutants only).

Project Name	Project No.	BMPs Implemented Prior to FY14	Additional BMPs Implemented in FY14	Estimated Annual Load Reductions	Load Reduction Method
Flat Creek Restoration	NPS2010B	1300' bank stabilization (4 log/rock J-hooks, 2 log vanes, 2 rock weirs, 500 ft. toe wood/sod mats), 0.5 acre wetland created	None	22.8 ton/yr. sediment (10.1 tons/yr. reported in FY12 based on modeling; monitoring since then has indicated a higher load reduction at 32.9 tons/yr.)	Monitoring, BANCS
Laramie River Restoration	NPS2010A	26 treatment sites installed providing 6,000' of stabilized stream bank	None	Load reductions for this project were reported in previous years	N/A
Grass/Enos Creek Phase II	NPS2011B	15 off-channel water tanks, 25,498' fence, 17 ac noxious weed control, 305 ac conifer control, 175 willows planted	~3,000 willows planted along ~2.25 miles streambank, 2 solar pumps for off-channel water tanks; 15 ac aspen stand with 4,300' fence; 43 ac conifer encroachment treated	109.4 lb./yr. nitrogen 42.1 lb./yr. phosphorus 59.5 ton/yr. sediment	STEPL
Sheridan County Watershed Improvements #3	NPS2011A	1 irrigation diversion; 1 fencing/stockwater project (710' fence), 4 septic system rehabilitations, 1 animal feeding operation modification, willow planting	3 septic system rehabilitations, 600' streambank stabilization, 3 fencing/stockwater projects (2,306' fence, 7 off-channel water sources, 2 water gaps)	240.1 lb./yr. nitrogen 50.0 lb./yr. phosphorus 36.8 ton/yr. sediment 1.22E+12 MPN/yr. E. coli	STEPL, WY Septic model
Goose Creek Watershed TMDL Implementation	NPS2010D	None	None, planning and design work in FY14	N/A	N/A
Belle Fourche Watershed Plan Implementation Phase III	NPS2012B	5,000' fence; 3 off-channel water tanks	9 off-channel water, riparian fencing, and/or windbreak projects (3 spring developments; 37,470' pipeline; 23 water tanks; 3900' fence, 9 solar/electric pumps, 1 windbreak)	4,379.4 lb./yr. nitrogen 439.5 lb./yr. phosphorus 112.0 ton/yr. sediment	STEPL
North Platte River TMDL Implementation	NPS2012E	283 acres flood to sprinkler irrigation, 2.59 mi open ditch to pipeline, 4.58 mi open ditch replaced	Continuation and completion of BMPs reported in FY13	N/A	N/A
2012 and 2013 Post Wildfire Rehabilitation	NPS2010F NPS2013A	None	BMP work is ongoing and will be completed in future fiscal years	N/A	N/A
Grass/Enos Creek Phase III	NPS2013B	None	4 off-channel water projects (4 springs developed and 4 tanks)	2,436.8 lb./yr. nitrogen 288.4 lb./yr. phosphorus 131.7 ton/yr. sediment	STEPL
Lower Capitol Basin Sediment Trap/Wetland	NPS2013C	None	None, planning work in FY14	N/A	N/A
PCFCD Water Quality Improvements	NPS2014A	None	1 septic system rehabilitation	10.3 lb./yr. nitrogen 2.9 lb./yr. phosphorus 7.64E+12 MPN/yr. E. coli	WY Septic Model
Sheridan County WS Improvements #4	NPS2014B	None	None, implementation to begin in FY15	N/A	N/A
Bighorn-Slick Creek WS Improvement	NPS2014C	None	None, implementation to begin in FY15	N/A	N/A



## **Objective #5: Protection and Prevention**

***In addition to restoring impaired waters, the WDEQ will seek to protect those waters that are not listed as impaired or threatened, but may nonetheless be adversely affected by nonpoint source pollution or may be high quality, unique waters that warrant special protection. The quality of these surface waters will be maintained and improved through coordinated regulatory and non-regulatory methods, including nonpoint source pollution reduction and control, permitting of point sources, the National Environmental Policy Act (NEPA) review process, Clean Water Act Section 401 certifications, and providing technical assistance and public education. Where possible, the WDEQ will seek to be proactive and prevent new water quality impairments from arising.***

- Wyoming State Forestry Division continued post-wildfire rehabilitation efforts through two Section 319 projects. In 2014, seed was purchased and planted to re-vegetate select burn areas to reduce erosion and sedimentation.
- The Nature Conservancy continued efforts to reduce watershed degradation in the Grass, Enos, and Lefthand Creek watersheds of the Bighorn Basin. This project was highlighted at a national EPA/States/NRCS Nonpoint Source Program conference in November 2014 as an example of the excellent range improvement projects occurring in Wyoming.
- Five Section 319 projects were active in FY14 that implemented conservation practices to protect unimpaired waters (see Appendix A). Two of these projects were successfully completed in FY14 (see Appendix B).
- Section 401 of the CWA requires that anyone desiring to obtain a federal permit for any activity that may result in a discharge into waters of the United States must first obtain a state Section 401 water quality certification. This certification ensures that state water quality standards and other state regulations will be met and provides opportunity for states to have input into federally approved projects that may affect surface waters of the state. The WDEQ issued 44 individual 401 certifications in 2014.
- The WDEQ issued 25 individual turbidity waivers to authorize activities that would cause short term turbidity increases determined to have minimal effect on water use. The WDEQ also re-issued a general authorization to the United States Forest Service (USFS) for temporary turbidity increases during routine maintenance projects meeting certain criteria or those resulting from *force majeure* circumstances.
- Results of Wyoming State Forestry Division's 2013 BMP Field Audit were published in 2014. In 2013, six harvested sites were selected from federal, state, and private land with live or active water courses. Each site was evaluated on the application and effectiveness of seventy BMPs using field audit rating guide criteria. For application, in 2013, the timber sale operators met or exceeded the BMPs 94 percent of the time for all ownership groups, with state and federal timber sales scoring the highest. The applied BMPs were effective 96 percent of the time. In 2013, federal timber sales also had the highest effectiveness rating.
- Watershed Program staff continued to participate as a cooperator in the National Environmental Policy Act (NEPA) process as part of federal consistency efforts. This included, but is not limited to, reviewing NEPA documents, submitting comments, participating in alternative development, participating in monitoring planning, conducting field reviews, and participating on stakeholder committees.



## **Objective #6: Ground Water Protection**

***The WDEQ will work to understand current ground water quality conditions, improve ground water quality, protect drinking water supplies from nonpoint sources of pollution, protect the public health, and increase public awareness of the potential for nonpoint sources to contribute to ground water contamination and public health concerns.***

- In FY14, the WDEQ/WQD Groundwater Program and United States Geological Survey continued groundwater baseline monitoring efforts under the Wyoming Groundwater-Quality Monitoring Network - Phase II Section 319 project. In FY14, an additional 50 groundwater samples and 14 quality control samples were obtained.
- WDEQ staff continued to participate on the Groundwater and Pesticide Strategy Committee. Nine groundwater and six surface water samples were collected in 2014 to evaluate levels of pesticides present either for baseline or trend monitoring.

### **New FY14 Project: 2<sup>nd</sup> Annual Cody Wild West River Fest**



Photo  
credits:  
Dewey  
Vanderhoff



The objectives of this project, sponsored by **The Nature Conservancy (TNC)** are to (1) strengthen partnerships between groups and agencies working on river conservation across the Big Horn Basin, (2) encourage implementation of best management practices, (3) increase community engagement in river conservation and/or restoration efforts ongoing across the Big Horn Basin, and (4) strengthen the constituency in support of river conservation in northwest Wyoming. To accomplish this, TNC hosted the second annual Cody Wild West River Fest in late August of 2014. This community festival used demonstrations to promote adoption of agricultural best management practices aimed at improving water quality, provided on-site training in water quality monitoring techniques, and distributed information about landowner-assistance programs available for best management practice implementation. This project will also undertake re-vegetation efforts following ongoing Russian olive and tamarisk control in key demonstration areas along the Shoshone River.

