2012 Performance and Progress Report

State of Idaho Nonpoint Source Management Program

State of Idaho
Department of Environmental Quality

April 2013

Cover photo: Root wads on the Kootenai River trap natural debris, protecting the bank from erosion and creating fish habit. For more information, see page 52.

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Acronyms and Abbreviations

AFO	animal feeding operation
BAG	basin advisory group
BMP	best management practice
BRO	Boise Regional Office
CRO	Coeur d'Alene Regional Office
DEQ	Idaho Department of Environmental Quality
EPA	US Environmental Protection Agency
GRTS	grants reporting and tracking system
IASCD	Idaho Association of Soil Conservation Districts
IDFG	Idaho Department of Fish and Game
IFRO	Idaho Falls Regional Office
LID	low impact development
LRO	Lewiston Regional Office
MOU	memorandum of understanding
NPS	nonpoint source
PCEI	Palouse-Clearwater Environmental Institute
PRO	Pocatello Regional Office
RC&D	resource conservation and development
Section 303(d) (§303(d))	Section 303(d) of the Clean Water Act
Section 319 (§319)	Section 319(h) of the Clean Water Act
SRF	State Revolving Fund
SWCD	soil and water conservation district
TFRO	Twin Falls Regional Office
TMDL	total maximum daily load
USGS	US Geological Survey
WAG	watershed advisory group

Root wads, log barbs, bio-logs, and plantings help stabilize a streambank on the Kootenai (page 52).

Section 1. Overview

This document summarizes the State of Idaho Nonpoint Source Management Program's performance and progress for the period from December 1, 2011, through November 30, 2012. The Department of Environmental Quality (DEQ) administers the program for the State of Idaho.

1.1 Introduction

Clean Water Act Section 319(h) requires the US Environmental Protection Agency (EPA) to make an annual determination of satisfactory progress in meeting the milestones of each state's nonpoint source (NPS) management plan. To assist EPA in making this determination, DEQ provides an annual report that assesses the program's performance and progress toward meeting the goals and milestones in Idaho's plan.

Idaho's Nonpoint Source Program

Congress established the national NPS program in 1987 when it amended the Clean Water Act with §319, "Nonpoint Source Management Programs." States were given the federally funded mandate to address NPS water pollution by (1) conducting statewide assessments of their waters, (2) developing NPS management programs to address identified impaired or threatened waters, and (3) implementing EPA-approved, federally funded NPS management programs to remediate and prevent NPS pollution.

In accordance with the congressional mandate, DEQ places strong emphasis on ensuring that §319 funds are directed to on-the-ground projects that prevent, reduce, or eliminate NPS pollution in Idaho's surface water and ground water. Idaho's NPS Program has funded hundreds of on-the-ground projects since 1998. The majority of these projects were designed to remediate and prevent NPS pollution, thereby resulting in measurable pollution reduction.

The State Revolving Fund and the NPS Program

Starting in 2011, the NPS Program began to work closely with the State Revolving Fund (SRF) Program to leverage SRF wastewater loans, thereby providing funding to help offset lower levels of Subsection 319 assistance.

In general, the SRF funding protocol provides for allowing the interest rate charged on a traditional SRF wastewater project loan to be adjusted to accommodate an NPS project's financial needs. Projects funded in this manner are then administered by DEQ's 319 grant staff and have essentially the same administrative conditions as a project funded with a traditional 319 grant.

A Sponsorship Agreement is required for projects receiving funds from the SRF. The funds for the NPS project result from reducing the interest rate on the SRF loan.

Since 2012 the SRF has been used to fund five NPS projects. Throughout this report, projects funded from the SRF are identified alphanumerically, beginning with the letters "WW" and followed immediately by four integers.

Scope of the Program

DEQ managed 75 active projects (Table 1) in 2012. Each project is described in a subgrant agreement established between DEQ and the project sponsor. Project sponsors may include federal or state agencies, counties, municipalities, nonprofit organizations, or private individuals.

Table 1. Nonpoint source funding summary for projects active during 2012, including projects closed during 2012.

Sub-grant	Project Name	Project Sponsor	Start Date	End Date	§319 Grant Amount	Total Spent (through 11/30/2012)	Balance (as of 11/30/2012)
S212	American River Water Quality Improvement	Framing Our Community, Inc.	07/09/07	01/30/12	$238,242.00	$238,242.00	$0.00
S213	Owyhee Restoration Incentive	Owyhee Watershed Council	07/16/07	01/30/12	$201,785.00	$198,785.00	$3,000.00
S215	Copper Creek Restoration	Lava Lake Land & Livestock	08/15/07	12/12/11	$161,000.00	$161,000.00	$0.00
S219	Big Lost River Temperature and Sediment Reduction	Trout Unlimited	08/27/07	01/30/12	$112,200.00	$80,194.78	$32,005.22
S223	Marsh Creek Watershed Phase 1	Portneuf Soil and Water Conservation District (SWCD)	10/15/07	12/15/12	$250,000.00	$249,032.35	$967.65
S227	Lindsay Creek Riparian Management	Palouse-Clearwater Environmental Institute (PCEI)	12/10/07	01/31/12	$149,774.38	$149,774.38	$0.00
S246	Croy Creek Wetland Restoration	Wood River Land Trust	06/15/08	03/15/13	$99,419.00	$99,418.83	$0.17
S247	Little Weiser River Stream Bank Protection	Adams SWCD	06/15/08	03/15/13	$201,050.00	$191,069.16	$9,980.84
S248	South Fork Palouse River Riparian Restoration	PCEI	06/30/08	03/20/13	$158,971.00	$92,220.81	$66,750.19
S250	North Idaho Animal Feeding Operation (AFO) Implementation Phase 4	Latah SWCD	06/20/08	03/20/13	$215,086.00	$132,886.06	$82,199.94
S251	Lawyer Creek	Lewis SWCD	06/20/08	03/20/13	$250,000.00	$89,700.00	$160,300.00
S252	E Coulee Drain Elimination	Balanced Rock SWCD	06/30/08	06/30/12	$204,500.00	$204,500	0.00
S279	Tammany Road Erosion Reduction Phase 2	Nez Perce SWCD	10/01/08	12/31/11	$185,247.00	$185,246.99	$0.01
S280	American and Red River	Framing Our Community, Inc.	10/15/08	12/21/12	$247,943.00	$162,776.00	$85,167.00
S292	N Idaho AFO Implementation Phase 3B (Formerly S181)	Idaho Association of Soil Conservation Districts (IASCD)	04/09/09	12/31/10	$67,100.00	$67,100.00	$0.00
S307	Bruneau-Grand View Ground Water Quality Management Plan	Bruneau River SWCD	06/02/09	12/31/13	$238,707.00	$163,550.00	$75,157.00
S310	Potlatch River Watershed Management Plan Phase 1	Latah SWCD	06/15/09	12/31/13	$205,028.00	$102,376.02	$102,651.98
S311	Pend Oreille Lake *A*Syst	Bonner SWCD	06/15/09	12/31/13	$36,368.00	$26,441.99	$9,926.01
S312	Camas Prairie Ground Water Nitrate Priority Area Phase 3	Lewis Soil Conservation District	06/15/09	12/31/13	$245,000.00	$195,267.40	$49,732.60
S313	Fish Creek Road Improvement	Bonner SWCD	06/15/09	12/31/13	$147,268.00	$89,244.89	$58,023.11
S321	Latour Creek Road Improvement	Idaho Department of Lands	07/01/09	12/31/13	$250,000.00	$94,500.00	$155,500.00
S323	Canyon County Best Management Practices (BMPs) for Water Quality Improvement	Lower Boise Watershed Council	07/01/09	12/31/13	$250,000.00	$225,000.00	$25,000.00
S326	Short and Riley Creeks (Porter Memorial)	North Idaho Fly Casters	07/27/09	12/31/13	$20,000.00	$19,979.10	$20.90
S327	Lower Payette River TMDL Implementation Phase 3	Gem SWCD	07/20/09	12/31/13	$180,000.00	$164,456.26	$15,543.74
S329	Mores Creek Floodplain Restoration	West Central Highlands Resource Conservation & Development (RC&D)	08/01/09	12/31/13	$96,000.00	$96,000.00	$0.00
S330	Boulder Ridge Ranch Wetlands	Balanced Rock SWCD	08/01/09	12/31/13	$249,000.00	$90,378.00	$158,622.00
S331	East Fork Potlatch River Riparian	Idaho Department of Fish and Game (IDFG)	08/01/09	12/31/13	$80,000.00	$22,239.93	$57,760.07
S332	Lapwai Creek Integrated Analysis	University of Idaho	08/14/09	12/31/13	$59,301.00	$33,652.72	$25,648.28
S333	North Idaho AFO Implementation Phase 3C	IASCD	10/01/09	12/31/13	$41,965.00	$41,965.00	$0.00
S356	Ada County BMPs Four Corners	Ada SWCD	12/10/09	12/31/13	$48,000.00	$12,000.00	$36,000.00
S381	Boulder Creek Restoration	Trout Unlimited	05/28/10	12/31/14	$5,400.00	$4,000.00	$1,400.00

Sub-grant	Project Name	Project Sponsor	Start Date	End Date	§319 Grant Amount	Total Spent (through 11/30/2012)	Balance (as of 11/30/2012)
S385	I Coulee Wetland	Balanced Rock SWCD	06/01/10	12/31/14	$52,200.00	$52,200.00	$0.00
S389	Little Salmon River Watershed Riparian Restoration	IDFG	06/15/10	12/31/14	$41,405.00	$13,628.05	$27,776.95
S392	Upper Bear River Streambank Stabilization	Bear Lake Regional Commission	07/02/10	12/31/14	$24,970.00	$24,970.00	$0.00
S393	Blackfoot River Water Quality	Three Rivers RC&D	06/22/10	12/31/14	$93,474.00	$46,552.93	$46,921.07
S394	South Fork Clearwater River Watershed Vegetation	PCEI	06/02/10	12/31/14	$246,261.00	$29,325.19	$216,935.81
S395	Upper Hangman Creek Watershed Road and Culvert	Benewah SWCD	06/21/10	12/31/14	$17,538.00	$17,429.14	$108.86
S396	Potlatch River Watershed Management Plan Phase 2	Latah SWCD	06/01/10	12/31/14	$207,302.00	$20,730.15	$186,571.85
S397	Mica Creek Sediment and Nutrient Reduction Phase 2	Kootenai-Shoshone SWCD	07/01/10	12/31/14	$91,080.00	$91,077.00	$3.00
S399	Marsh Creek and Middle Portneuf River Watershed	Portneuf SWCD	07/01/10	12/31/14	$249,550.00	$171,848.35	$77,701.65
S401	Little Weiser River Stream Bank Stabilization and Restoration	Adams SWCD	07/19/10	12/31/14	$187,386.00	$127,044.33	$60,341.67
S402	Daniels Reservoir Sediment Reduction	Oneida SWCD	07/20/10	12/31/14	$170,329.00	$126,749.60	$43,579.40
S404	Bear Valley Casner Creek Restoration	Trout Unlimited	07/27/10	12/31/13	$33,000.00	$15,099.00	$17,901.00
S405	Payette Ditch Water Discharge Treatment	Weiser River SWCD	08/10/10	12/31/14	$51,737.00	$51,737.00	$0.00
S406	American River and Red River Phase 2	Framing Our Community, Inc.	09/13/10	12/31/14	$250,000.00	$192,748.45	$57,251.55
S425	Potlatch River Watershed Management Plan Phase 3	Latah SWCD	07/25/11	05/31/15	$207,523.00	$20,752.30	$186,770.70
S426	Palisades Creek	Trout Unlimited	07/25/11	06/01/15	$90,000.00	$90,000.00	$0.00
S427	St. Maries River Road Improvement	Benewah County	07/25/11	05/31/15	$237,504.00	$40,473.00	$197,031.00
S428	Grimes Creek Restoration Cooling Waters	Trout Unlimited	08/01/11	05/31/15	$60,000.00	$17,509.00	$42,491.00
S429	Kootenai River Bank Restoration	Kootenai Tribe of Idaho	08/15/11	05/31/15	$250,000.00	$250,000.00	$0.00
S430	Upper Blackfoot River Improvement Phase 1	Caribou SWCD	08/15/11	05/31/15	$195,255.00	$44,729.82	$150,525.18
S431	Bear River and Whisky Creek AFOs	Caribou SWCD	08/15/11	05/31/15	$212,615.00	$21,261.50	$191,353.50
S432	Boulder and Willow Creek Restoration	IDFG	08/18/11	05/31/15	$10,250.00	$0.00	$10,250.00
S433	Little Salmon River Watershed Improvement	IDFG	08/18/11	05/31/15	$51,700.00	$0.00	$51,700.00
S434	Upper Bear River Streambank (Peterson Property)	Bear Lake Regional Commission	09/01/11	04/01/14	$75,488.00	$49,705.09	$25,782.91
S443	Canyon County BMPs	Lower Boise Watershed Council	01/18/12	12/31/15	$250,000.00	$0.00	$250,000.00
S444	Mud Creek and Silo Creek	Balanced Rock SWCD	05/14/12	12/31/13	$158,622.00	$0.00	$158,622.00
S458	Cold Springs Creek Riparian Restoration	Elmore SWCD	08/06/12	12/31/16	$40,476.00	$0.00	$40,476.00
S459	Rock Creek BMPs	Idaho SWCD	08/13/12	12/31/16	$95,764.00	$0.00	$95,764.00
S460	Potlatch River Phase IV	Latah SWCD	08/13/12	12/31/16	$207,302.00	$20,730.15	$186,571.85
S461	Upper Bear River Streambank Stabilization Project 11 (2)	Bear Lake Regional Commission	08/13/12	12/31/16	$54,350.00	$0.00	$54,350.00
S462	Clear Creek Road Restoration	Valley County Road Department	07/30/12	07/30/14	$70,000.00	$0.00	$70,000.00
S463	Cove Creek Wetlands	Weiser River SWCD	08/16/12	12/31/16	$127,698.00	$18,072.94	$109,625.06
S464	Coeur D'Alene River at Medimont	Kootenai-Shoshone SWCD	08/17/12	12/31/16	$129,000.00	$111,282.00	$17,718.00
S465	Valley County Watershed	Valley SWCD	09/01/12	11/30/16	$105,000.00	$5,697.00	$99,303.00
S467	Pebble Creek	Portneuf SWCD	09/14/12	12/01/16	$180,729.00	$0.00	$180,729.00
S468	St. Maries River Road Phase 2	Benewah County	09/26/12	12/01/16	$238,821.00	$23,882.10	$214,938.90
S469	Twin Falls Coulee	Snake River SWCD	10/03/12	12/01/16	$106,300.00	$10,630.00	$95,670.00