### **Featured Press Release: WDEQ Recognizes the Town of Jackson for Environmental Efforts, Including Karns Meadow Storm Water Treatment Wetlands**

In 2014, the Wyoming Department of Environmental Quality (WDEQ), Wyoming Pollution Prevention Program (WP3) recognized the Town of Jackson (TOJ) and its supporting partners for their efforts in becoming an environmental stewardship leader. The Town was recognized at the Platinum Level within the WP3 after achieving pollution reduction in numerous areas and sustainability efforts. These accomplishments included the Karns Meadow Storm Water Treatment Wetland Project. This project was a joint venture with WDEQ, The National Fish and Wildlife Foundation, Trout Unlimited, Teton Conservation District, Jackson Hole One Fly, Jackson Hole Chapter of Ducks Unlimited, 1% For the Tetons, and the Jackson Hole Land Trust. The project improved water quality in Flat Creek as well as habitat for wildlife and local trout populations. Randy Williams with the Teton Conservation District said that the Karns Meadow Stormwater Wetland is a great example of collaboration of partners to address natural resource protection. "Flat Creek has been on the impairment list due to stormwater runoff," said Williams. "The TOJ and Teton Conservation District, with the visioning of the Pete Karns family, partnered with Ducks Unlimited, Trout Unlimited, Jackson One Fly, 1% for the Tetons, Jackson Hole Land Trust, and the Wyoming DEQ with a 319 Water Quality Grant to plan, design, and build this 4 acre stormwater treatment wetland that treats runoff from approximately one third of the TOJ and is estimated to prevent up to 200 tons of sediment annually from going into Flat Creek." The Flat Creek project was just one of many that the town and surrounding partners have cooperated on to make environmental impact reductions. These successful efforts are what give the community a sense of pride for being environmental leaders within the state.

## **Objective #7: Information and Education**

***The WDEQ will work to increase and maintain general public awareness of water quality and nonpoint source pollution through an effective education and outreach program.***

- Two new information/education projects were recommended for funding in FY14. The Nature Conservancy was awarded funding for the 2<sup>nd</sup> Annual Cody Wild West River Fest Project (see page 13). The Wyoming Natural Resource Foundation (WNRF) was awarded funding for the Statewide Nonpoint Source Information/Education project (see this page).
- Three other information/education projects were active in FY14 (see Appendix A). Two of these projects were successfully completed in FY14 (see Appendix B).
- The WNRF produced a new BMP implementation video. This video featured stream restoration efforts on the Little Snake River. The video, completed with assistance of Little Snake River Conservation District, has been posted to the [Foundation's YouTube channel](#).
- Approximately 1,159 Wyoming students and 84 volunteers attended Worldwide Day of Monitoring activities in 2014, coordinated by local conservation districts and the Wyoming Association of Conservation Districts (WACD).
- One Wyoming Stream Team summer workshop provided water quality monitoring training to 10 Wyoming teachers at Teton Science Schools. Additional workshops and outreach visits were made under Wyoming Stream Team to schools and communities across Wyoming.
- Monitoring Program staff attended the Campbell County Ag Expo in 2014. A table was manned at this event to teach participants about aquatic insects and stream health.
- The updated Stream and Lakeshore Restoration BMP Manual was certified by the Governor and approved by EPA in 2014.
- Funds were provided to the University of Wyoming to assist with costs for developing and publishing a Wyoming macroinvertebrate field guide.
- Monitoring Program staff participated in the World Water Quality Challenge in Campbell County and an *E. coli* education event with Tongue River High School. Staff also assisted with two education events in conjunction with Wyoming Game and Fish Department to demonstrate how WDEQ uses macroinvertebrates to evaluate water quality.



Left: Photo credit Dewey Vanderhoff

Right: Photo credit: Teton Science Schools



Left: Photo credit: TNC



Right: Photo credit: Teton Science Schools

## **New FY14 Project: Statewide Nonpoint Source Information/Education**

The purpose of this project, sponsored by the **Wyoming Natural Resource Foundation**, is to provide statewide education on water quality, monitoring, and nonpoint source pollution. This project will coordinate a statewide Day of Monitoring event to provide youth and adults the opportunity to participate in water quality monitoring activities. This project will also publish an updated Wyoming Watersheds Progress Report to document and inform decision makers and the general public of activities and efforts being undertaken to improve water quality in Wyoming. The project will also implement a pet waste campaign at the State Fair Grounds as an additional component of the Pathway to Water Quality Project.

## **Featured Waterbody: Flat Creek**

In 2010, Teton Science Schools initiated the Flat Creek Restoration Section 319 project. This project conducted stream restoration on an 825 ft. reach of Flat Creek in order to address sediment loading and degraded channel morphology. Specific objectives of the project included creation of an appropriate and stable stream dimension, pattern and profile; restoration of floodplain connectivity; enhancement of in-stream habitat via bio-engineered riffles, pools and glides; and creation of adjacent wetland areas. Streambank re-vegetation objectives were to establish appropriate riparian native species, thereby enhancing ecosystem function by lowering in-stream temperatures, stabilizing banks, and filtering and reducing sediment and other pollutant inputs. Methods for restoration included the manipulation of approximately 825-linear feet of Flat Creek; installation of four log/rock J-hooks, two log vanes, two rock weirs and 500-feet of sod mats. The project also involved creating a functional deep water wetland adjacent to the creek. The restoration project was completed in 2013.

A pre-restoration reach assessment for the study area was performed in 2009 to determine baseline stream conditions prior to engineering activities. In 2014, post-restoration assessment and analysis were conducted. Conclusions of the post-restoration assessment and analysis include the following:

- Based on the geomorphology data, the sampled reach is classified as a Rosgen C4 stream type, a type appropriate for the valley type. The re-classification of the creek from an F5 stream type in 2009 indicates that bio-engineering generally improved channel geometry and planform, accomplishing many morphological project objectives and allowing for more overall stability of the fluvial system. These improved characteristics indicate a decreased potential load of sediment inputs leading to improved aquatic habitat.
- Ecologically, habitat complexity was significantly improved from pre- to post-restoration conditions in the fluvial system. This is reflected in relatively high macroinvertebrate taxa richness and *Ephemoptera* (mayflies)/*Plecoptera* (stoneflies)/*Trichoptera* (caddisflies) (EPT) relative abundance.
- Evaluations of vegetation composition and diversity show that both the planted vegetation and the natural regeneration have been highly successful along the study reach providing important riverine functions.
- Reach-wide, predicted sediment contribution to the channel is estimated at 21.94 tons per year of bank loss. This is a 60% decrease from 2009 conditions.

This monitoring effort highlights the fact that the bio-engineered stream channel in the project area was constructed successfully and effective techniques were used to re-establish riparian vegetation and improve overall habitat and water quality.



*Photographs showing Flat Creek site pre-restoration looking upstream (left) and post-restoration looking downstream (right).*

*Photo credits: Teton Science Schools and Y2 Consulting, LLC*

### **Featured Waterbody: Gillette Fishing Lake**

High levels of sediment and phosphorus have impacted the ability of **Gillette Fishing Lake** (GFL) to support aquatic life. Studies determined that the primary source of the pollutants was urban stormwater runoff. To address pollutants entering GFL, a Section 319 grant was given to the City of Gillette to construct a wetland complex where Donkey Creek enters the lake, allowing it to filter out sediment and utilize wetland vegetation to remove nutrients from the water. In addition to the wetland complex, the City of Gillette previously installed several stormwater interceptors on outfalls to Donkey Creek upstream of the lake to aid in sediment removal. The WDEQ Watershed Monitoring Program assisted with monitoring in 2013 and 2014 to determine effectiveness of the wetland complex at removing nutrients and sediment. The wetland complex appears to be reducing nutrient levels within the lake. Results obtained in 2013 indicated that all nutrient concentrations decreased from above the wetlands to below the wetlands. In 2014, nutrient concentrations all decreased from above the wetlands to below the wetlands during the growing season. The wetland complex appears to be reducing sediment as well, but processes within the lake and at the outlet (e.g., algal growth, sediment re-suspension) are likely contributing to an increase in total suspended solids at various locations within the lake. Overall, the data suggest that the wetland complex is filtering or removing a portion of the pollutants from Donkey Creek before it enters GFL. To further improve GFL, the City of Gillette has considered restoration activities that could help address nutrients and sediments already in the lake bottom of GFL that may become suspended in the water column during seasonal and wind-induced mixing events.