Sub-grant	Project Name	Project Sponsor	Start Date	End Date	§319 Grant Amount	Total Spent (through 11/30/2012)	Balance (as of 11/30/2012)
S471	Station Creek Watershed Improvement	Franklin SWCD	10/16/12	12/31/16	$125,008.00	$0.00	$125,008.00
S472	Lindsay Creek Water Quality Improvement Phase I	Nez Perce SWCD	10/17/12	12/31/15	$135,721.00	$0.00	$135,721.00
WW1010	Middle Bear River Watershed (Mound Valley)	Franklin SWCD	12/24/09	09/28/14	$358,704.74	$0.00	$358,704.74
WW1103	Teton Creek Channel Repair	Friends of the Teton River	04/30/11	04/30/13	$150,000.00	$49,200.00	$100,800.00
WW1201	Trout Creek AFO	Caribou SWCD	09/05/12	09/05/13	$248,804.00	$0.00	$248,804.00
WW1205	North Fork Payette River	Alzar School	02/28/12	12/28/14	$42,750.00	$0.00	$42,750.00
WW1207	Ovid Creek Stream Protection	Bear Lake SWCD	03/15/12	12/31/14	$84,375.00	$8,437.00	$75,938.00

Assessing Program Performance

DEQ operates under the goals and objectives incorporated in the 1999 *Idaho Nonpoint Source Management Plan*, which provides guidance for developing an annual work plan required to effectively administer the program (DEQ 1999). Work plan tasks for fiscal year 2012 are presented in section 1.2.

Framework of the Program

NPS Program functions include the following:

- Implementing watershed plans that target meeting total maximum daily loads (TMDLs) for pollutants and require adhering to drinking water, source water protection, and ground water management plans developed for the watershed
- Targeting compliance with water quality standards
- Evaluating the successful implementation of projects proceeding under their respective work plans and approved watershed plans, through water quality and various forms of effectiveness monitoring

Program Emphasis and Focus

Most program-managed projects focus on reducing NPS pollution associated with agricultural and grazing practices. Other NPS pollution sources in which the program has invested resources include the following:

- Fisheries
- Forestry
- Mining
- Transportation
- Urban and rural stormwater

Determining Pollutant Load Reductions

DEQ requires project sponsors to submit estimated load reductions of sediment, phosphorous, and nitrogen resulting from the completion of each project. Most projects take place within or close to a particular water body. A project's pollution load reduction can be added to load reductions resulting from other projects within the watershed to show a cumulative load reduction over the entire basin.

Providing Technical Support

Idaho's NPS Program provides technical support through various actions:

- Facilitating and coordinating implementation of the *Idaho Nonpoint Source Management Plan* (DEQ 1999)
- Developing and assisting with new technical approaches aimed at improving surface water and ground water quality
- Promoting natural resource partnerships, interagency collaboration, environmental education, and information transfer
- Ensuring consistency of base-level implementation activities related to TMDLs

- Training for project application, invoicing, and reporting
- Managing §319 funds in accordance with standard accounting and reporting practices

Public Participation

Public participation is an important component of the NPS Program and is mainly achieved through interaction with watershed advisory groups (WAGs) and basin advisory groups (BAGs) in accordance with Idaho Code 39-3601. Both WAGs and BAGs are required to evaluate and recommend actions necessary for improving water quality across the state.

In addition, the NPS Program works to coordinate activities with local, state, tribal, and federal agencies, whose support is essential to closing the feedback loop as provided for in the 1999 *Idaho Nonpoint Source Management Plan*, project-by-project, within each of the major river basins in the state.

1.2 Calendar Year 2012 Nonpoint Source §319 Grant Work Plan

NPS Program tasks are defined in terms of "outputs," as described for the following tasks.

Task 1: DEQ State Office Administration

Output:	Maintain a process for soliciting new nonpoint source related projects, monitor program activities, process and track grant expenditures to ensure compliance with Clean Water Act §319 program requirements and federal grant conditions.
Milestone:	As needed: July 1, 2012, through June 30, 2013
Estimated cost:	$152,054
Staffing level:	1.56 fulltime positions

Task 2: Develop Procedures and Guidance Materials

Output:	Draft procedures and guidance to support new and ongoing program implementation efforts.
Milestone:	As needed
Estimated cost:	$51,967
Staffing level:	0.53 fulltime positions

Task 3: Revise Memoranda of Understanding (MOUs) with Designated Management Agencies (DMAs)

Output:	Revised MOUs.
Milestone:	On a schedule agreed to with EPA
Estimated cost:	$23,097
Staffing level:	0.24 fulltime positions

Task 4: Program Implementation

Output 4A:	Collaborate with partners to target priority waters of the state that would benefit as a result of an NPS project being implemented.
Milestone:	July 1, 2012, through June 30, 2013
Output 4B:	Implement program work plan as necessary to meet objectives and the key elements of TMDL Implementation Plans. In partnership with DMA's WQ monitoring will be encouraged and may be performed to assess improvements to water quality. Routine Program evaluations will provide insight on implementation effectiveness and allow corrective action to be taken, as needed.
Milestone:	July 1, 2012, through June 30, 2013
Output 4C:	Support the Idaho Water Quality Monitoring and Management Conference.
Milestone:	February 2013
Estimated cost of 4A–4C:	$154,941
Staffing level:	1.59 fulltime positions

Task 5: Evaluate Nonpoint Source Projects

Output:	Perform an on-site evaluation of a minimum of 50% of all active and a set number of legacy projects to assess progress and the long term performance of previously implemented BMPs.
Milestone:	Annually, May through October
Estimated cost:	$51,967
Staffing level:	0.53 fulltime positions

Task 6: Integrate NPS Program Protocols with Water Pollution Control Loan (SRF) Program Protocols

Output:	Achieve mutual goal of leveraging SRF-generated funding to implement projects that meet respective program criteria.
Milestone:	Annually
Estimated cost:	$9,624
Staffing level:	0.10 fulltime positions

Task 7: Provide Technical Support, Education, and Information Transfer on Watershed-Based Plan and TMDL Implementation Activities

Output:	Provide base-level support to watershed-based planning efforts and TMDL implementation plan activities.
Milestone:	Annually, as requested
Estimated cost:	$18,285
Staffing level:	0.19 fulltime positions

Task 8: Develop, Review, and Distribute the Annual Program Performance and Progress Report

Output:	Submit report to EPA Region 10.
Milestone:	Annually, in March
Estimated cost:	$21,172
Staffing level:	0.22 fulltime positions

Task 9: Conduct Required Reporting to the Federal Grants Reporting and Tracking System (GRTS) Database

Output:	Complete entry of mandatory data into GRTS.
Milestone:	Annually, by February 15.
Estimated cost:	$21,172
Staffing level:	0.22 fulltime positions

Task 10: Update Idaho Nonpoint Source Management Plan

Output:	Draft of revised Idaho Nonpoint Source Management Plan.
Milestone:	By June 30, 2013
Estimated cost:	$21,172
Staffing level:	0.22 fulltime positions

Task 11: Surface Water Quality Management

Output:	Support 319 Program goals and objectives by developing water quality standards, conducting assessments, and completing the biannual Integrated Report.
Milestone:	Ongoing
Estimated cost:	$350,363
Staffing level:	3.65 fulltime positions

1.3 Schedule and Budget Utilization

For active projects, Figure 1 illustrates how much time each project has been underway compared to the amount of time provided to complete the project. Figure 2 shows the NPS §319 funds expended through November 30, 2012, for each active project compared to the total amount of NPS §319 project funds provided.