### **Featured Waterbody: North Platte River near Casper**

High selenium levels in a 36.8 mile segment of the **North Platte River** (NPR) near the City of Casper have affected the ability of the river to support fisheries and other aquatic life. The source of excess selenium was determined to be coming from irrigation return flows from the Kendrick Irrigation District west of Casper. The irrigation return flows contain high levels of selenium due to the naturally selenium rich marine shales in the area. Efforts to address selenium loading to the NPR and its tributaries began in the mid-1990s and continue to the present through voluntary efforts of local agencies and landowners with support from various state and federal agencies. Natrona County Conservation District (NCCD) sponsored several Section 319 projects and used funding through other sources to reduce selenium levels through irrigation application and conveyance best management practices. Water quality monitoring conducted by NCCD at two sites on the NPR (one above the Kendrick Irrigation District and one east of Evansville) has shown that total selenium concentrations in the NPR at these two sites have been at or below the 5  $\mu\text{g}/\text{L}$  chronic criterion protective of aquatic life for at least three straight years, suggesting that the elevated selenium may have been addressed in the NPR. However, because these two sites are nearly 25 stream miles apart, the WDEQ and NCCD have worked to establish additional monitoring sites to determine whether the entire 36.8 mile impaired segment is now meeting the water quality criterion. The work done by NCCD and partners is an excellent example of how agencies and landowners can work together through voluntary programs. The number of best management practices implemented, the improving water quality trends documented, and the numerous partnerships that have been developed are noteworthy achievements.



*Middle and bottom photo credits: NCCD*

## **Objective #8: Partnerships and Interagency Cooperation**

***The WDEQ will work to maintain and improve existing partnerships and develop new partnerships with other agencies, non-profit organizations, local watershed groups, and individuals who also seek to reduce nonpoint source pollution and improve water quality. Partnerships and coordination will allow watershed restoration and protection efforts to occur more efficiently and effectively.***

- The Nonpoint Source Program continued working with the Wyoming Natural Resources Conservation Service (NRCS), Wyoming Association of Conservation Districts (WACD), and Washakie County Conservation District (WCCD) to implement the National Water Quality Initiative in the Bighorn River-Slick Creek Watershed and to evaluate monitoring strategies for Sage Creek and Slick Creek.
- Nonpoint Source Program staff worked to outreach to local government agencies and organizations to encourage proposal submission for FY15 Section 319 funding. Two new agencies/organizations submitted a proposal in FY14 for FY15 funds.
- The Nonpoint Source Program Coordinator participated on NRCS State Technical Committee meetings and provided input to encourage use of Farm Bill funding for water quality-related projects.
- The Nonpoint Source Program Coordinator participated in State Engineer Office Water Forum meetings. A presentation was provided at a 2014 Forum meeting about the Whitelaw Creek Ecological Restoration Success Story.
- The Nonpoint Source Program worked with Wyoming Game and Fish Department to meet sage grouse protection reporting requirements and to ensure proposed projects complied with the Governor's Executive Order on Greater Sage Grouse Core Area Protection.
- Watershed Protection Program staff continued to participate in interstate water quality committees, including the Colorado River Basin Salinity Control Forum and the Bear River Commission.
- The Nonpoint Source Program Coordinator presented at the 2014 Wyoming Water Association Annual Meeting and Education Seminar about state-based watershed management incentives and credible data requirements.
- The Nonpoint Source Program Coordinator presented at the 2014 EPA/States/NRCS national conference about using Supplemental Environmental Project funds for nonpoint source pollution projects, watershed-based planning methods in Wyoming, and Wyoming range management projects.
- Watershed Protection Program staff began discussions with Friends of Fish Creek and Teton Conservation District about technical and financial assistance for developing a voluntary nutrient reduction program to address nutrient pollution in Fish Creek near Jackson.
- The Nonpoint Source Program encouraged Section 319 project sponsors to apply for funding through the NRCS Regional Conservation Partnership Program (RCPP); the Nonpoint Source Program provided information to two RCPP applicants about the ability to use Section 319 funds in conjunction with RCPP funds.
- The Nonpoint Source Program Coordinator presented at the Wyoming Water Development Office's Northeast Basin Advisory Group meeting about the Belle Fourche River TMDLs and Watershed-Based Planning.
- The Nonpoint Source Program and Quality Assurance/Quality Control Program assisted with WACD Monitoring Refresher Training and coordinated Conservation District Sampling and Analysis Plan updates with WACD.

## Highlighted Partner Project: AML Reliance Mines Cleanup and Reclamation

The **Wyoming Abandoned Mine Land Program** (AML) undertook a large coal waste (coal slack) cleanup and reclamation project at the historic abandoned Reliance Mines during 2014. The Reliance Tipple, now a national historic site, was where several of the Reliance mines gathered, sorted, and loaded coal into rail cars. Waste coal and other debris were discarded in a great fan-shaped dump over a relatively flat area to the southwest of the tipple during operation of the mines throughout the first half of the 1900s. This old coal dump is located in the headwaters of Killpecker Creek, and coal slack has been migrating into the creek drainage and beyond for about a century, contributing to the degradation of water quality during periods of flow. The hostile soils provided by coal slack support very little plant growth, reducing soil stabilization by plants, and exacerbating the mobility of coal particles through both water and wind erosion.



*Aerial view of the Reliance Coal Slack Reclamation Project showing the extent of the coal waste dump and lack of vegetation.*



*Massive deposits of waste coal were excavated from the surface and encapsulated in a protected repository.*



*Acres of coal slack were stripped off to expose clean soils.*

In addition to the contribution to water quality degradation, the coal slack in places on the site was still combustible, posing the risk of a coal slack fire and potentially a range fire just across the street from the community of Reliance. While prior AML projects have alleviated other dangerous abandoned mine hazards in the area, the coal slack was not previously addressed. Project planning for the Reliance Coal Slack Reclamation Project was rather complex due to the national historic site and all the historic structures requiring protection within the work area. Because some islands of native vegetation have volunteered on patches of viable soils onsite, AML was determined to preserve as much vegetation as possible during coal slack remediation and removal. This goal was accomplished through careful construction techniques and pride of workmanship by the contractor who did the reclamation work, High Country Construction of Lander, WY. Together with team personnel from Lidstone and Associates from Ft. Collins, CO, the contractor worked through unexpected conditions, difficult weather, and other challenges to produce a cleaner, more hydrologically stable site, while preserving the historic resources and native vegetation.

Approximately 162,800 cubic yards of coal slack were collected, encapsulated into a buried and capped repository, and made unavailable for downstream transport. Topsoil was salvaged from burial areas and uncovered through coal slack removal, providing new surfaces of clean soils for planting. About 55 acres were seeded to native vegetation with a mixture designed to grow in the inhospitable soils that are native to this site. The preserved islands of existing vegetation will continue to stabilize soils, and will also contribute a native seed source to augment the reclamation plantings.



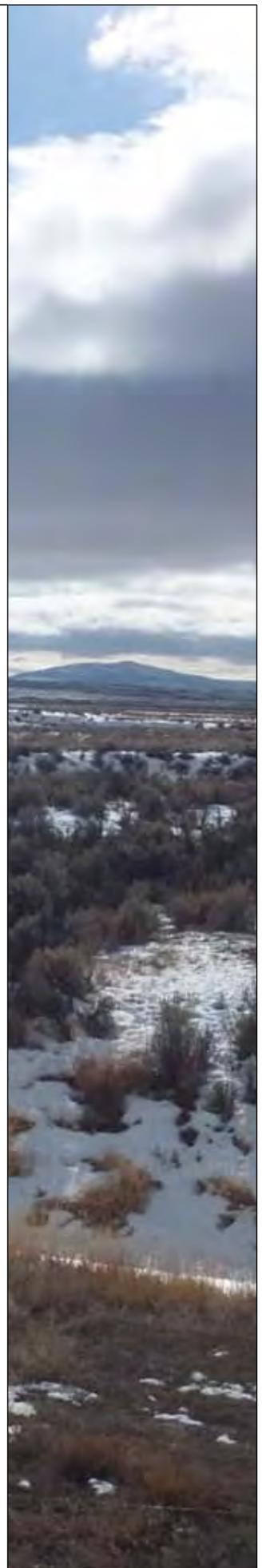
*Approximately 55 acres of recovered native soils were seeded to native vegetation species.*

## Selected Highlights from Program Partner Activities

- **Wyoming Natural Resources Conservation Service (NRCS)** continued to provide conservation planning, technical assistance, and financial assistance in FY14 to landowners to conserve soil, water, and other natural resources on private property.
  - NRCS awarded \$627,366 to the Bighorn River-Slick Creek Watershed in Washakie County as part of the National Water Quality Initiative. The main focus of treatment in this watershed is to reduce bacteria loading from cropland and irrigated acres. Ten applications were funded, treating 1,229 acres.
  - Three applications were funded to address livestock waste under the State Livestock Waste Management Account.
  - Two applications treating 212 acres were funded in FY14 under the Wetland/Wildlife Account, used for projects that restore wetland hydrology, improve upland habitat to benefit wildlife, or address resource concerns in riparian areas.
  - A State Forestry account was continued in FY14 to address the growing interest in Forest Health, commercial thinning, and aspen regeneration. Seven applications were funded, treating 362 acres.
  - A Streambank/Riparian Account was created to address growing interest in treating streambank erosion and improving riparian habitat. Six applications were funded treating 649 acres.
  - FY14 State-Level Conservation Innovation Grant funds were awarded to two projects. The first, through the University of Wyoming, continues to expand the development of an effective conservation exchange as an innovative way to provide private-market financial incentives to private landowners to implement conservation practices. The second project, with University of Wyoming Cooperative Extension Service, will work to demonstrate the use of no-till planting, herd effect planting, and planting with common rancher and homeowner equipment on a number of sites throughout central Wyoming.
  - Seventeen applications treating 98,797 acres were funded in FY14 under the Conservation Stewardship Program.
- The **Wyoming Wildlife and Natural Resource Trust (WWNRT)** continues to be an important program to enhance and conserve wildlife habitat and natural resource values throughout the state. WWNRT projects fund a wide range of activities, including many that directly or indirectly improve water quality. Many WWNRT projects have addressed waterbodies listed as impaired by the WDEQ, have worked in conjunction with Section 319 funding to restore or protect waterbodies, or are notable examples of watershed restoration efforts. Information about WWNRT projects can be found on that program's website (<http://wwnrt.wyo.gov/>).
- The **WDEQ Abandoned Mine Land Division (AML)** completed the Reliance Mines Cleanup and Reclamation Project (see page 18).
- The **City of Sheridan** received \$400,000 of **EPA Brownfields** grant funding to assess, clean up, and redevelop properties in the North Main Street area. The City will assess hazardous waste and petroleum contamination at more than a dozen properties in the downtown area. These properties include a former stockyards, an abandoned sawmill, railroad and fuel storage facilities, and warehouses. Potential contaminants include heavy metals, petroleum compounds, and polyaromatic hydrocarbons.

## Selected Highlights from Program Partner Activities, Continued

- In FY14, the **United States Forest Service** (USFS) completed the second year of transition to full implementation of the Best Management Practices (BMP) monitoring component of the National BMP Program on all administrative units in Wyoming. National monitoring protocols were used to monitor BMP implementation and effectiveness on a variety of projects on National Forest System (NFS) lands in Wyoming, including grazing management, recreation activities, road management, mechanical vegetation treatments, and water uses. As FY14 was a transition year for the program, the sample size of evaluated projects was relatively small, but some patterns were evident. USFS administrative units in Wyoming completed both BMP implementation and effectiveness evaluations on a total of 18 projects in FY14. Twelve of those evaluations received composite ratings of “acceptable,” meaning the project was rated as “effective” and the BMPs were substantially implemented. For those resource areas where the USFS has traditionally placed the most BMP emphasis (i.e., roads and vegetation management), monitoring shows high rates of BMP implementation. While the effectiveness of BMPs used in vegetation management projects was high, the effectiveness of the BMPs in road management was not. Four projects were monitored for BMP implementation only.
- In addition, the USFS continued efforts under a number of program areas to restore watersheds and reduce or prevent nonpoint source pollution.
  - *Burned Area Emergency Response (BAER) Program*: In FY14, approximately 250 acres of land and 14 miles of trails on NFS lands in Wyoming received BAER treatments following wildfire to help stabilize soil; to control water, sediment and debris movement; to prevent permanent impairment of ecosystem structure and function; and to mitigate significant threats to health, safety, life, property or downstream values.
  - *Healthy Forests and Rangelands—Hazardous Fuels Reduction and Landscape Restoration*: In FY14, Wyoming National Forests completed fuel treatment projects on 7,315 acres inside the wildland urban interface (WUI) and another 7,358 acres outside the WUI for a total of 14,673 acres. These projects treat the excessive accumulation of hazardous or unusually flammable fuels in the forests and rangelands that are the root cause of an unprecedented fire risk on national forest lands.
  - *Watershed Restoration*: Wyoming National Forests reported accomplishments of approximately 4,250 acres of soil and water improvements in FY14 to improve watershed conditions using upland and instream treatments such as correction of cut or fill slope failures, surface scarification of compacted upland areas (e.g. old skid trails), and reclamation of old gravel quarries.
  - *Road maintenance*: Wyoming National Forests reported accomplishments of about 1,400 miles of road maintenance in FY14 to provide for the upkeep of roads and trails including the surface and shoulders, parking and side areas, drainage structures and signs necessary for the safe and efficient operation of the transportation system.
  - *Legacy Road and Trail Program*: In FY14, there were 6 miles of road drainage improvement projects, 10 miles of road decommissioning, and a critical trail bridge was reconstructed to reduce erosion with Legacy Road and Trail program funds. The purpose of this program is the repair, restoration, rehabilitation, and decommissioning of both system and unauthorized roads and trails where the conditions are causing water quality issues in water bodies; adversely affecting threatened, endangered, or sensitive species; or impacting community water systems.



## Restoration Success Story: Constructed Wetlands Control Sedimentation in Wyoming's Muddy Creek

Muddy Creek is a high-elevation, cold-desert stream in Wyoming's Little Snake River Basin. The Muddy Creek watershed produces naturally high sediment loads because of its highly erodible soils. In addition, irrigation diversions constructed by early homesteaders were breached during the 1960s, causing severe headcutting, gully erosion, and sedimentation in the creek. Also, historical livestock grazing practices damaged riparian areas and stream banks, increasing erosion and sediment loading during precipitation and spring snowmelt events. Data collected in the mid-1990s indicated that excessive sedimentation was threatening the nongame fisheries and aquatic life uses along a 17.5-mile section of Muddy Creek. As a result, this segment was added to Wyoming's 1996 CWA section 303(d) list of impaired waters.

The Muddy Creek watershed became the focus of extensive sediment remediation efforts beginning in the early 1990s. Breached spreader dikes were repaired to create the George Dew and Red Wash wetlands. This combined wetland complex consists of water storage impoundments, engineered channels, vertical drop structures, headgates for diversions, overflow spillways, and a braided channel stream network. Water is either stored or released gradually back to Muddy Creek's main channel. Coordinated Resource Management (CRM) efforts led by the Little Snake River Conservation District (LSRCD) beginning in 1992 added to restoration efforts by addressing sedimentation caused by historical livestock grazing. Through CRM, partners implemented a number of best management practices, including installing off-channel water sources for livestock, adding riparian fencing, herding cattle away from riparian zones, conducting prescribed burns, planting riparian vegetation, and installing channel stabilization structures.