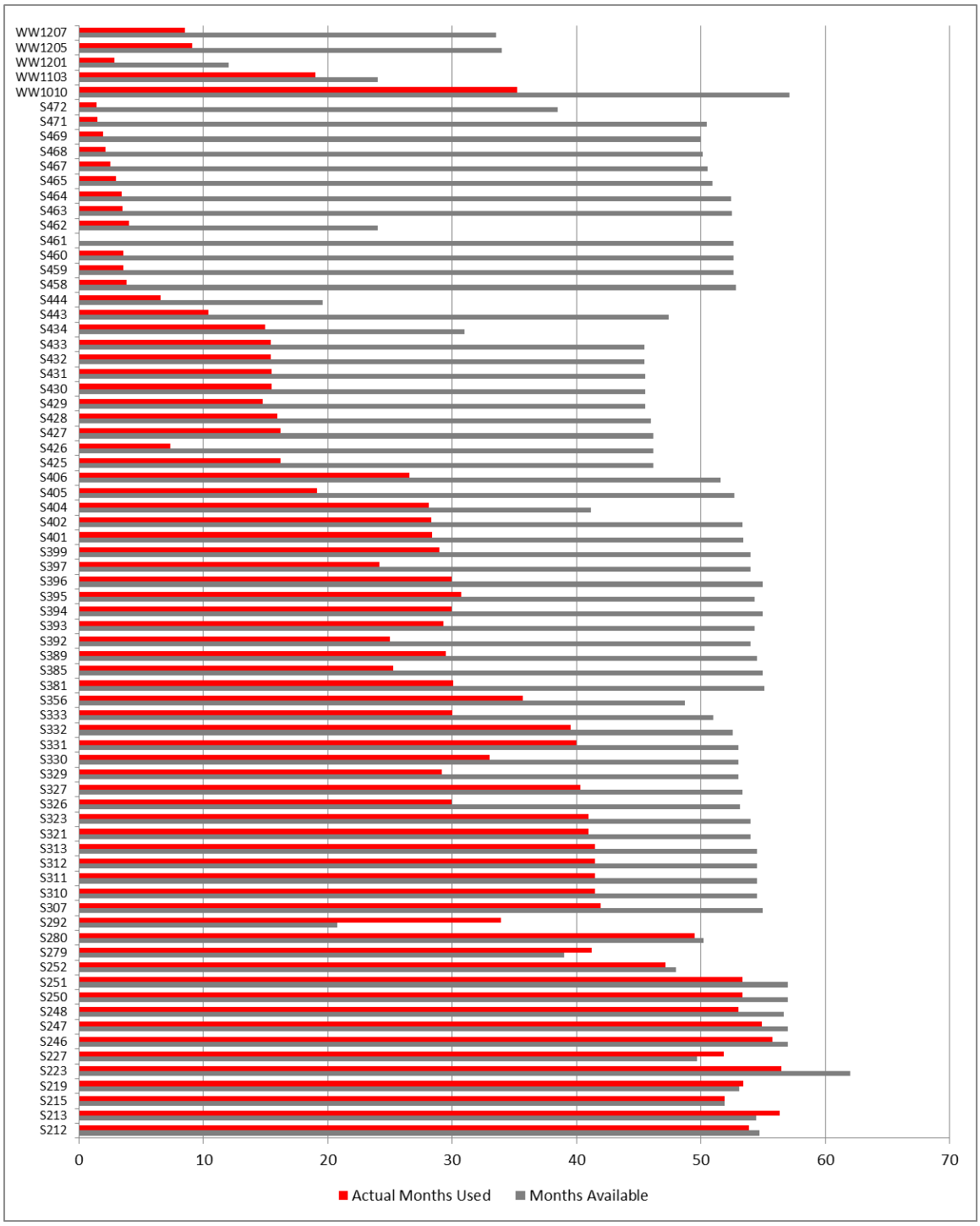

Figure 1. Active projects, time used, and total time available. The red bars represent the total number of months the project has been underway. The gray bars represent total months available for project completion. [Note: Active projects are any projects funded in federal grant years 2008—2013, inclusive]

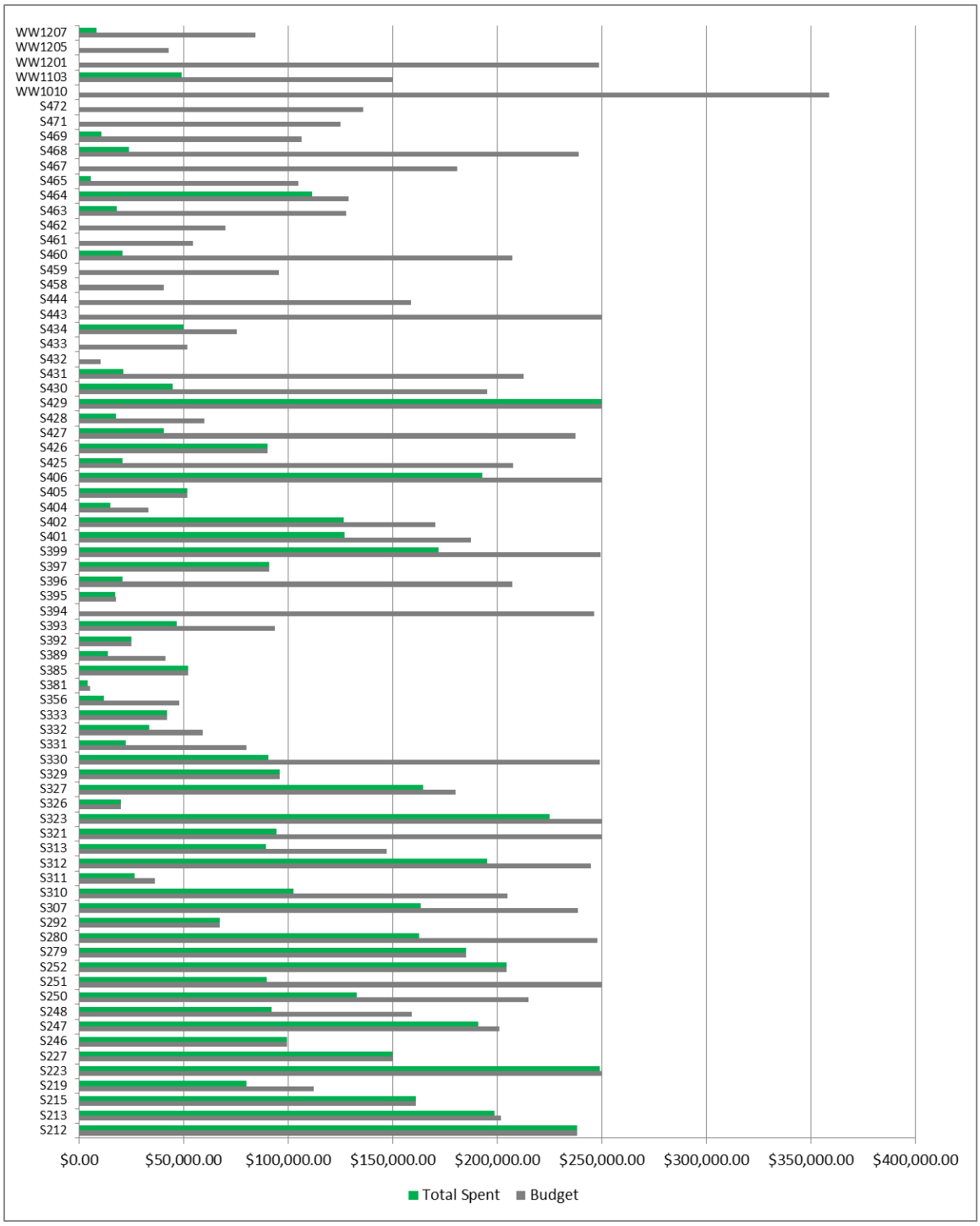

Figure 2. Budget usage by active projects. The gray bars represent the total federally funded budget for each project. The green bars show the amount expended through November 30, 2012.

Section 2. Project Field Evaluations—2012

This section summarizes the project field evaluations DEQ performed in 2012. Following this section, Section 3 starts on page 18 and continues with a short report on each completed evaluation.

The full report on each field evaluation is available at the DEQ State Office.

2.1 Introduction

In 2012, DEQ managed 75 active projects across the state (Figure 3). Of these, 35 were evaluated in the field (Figure 4) and 15 projects were determined to be complete and were subsequently closed out.

2.2 Field Evaluation Process

The field evaluation process begins with a staff review of the project's subgrant agreement. The review is used to determine the project sponsor's compliance with the agreement. An evaluation form is used to report on compliance with the project workplan and budget.