Repairing the wetland complex has greatly decreased peak stream flows in the threatened segment of Muddy Creek. Following wetland and irrigation infrastructure reconstruction, flow duration intervals and peak flows were much higher above the wetland complex than below. Likewise, average peak discharge was also higher above the wetlands than below. Thus, the wetlands have greatly reduced the occurrence, magnitude, and duration of the scouring streamflows that were causing accelerated erosion within the impaired segment of Muddy Creek. As a result, stream banks have stabilized and new vegetation has grown. In addition to storing water, the wetlands act as a filter that traps sediment eroded from upstream sources. WDEQ has proposed to remove sediment as a cause of impairment on this segment of Muddy Creek from its 2014 CWA section 303(d) list of impaired waters.

Section 319 funds supported watershed restoration efforts in the Muddy Creek watershed. The LSRCD's major partners included the Bureau of Land Management, Natural Resources Conservation Service, Wyoming Game and Fish Department, Wyoming Department of Agriculture, WDEQ, Wyoming Water Development Commission, Wyoming Natural Resource Trust Fund, Ducks Unlimited, Wyoming Land Conservation Initiative, U.S. Fish and Wildlife Service, and numerous private landowners. For the full success story, please visit:

<http://water.epa.gov/polwaste/nps/success319/>

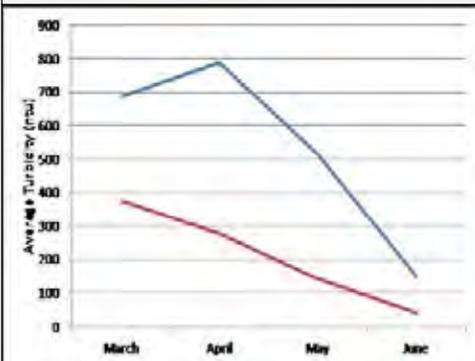


Photos showing a failed spreader dike within the George Dew Wetland Complex before restoration in 1992 (above) and after restoration in 2002 (below). *Photo credits: Little Snake River Conservation District*



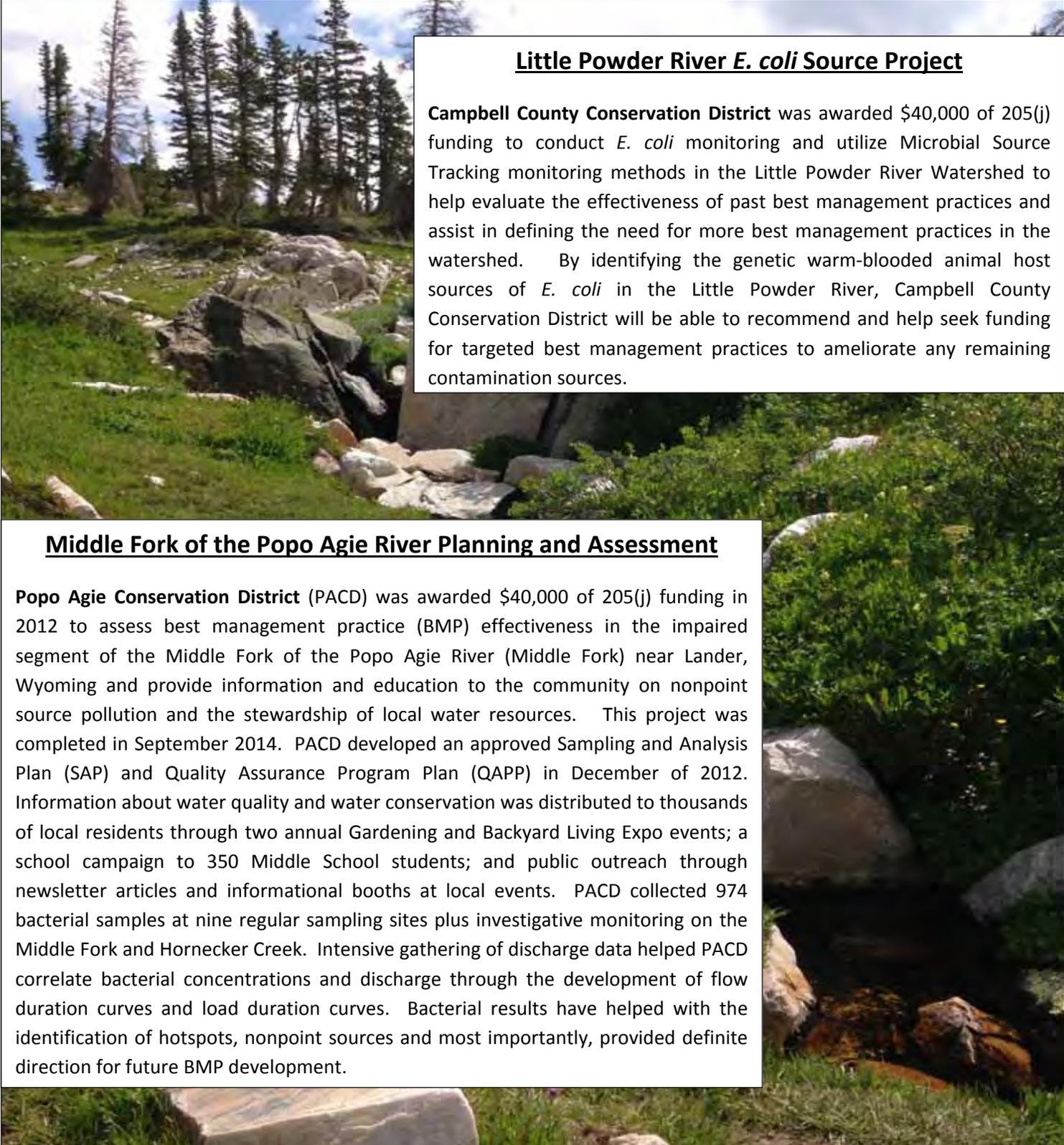
Aerial view of the George Dew Wetland Complex. *Photo credit: Little Snake River Conservation District*

Figure showing the average monthly turbidity above the wetlands (Blue) and below the wetlands (Red).



## FY14 Water Quality Management Planning Projects

In addition to the Section 319 projects discussed in this report, the Nonpoint Source Task Force recommended one water quality management planning project for CWA 205(j) funding. CWA 205(j) funds are available to cities, towns, counties, and conservation districts on a competitive basis each year to address water quality planning and assessment needs. In FY14, one project applied for and received 205(j) funding. This project is discussed below (Campbell County Conservation District), along with one 205(j) project that closed in FY14 (Popo Agie Conservation District).



### Little Powder River *E. coli* Source Project

**Campbell County Conservation District** was awarded \$40,000 of 205(j) funding to conduct *E. coli* monitoring and utilize Microbial Source Tracking monitoring methods in the Little Powder River Watershed to help evaluate the effectiveness of past best management practices and assist in defining the need for more best management practices in the watershed. By identifying the genetic warm-blooded animal host sources of *E. coli* in the Little Powder River, Campbell County Conservation District will be able to recommend and help seek funding for targeted best management practices to ameliorate any remaining contamination sources.

### Middle Fork of the Popo Agie River Planning and Assessment

**Popo Agie Conservation District (PACD)** was awarded \$40,000 of 205(j) funding in 2012 to assess best management practice (BMP) effectiveness in the impaired segment of the Middle Fork of the Popo Agie River (Middle Fork) near Lander, Wyoming and provide information and education to the community on nonpoint source pollution and the stewardship of local water resources. This project was completed in September 2014. PACD developed an approved Sampling and Analysis Plan (SAP) and Quality Assurance Program Plan (QAPP) in December of 2012. Information about water quality and water conservation was distributed to thousands of local residents through two annual Gardening and Backyard Living Expo events; a school campaign to 350 Middle School students; and public outreach through newsletter articles and informational booths at local events. PACD collected 974 bacterial samples at nine regular sampling sites plus investigative monitoring on the Middle Fork and Hornecker Creek. Intensive gathering of discharge data helped PACD correlate bacterial concentrations and discharge through the development of flow duration curves and load duration curves. Bacterial results have helped with the identification of hotspots, nonpoint sources and most importantly, provided definite direction for future BMP development.