2.3 Results

Table 2 lists and briefly describes all projects that were field-evaluated during 2012.

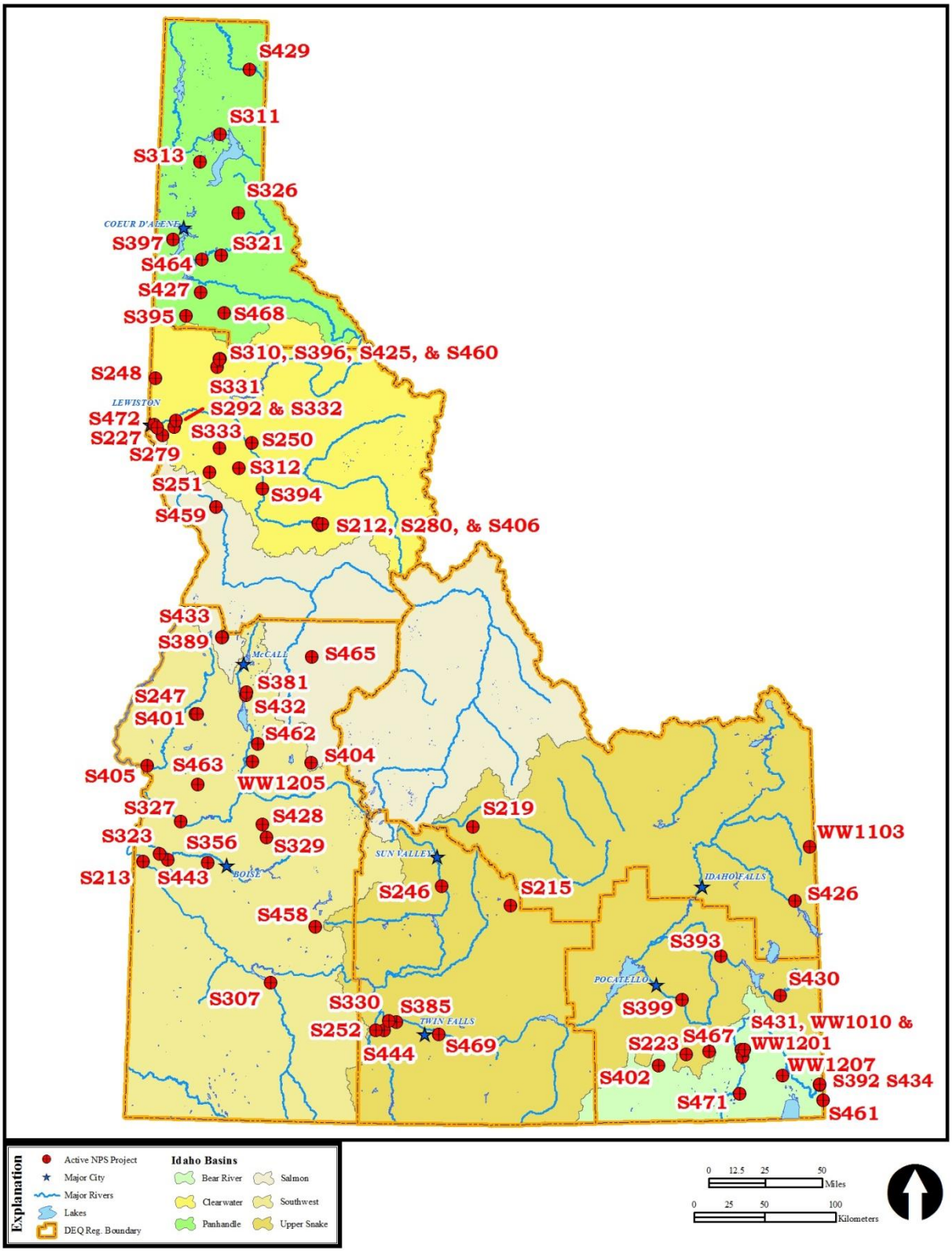

Figure 3. Active or recently closed nonpoint source projects, as of November 30, 2012.

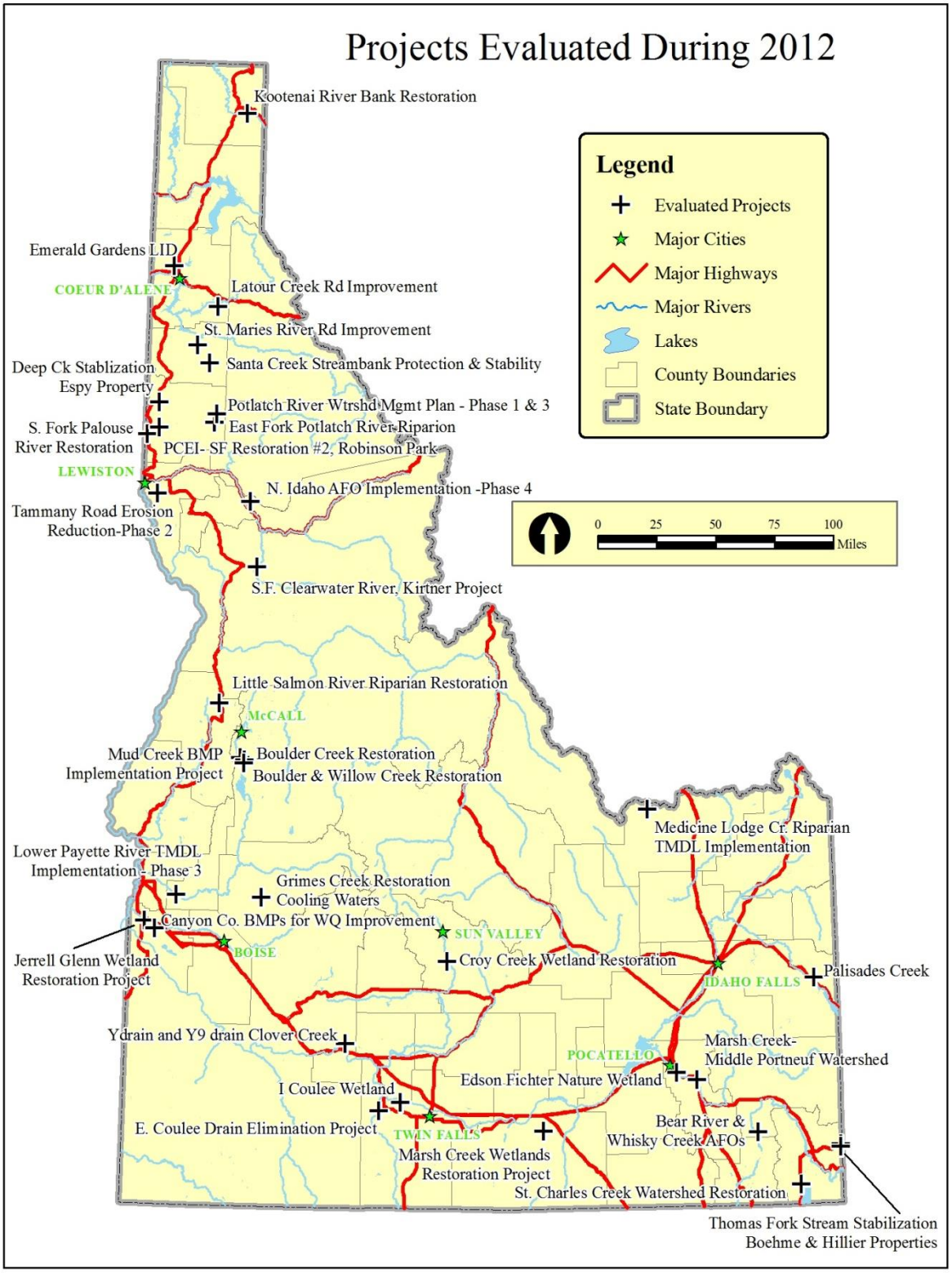

Figure 4. Nonpoint source projects evaluated during 2012.

Table 2. Projects field-evaluated during 2012.

Sub-grant	Project Name	Project Goals and Evaluation Conclusions	Category	DEQ Region[a]
S024/ S095	Santa Creek and Santa Creek Phase 2	Stabilization of shoreline and riparian area within the floodplain of Santa Creek. This project is the main component of the Santa Creek TMDL implementation plan. There are some minor signs of overgrazing, but, generally, the BMPs are holding up well. (See page 20 for more information.)	Agriculture	CRO
S051	Medicine Lodge Creek	The goal of this project was to reduce sediment deposition in Medicine Lodge Creek and improve fish habitat. No deficiencies were found. (See page 21 for more information.)	Agriculture	IFRO
S076	South Fork Palouse River Restoration	BMPs installed as part of this project helped reduce sediment and nutrient loads and restored shading. (See page 22 for more information.)	Agriculture	LRO
S077	Mud Creek Streambank Restoration	BMPs installed helped reduce sediment load and uncontrolled grazing in the watershed. The BMPs are functioning very well. (See page 23 for more information.)	Agriculture	BRO
S093	Edson Fichter Nature Area	BMPs installed helped reduce sediment loads to the Portneuf River. No deficiencies were found during this evaluation. (See page 24 for more information.)	Urban and Rural Stormwater	PRO
S120	Jerrell Glenn Wetland Restoration	This project reduces pollutants to surface water and serves as a model for water quality improvement projects in Canyon County. The BMPs are functioning well, and serving to help reduce the amount of phosphorous, nitrogen, sediment, and bacteria in irrigation return water. However, the wetland is not being adequately maintained and is almost totally overgrown with cattail. (See page 25 for more information.)	Agriculture	BRO
S143	South Fork Palouse Robinson Park	BMPs collect thousands of tons of fine-grained sediments. All of the BMPs are being well maintained and are functioning as intended. (See page 26 for more information.)	Agriculture	LRO
S147	Emerald Gardens Low Impact Development	This project includes numerous low impact development (LID) BMPs. All of the BMPs are functioning well. (See page 27 for more information.)	Urban and Rural Stormwater	CRO
S168	Y and Y9 Drain Irrigation Return Flow Elimination	This project eliminated a major irrigation return flow into Clover Creek and the Snake River. All of the BMPs are being well maintained. (See page 28 for more information.)	Agriculture	TFRO
S180	South Fork Clearwater, Kirtner and Rylaarsdam Projects	This project consists of two subprojects: the Kirtner site on the South Fork Clearwater River and the Rylaarsdam site on a tributary to the South Fork Clearwater River. Riparian area vegetative on the Kirtner site has suffered some degradation due to very high spring runoff over the past several years. Hardscape toe armor, rip-rap, and rock barbs have remained in place and are functioning as designed. All BMPs at the Rylaarsdam site are in good condition and functioning as intended. The vegetation planted in 2006–2007 is mature and functioning as designed to reduce sediment and nutrient transport to the River. (See page 29 for more information.)	Agriculture	LRO
S182	Deep Creek Bank Stabilization Project	Streambanks were resloped and riparian buffer was installed. Bank stabilization is reducing sediment, nutrient, bacteria, and temperature loading to the Palouse River via Deep Creek. No discrepancies were found during the evaluation. (See page 30 for more information.)	Agriculture	LRO
S189	St. Charles Creek Watershed Restoration	Restoration of wetland habitat for the imperiled Bonneville cutthroat trout. There were no discrepancies. (See page 31 for more information.)	Agriculture	PRO
S207	Thomas Fork Streambank Stabilization Project, Hillier Property	This project involved reshaping streambanks to reduce sediment, phosphorus, and nitrogen loading; decrease daily temperature fluctuations through increased vegetative canopy; and improve aquatic habitat conditions. No deficiencies were found during the evaluation. (See page 32 for more information.)	Agriculture	PRO
S208	Thomas Fork Streambank Stabilization Project, Boehme Property	This project involved streambank resloping and stabilization, including planting riparian vegetation as a means of reducing sediment and nutrient concentrations. No deficiencies were found during the evaluation. (See page 33 for more information.)	Agriculture	PRO