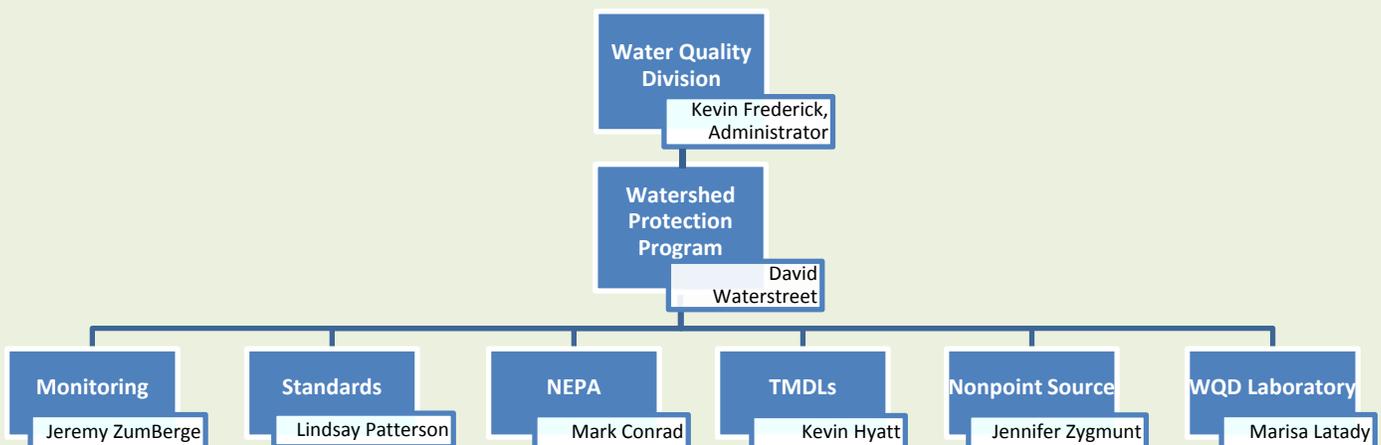
## Objective #9: Efficient and Effective Program Administration

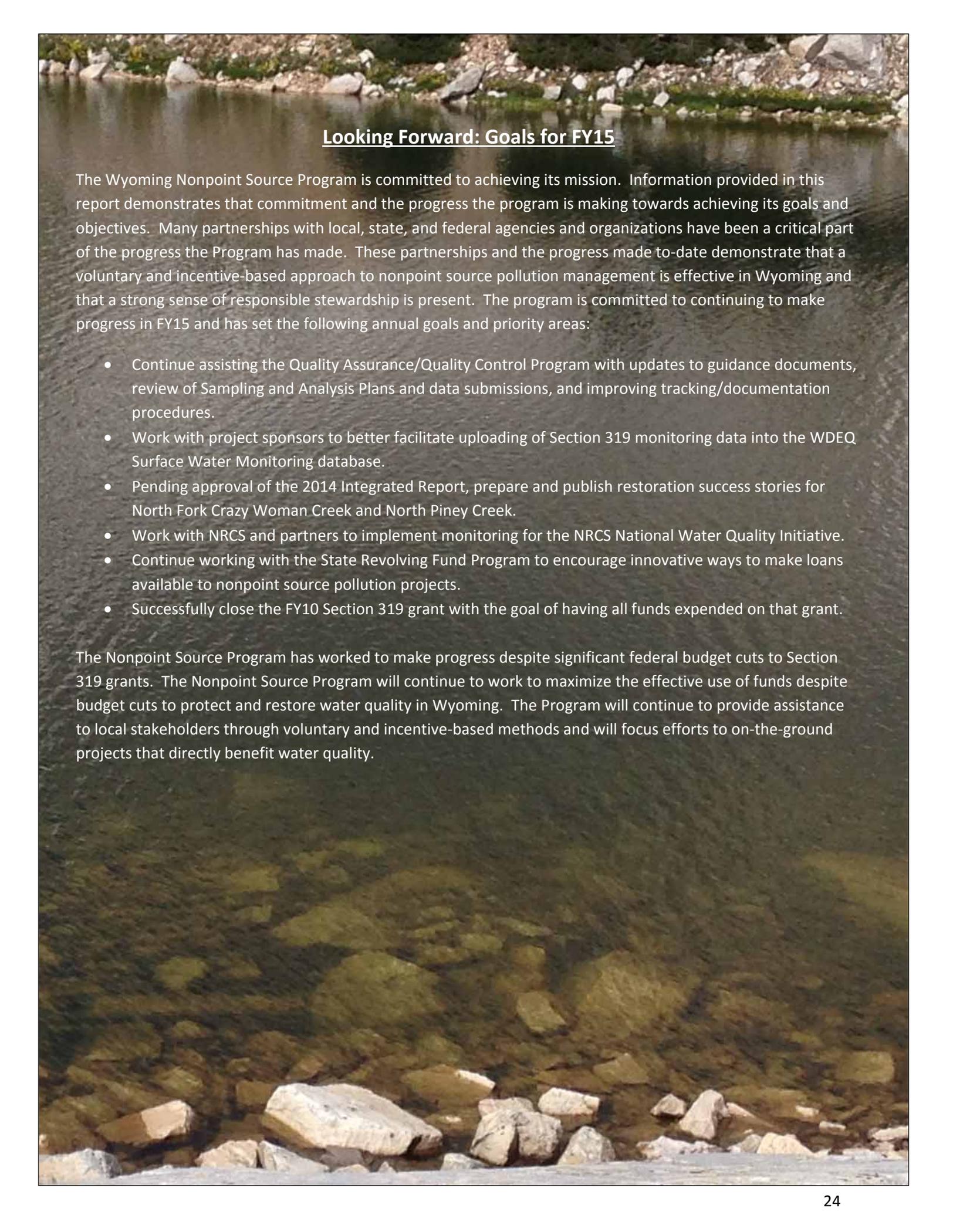
*The WDEQ will administer its Nonpoint Source Program as effectively and efficiently as possible, with a focus on integration of Watershed Protection Programs, demonstration of accountability, and continual program evaluation.*

- The updated Stream and Lakeshore Restoration BMP Manual was certified by the Governor's Office and approved by EPA in the spring of 2014. This document can be accessed on the [Nonpoint Source Program website](#).
- The FY09 Section 319 grant expired on September 30<sup>th</sup>, 2014. 99.5% of the funds on this grant were expended prior to expiration. A close-out report detailing the use of funds on the FY09 grant was submitted to EPA.
- The Nonpoint Source Program continues to obligate and expend funds on active Section 319 grants in a timely manner. All FY14 projects were issued a cooperative agreement in FY14.
- The Nonpoint Source Program continued the use of a Project Management Database to assist project sponsors with project management. This database facilitates submission of reimbursement requests, annual reporting, progress reporting, and BMP tracking and reporting.
- The Nonpoint Source Program continued to update and maintain its electronic library and expanded the library to include Sampling and Analysis Plans.
- The Nonpoint Source Program worked with other programs within WDEQ to encourage the use of Supplemental Environmental Project (SEP) funds collected as part of permit violation enforcements to go towards nonpoint source pollution reduction projects.
- The Nonpoint Source Program Coordinator provided training on applying for and managing grant funding at the 2014 Wyoming Conservation District Employee Association Winter Training.
- The Nonpoint Source Program updated final report guidance; guidance will be posted in FY15.
- The Nonpoint Source Program worked with the Monitoring Program to evaluate ways to upload electronic Section 319 project data into the WDEQ Surface Water Monitoring database.
- Request for Proposal application and guidance material were streamlined and updated.

## WDEQ Watershed Protection Program

The Water Quality Division is one of seven divisions of the Wyoming Department of Environmental Quality. Within the Water Quality Division, the Watershed Protection Program is responsible for a variety of water quality planning and project implementation activities, including nonpoint source pollution management. The Water Quality Division can be reached by calling 307-777-7781. Additional information on the Watershed Protection Program can be found at: <http://deq.wyoming.gov/wqd/watershed-protection/>.





## Looking Forward: Goals for FY15

The Wyoming Nonpoint Source Program is committed to achieving its mission. Information provided in this report demonstrates that commitment and the progress the program is making towards achieving its goals and objectives. Many partnerships with local, state, and federal agencies and organizations have been a critical part of the progress the Program has made. These partnerships and the progress made to-date demonstrate that a voluntary and incentive-based approach to nonpoint source pollution management is effective in Wyoming and that a strong sense of responsible stewardship is present. The program is committed to continuing to make progress in FY15 and has set the following annual goals and priority areas:

- Continue assisting the Quality Assurance/Quality Control Program with updates to guidance documents, review of Sampling and Analysis Plans and data submissions, and improving tracking/documentation procedures.
- Work with project sponsors to better facilitate uploading of Section 319 monitoring data into the WDEQ Surface Water Monitoring database.
- Pending approval of the 2014 Integrated Report, prepare and publish restoration success stories for North Fork Crazy Woman Creek and North Piney Creek.
- Work with NRCS and partners to implement monitoring for the NRCS National Water Quality Initiative.
- Continue working with the State Revolving Fund Program to encourage innovative ways to make loans available to nonpoint source pollution projects.
- Successfully close the FY10 Section 319 grant with the goal of having all funds expended on that grant.

The Nonpoint Source Program has worked to make progress despite significant federal budget cuts to Section 319 grants. The Nonpoint Source Program will continue to work to maximize the effective use of funds despite budget cuts to protect and restore water quality in Wyoming. The Program will continue to provide assistance to local stakeholders through voluntary and incentive-based methods and will focus efforts to on-the-ground projects that directly benefit water quality.

## Appendix A: Summary of FY14 Section 319 Projects

**Table A1.** Section 319 projects active during part or all of FY14. Projects in *bold italics* closed during FY14.

State ID	Project Title	Project Sponsor	Grant #(s)	Ending Date	Project Type
<i>NPS2010A</i>	<i>Laramie River Restoration Phase II and III</i>	<i>Laramie Rivers Conservation District</i>	<i>008630-10</i>	<i>1/31/14</i>	<i>Implementation—Prevention</i>
<i>NPS2010B</i>	<i>Flat Creek Restoration</i>	<i>Teton Science Schools</i>	<i>008630-10</i>	<i>12/31/13</i>	<i>Implementation—Impaired</i>
NPS2011A	Sheridan County Watershed Improvements #3	Sheridan County Conservation District	008630-11	12/31/15	Implementation—Impaired
NPS2011B	Grass, Enos, Lefthand Creeks NPS Reduction Phase II	The Nature Conservancy	008630-11, 06	12/31/15	Implementation—Prevention
NPS2010D	Goose Creek Watershed TMDL Implementation	City of Sheridan	008630-10	3/31/15	Implementation—Impaired
NPS2010E/ 2012E	North Platte River Watershed—Segment I	Natrona County Conservation District	008630-10, 12	12/31/15	Implementation—Impaired
NPS2012D/ ON70J	Wyoming Stream Team 2012	Teton Science Schools	008630-07, 12	12/31/14	Information/Education
<i>NPS2012C</i>	<i>Cody River Days</i>	<i>The Nature Conservancy</i>	<i>008630-12</i>	<i>12/31/13</i>	<i>Information/Education</i>
NPS2012A/ ON70I	Bitter Creek Sampling and Analysis	Sweetwater County Conservation District	008630-07, 12	12/31/15	Planning/Assessment
NPS2011D/ 2012B	Belle Fourche Watershed Plan, Phase III	Crook County Natural Resource District	008630-11, 12	12/31/15	Implementation—Impaired
<i>NPS2010F</i>	<i>2012 Wildfire Rehabilitation</i>	<i>Wyoming State Forestry</i>	<i>008630-10</i>	<i>9/30/14</i>	<i>Implementation—Prevention</i>
<i>NPS2010G</i>	<i>Pathway to Water Quality</i>	<i>Wyoming Natural Resource Foundation</i>	<i>008630-10</i>	<i>12/31/13</i>	<i>Information/Education</i>
<i>ON80L/905</i>	<i>Bear River TMDLs</i>	<i>WDEQ</i>	<i>008630-08, 09</i>	<i>05/30/14</i>	<i>TMDL</i>
<i>ON808/909</i>	<i>Blacks Fork/Smiths Fork TMDLs</i>	<i>WDEQ</i>	<i>008630-08, 09</i>	<i>9/30/14</i>	<i>TMDL</i>
NPS2013A	2013 Post Wildfire Rehabilitation	Wyoming State Forestry Division	008630-13	09/30/15	Implementation—Prevention

## Appendix A Continued: Summary of FY14 Section 319 Projects

**Table A1 continued.** Section 319 projects active during part or all of FY14. Projects in *bold italics* closed during FY14.

State ID	Project Title	Project Sponsor	Grant #(s)	Ending Date	Project Type
NPS2013B	Grass, Enos, Lefthand Creeks NPS Reduction Phase III	The Nature Conservancy	008630-13	12/31/15	Implementation—Prevention
NPS2013C	Lower Capitol Basin Sediment Trap/Wetlands	City of Cheyenne	008630-13	12/31/17	Implementation—Impaired
USGS Contract	Wyoming Groundwater-Quality Monitoring Network - Phase II	WDEQ—Groundwater Program	008630-13	06/30/15	Groundwater
NPS2014A	PCFCD Water Quality Improvements	Powell Clarks Fork Conservation District	008630-14	9/30/16	Implementation—Impaired
NPS2014B	Sheridan County Watershed Improvements #4	Sheridan County Conservation District	008630-14	12/31/16	Implementation—Impaired
NPS2014C	Bighorn-Slick Creek Watershed Improvement Program	Washakie County Conservation District	008630-14	12/31/16	Implementation—Impaired
NPSSEP02	Statewide NPS Information/Education	Wyoming Natural Resource Foundation	SEP*, 008630-09	3/31/16	Information/Education
NPSSEP03	2 <sup>nd</sup> Annual Cody Wild West River Fest	The Nature Conservancy	SEP*	1/31/17	Information/Education
<b><i>ON906</i></b>	<b><i>Big Horn River TMDLs Addition</i></b>	<b><i>WDEQ</i></b>	<b><i>008630-09</i></b>	<b><i>1/31/14</i></b>	<b><i>TMDL</i></b>
<b><i>ON909</i></b>	<b><i>East Fork Wind River Planning</i></b>	<b><i>Wyoming Community Foundation</i></b>	<b><i>008630-09</i></b>	<b><i>9/30/14</i></b>	<b><i>Planning/Assessment</i></b>

\*SEP = Supplemental Environmental Project funding (state funding)

## Appendix B: Summaries of Third-Party Section 319 Projects Completed in FY14

**Laramie River Restoration Phases II and III (NPS2010A); Laramie Rivers Conservation District:** The need for water quality improvement related to excess sedimentation and observed habitat impairment was documented through Beneficial Use Reconnaissance sampling performed by Laramie Rivers Conservation District staff from 2001-2005 and discussed at length with WDEQ staff. Further investigation of river sinuosity and gradient by a fluvial geomorphologist indicated that the Laramie River in the reach of interest (near and through the City of Laramie) had been shortened by about 40% since modern settlement. The river shortening had increased the stream's erosive power and had been the primary cause in increased bank erosion and subsequent fine sediment that caused degradation to aquatic habitat. The primary objectives of this project were to (1) reduce sediment contribution to the Laramie River by stabilizing banks in the project area and (2) improve aquatic habitat by reducing sedimentation. Bank stabilization was accomplished at 52 sites from 60' to 1200' in length along 19,000' of river channel. Treatments included vegetated riprap at 7 sites, longitudinal stone toe treatments at 8 sites, rootwad revetments at 29 sites, and rock/log deflectors at 3 sites; all influencing a total of 12,000' of channel. These treatments reduced sedimentation by a combination of stabilizing banks and routing the power of flowing water away from the banks and back into the channel. Bank erosion data provided by Wyoming Game and Fish Department suggest there was a reduction of erosion (up to 90% reduction) within the project area, along with a coincidental doubling in brown trout numbers. Visually, there are no longer severely eroding banks within the three mile reach and the sponsor noted a drastic increase in recreational use of the area. Extensive outreach was done for children and adults, public and administrators, raising the awareness of the river, its proper function, and the function of the riparian zone to thousands of Laramie residents and visitors. This project was initiated in March 2010 and closed in January 2014. This project expended \$94,628 in Section 319 funds and accrued \$623,651 in non-federal match.



*Laramie River Greenbelt Site 44 in 2008 (top), 2011 (middle), and 2012 (bottom).*

*Photo credits: Laramie Rivers Conservation District*

## Appendix B—Continued: Summaries of Third-Party Section 319 Projects Completed in FY14

**2012 Wildfire Rehabilitation (NPS2010F); Wyoming State Forestry Division:** Wyoming's 2012 wildfire season was especially severe. Eight fires reached or exceeded 5,000 acres in size with the largest reaching 98,094 acres. Extensive areas were heavily burned with a near complete loss of overstory and understory vegetation and consumption of litter layer. Natural plant recovery was expected to be poor on many sites. The combination of adverse terrain and bare soils created a high potential for soil erosion and excessive sediment and nutrient delivery to nearby waterbodies. This project, which continues under project NPS2013A, sought to reestablish ground cover vegetation to stabilize slopes and trap sediment to reduce sediment and nutrient loading to surface waterbodies from surface runoff on burned areas. Efforts were focused on two of the largest 2012 Wildfires, the 98,094 acre Arapaho Fire in Albany County and the 61,471 acre Oil Creek Fire in Weston County. 319 funds were used to purchase native grass seed mixes which were used to re-establish vegetation on sites exhibiting slow or inadequate recovery, enhance the effectiveness of other erosion control treatments and stabilize repaired roads, trails and culverts damaged in post fire rain events. Post-fire rehabilitation efforts are continuing on a number of sites to protect, enhance and expand on the work done to date. This project was initiated in September 2012 and closed in September 2014. The project expended a total of \$30,000 in Section 319 funds and accrued \$26,442 in non-federal match.

*Photo Credits: Wyoming State Forestry Division*



**Flat Creek Restoration (NPS2010B):** In 2010, **Teton Science Schools** initiated the Flat Creek Restoration Section 319 project. This project conducted stream restoration on an 825 ft. reach of Flat Creek in order to address sediment loading and degraded channel morphology. Specific objectives of the project included creation of an appropriate and stable stream dimension, pattern and profile; restoration of floodplain connectivity; enhancement of in-stream habitat via bio-engineered riffles, pools and glides; and creation of adjacent wetland areas. Streambank re-vegetation objectives were to establish appropriate riparian native species thereby enhancing system functioning by lowering in-stream temperatures, stabilizing banks, and filtering and reducing sediment and other pollutant inputs. Methods for restoration included the manipulation of approximately 825-linear feet of Flat Creek; installation of four log/rock J-hooks, two log vanes, two rock weirs and 500-feet of sod mats. The project also involved creating a functional deep water wetland adjacent to the creek. The restoration project was completed in 2013. Monitoring completed for this project indicates the bio-engineered stream channel in the project area was constructed successfully, and effective techniques were used to re-establish riparian vegetation and improve overall habitat and water quality (see page 15 for more information about monitoring results for this project). This project was initiated in April 2010 and closed in December 2013. The project expended a total of \$129,521 in Section 319 funds and accrued \$177,353 in non-federal match.



*Pre-restoration conditions (left) and post-restoration conditions (right) at site within Flat Creek Restoration Project.*

*Photo Credits: Teton Science Schools and Y2 Consultants, LLC*

## Appendix B—Continued: Summaries of Third-Party Section 319 Projects Completed in FY14

**Cody River Days Festival (NPS2012C); The Nature Conservancy:** The 1<sup>st</sup> annual Cody Wild West River Fest, held on August 23-24, 2013, was an information and education project designed to educate community members and landowners about water conservation issues and to present strategies for water quality improvement. The festival attracted over 1,000 participants from all over the Big Horn Basin and from Montana, Colorado, Idaho, and several other states. In addition to community education, a secondary objective of the project was to build partnerships between the Conservancy and groups and/or agencies interested in water conservation; six groups joined the Conservancy on the steering committee and there were another 12 cooperating partners on the event. These partners helped organize and staff many educational activities at the event like riparian plant identification, native tree planting, fish migration activities, the connection between aquatic life and water quality, and the impacts of rainfall and land use on water quality. Partners also helped organize and run a water quality improvement forum for producers. The organizers also made significant strides toward financial stability for the event. Both donations and revenue were strong in the first year of the festival, and will hopefully continue in year two. This project was initiated in May 2012 and was completed in December 2013. The project expended \$20,000 in Section 319 funds and accrued \$24,145 in non-federal match.



*Photo credits: Richard Garrett*

**Pathway to Water Quality (NPS2010G):** The “Pathway to Water Quality” project implemented innovative management practices to protect water quality, reduce erosion, eradicate invasive species, enhance a wetland, and establish native grasses and tree species while serving as an education demonstration project on the Wyoming State Fairgrounds. The project has been implemented over a 3-4 year period. This project has resulted in approximately 75-80% of the runoff from the Wyoming State Fair Park being captured and diverted to a wetland area to be filtered prior to entering the North Platte River. The Project Partners and volunteers have invested nearly \$500,000 in enhancing the Wyoming State Fair Park and protecting water quality, while providing an educational opportunity to the more than 40,000 State Fair Park users. This final phase of the project was completed during the spring and summer of 2013 and included the completion of the Wetland Interpretative Park. Construction of the patio and walkway was begun in early spring and completed in late July to complete the Wetland Interpretative Park. Additional wetland plants were planted and hydro-seeding occurred to re-establish plants where construction occurred. Five additional interpretive signs were installed to provide information on wetland vegetation, constructed wetlands, the role of vegetation in reducing storm water runoff, wetlands and water cycles, and wetland benefits to wildlife. This project was initiated in April 2013 and completed in December 2013. The project expended \$20,000 in Section 319 funds and accrued \$14,395 in non-federal match.



*Photo credit: Wyoming Natural Resource Foundation*

**Appendix B—Continued: Summaries of Third-Party Section 319 Projects Completed in FY14**

**East Fork of the Wind River Planning and Design (ON909); Wyoming Wildlife—The Foundation:** The goal of this project was to develop three conceptual-level design options that described methods to reduce sedimentation of the East Fork of the Wind River within the Spence and Moriarity Wildlife Habitat Management Area. On August 21, 2014, the contracted engineering firm conducted a geomorphic assessment of the project area. The data from this assessment were compared to reference reach data to determine the degree of departure from stable conditions. Analysis of this data and the comparison reach indicated that the project reach is unstable. The contracted engineer supplied three design options describing possible methods to reduce sedimentation issues along with their respective cost estimates. The three options include: (1) point of diversion relocation and ditch extension without main channel modification, (2) point of diversion relocation, channel realignment, and ditch extension, and (3) channel realignment and sediment sluice at existing point of diversion. This project was initiated in April 2014 and was completed in September 2014. The project expended a total of \$42,471 in Section 319 funds.

*Photo credit: Stantec  
Consulting Services, Inc.*



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<http://deq.wyoming.gov/wqd/non-point-source/>  
(Nonpoint Source Program website)