Sub-grant	Project Name	Project Goals and Evaluation Conclusions	Category	DEQ Region[a]
S246	Croy Creek Wetland Restoration	Wood River Land Trust restored an area of illegal dumping, creating a large, naturally functioning riparian wetland. The Wood River Land Trust continues to conduct routine oversight of the site and the BMPs associated with this project. No deficiencies were found. (See page 34 for more information.)	Urban and Rural Stormwater	TFRO
S250	North Idaho AFOs Phase 4	There are fourteen subprojects spread over four counties in central Idaho associated with this project. The project manager is aware that the subgrant will expire in March 2013. His projection is that the project will be completed on time. (See page 35 for more information.)	Agriculture	LRO
S252	E Coulee Drain	Two sediment basins and one finishing pond treat irrigation return flow from farmland. All three ponds were observed functioning as designed, resulting in improved water quality being discharged to Salmon Falls Creek and the Snake River. (See page 36 for more information.)	Agriculture	TFRO
S279	Tammany Road Erosion Reduction, Phase 2	This project includes no-till crop planting techniques, filter strips, and streambank stabilization. No deficiencies were found during the evaluation. (See page 37 for more information.)	Transportation	LRO
S291	Marsh Creek Restoration	This partnership restored 60 acres of high quality seasonal and permanent wetlands in four areas along Marsh Creek. No deficiencies were found during the evaluation. (See page 38 for more information.)	Agriculture	TFRO
S310	Potlatch River Watershed Management Plan Phase 1	This project was to begin restoring and protecting steelhead habitat as identified in the *Potlatch River Watershed Management Plan*. Evaluation of the earlier implemented BMPs documented they were being well maintained and remain functional. (See page 39 for more information.)	Agriculture	LRO
S321	Latour Creek Road Improvement Project	The project brought the road into BMP compliance and reduced sediment transport to Latour Creek. No deficiencies were found during the evaluation. (See page 40 for more information.)	Transportation	CRO
S323	Canyon County BMPs for Water Quality	This project is placing nutrient management BMPs on seven farms along the lower Boise River. All of the BMPs evaluated were being well maintained and functioning as designed. (See page 41 for more information.)	Agriculture	BRO
S327	Lower Payette River TMDL Phase 3	This project installs BMPs to reduce sediment, phosphorous, and nitrogen discharge to the lower Payette River. Delays were experienced early in the project due to the loss of one major landowner. New landowners volunteered to implement various BMP's on their lands in 2013. (See page 42 for more information.)	Agriculture	BRO
S331	East Fork Potlatch River Riparian Canopy Enhancement	This project is directed at increasing the riparian canopy within the East Fork Potlatch River sub-watershed and reducing sedimentation. All of the BMPs look excellent. (See page 43 for more information.)	Agriculture	LRO
S381	Boulder Creek Restoration	Teacher Deirdre Bingaman, one of 18 teachers nationwide to receive the President's Innovation Award for Environmental Educators, oversaw her Donnelly fifth grade class in the design, contractor bidding, and construction of this streambank stabilization project. The hardscape and plantings were successfully installed and are functioning as intended. (See page 44 for more information.)	Forestry	BRO
S385	I Coulee Wetland Evaluation	Four in-line, elongated settling ponds treat irrigation return flow to the Snake River. All ponds are functioning as intended. (See page 45 for more information.)	Agriculture	TFRO
S389	Little Salmon River Watershed Riparian Restoration	The project reduces sediment and nutrients by excluding livestock and restoring riparian vegetation. The vegetation has enjoyed a nearly 100% survival rate and looks very healthy and stable. The fencing is in good condition and functioning as intended to keep livestock out of the riparian areas and creeks. (See page 46 for more information.)	Agriculture	BRO
S399	Marsh Creek Middle Portneuf Watershed	Subprojects include streambank stabilization to protect a USGS water flow gaging station, AFO improvements or relocations, and exclusionary fencing to protect Marsh Creek. All of the BMPs are in good condition and functioning as intended. (See page 47 for more information.)	Agriculture	PRO
S425	Potlatch River Watershed Management Plan Phase 3	Continuation of two previous projects to improve water quality and fish habitat within the Potlatch River Watershed. The BMPs DEQ visited were recently installed and are in good condition. (See page 48 for more information.)	Agriculture	LRO
S426	Palisades Creek	The goal of this project is to decrease stream gradient by restoring sinuosity. No deficiencies were found during the evaluation. (See page 49 for more information.)	Agriculture	IFRO

Sub-grant	Project Name	Project Goals and Evaluation Conclusions	Category	DEQ Region[a]
S427	St. Maries River Road Phase 1	This project involves removing right-of-way timber, widening the right-of-way, upgrading existing culverts, adding additional culverts, and improving road drainage. No deficiencies were found during the evaluation. (See page 50 for more information.)	Transportation	CRO
S428	Grimes Creek Restoration Cooling Waters	The Grimes Creek portion of the project has received treatments to reduce elevated temperatures. No deficiencies were found during the evaluation. (See page 51 for more information.)	Mining	BRO
S429	Kootenai River Bank Restoration	This project was one of the single largest NPS 319-related streambank protection projects ever undertaken in Idaho. All of the BMPs were in good condition and holding up well after one spring runoff. Some of the temporary exclusionary fencing installed had been damaged by elk or moose and will be repaired by the contractor. (See page 52 for more information.)	Agriculture	CRO
S431	Bear River/Whiskey Creek	This project consists of rerouting and stabilizing a tributary to Bear River around a former dairy barn and existing manure stockpile area, rejuvenating an old domestic well, installing exclusionary fencing, and installing pipeline to supply water to watering troughs. No deficiencies were observed during the evaluation. (See page 53 for more information.)	Agriculture	PRO
S432	Boulder and Willow Creek Restoration	This project includes the planting of over 500 trees and shrubs on two streams. No deficiencies were found during the evaluation. (See page 54 for more information.)	Agriculture	BRO

[a] Coeur d'Alene Regional Office (CRO), Idaho Falls Regional Office (IFRO), Lewiston Regional Office (LRO), Boise Regional Office (BRO), Pocatello Regional Office (PRO), Twin Falls Regional Office (TFRO)

Section 3. Project Field Evaluation Reports—2012

DEQ staff traveled to 35 project sites to evaluate and document progress and results of the funded work. A breakdown of the category of projects evaluated showed the following:

- 27 projects addressed NPS water quality issues related to agriculture or grazing.
- 1 project addressed issues related to forestry.
- 1 project addressed issues related to mining.
- 3 projects addressed issues related to transportation.
- 3 projects addressed issues related to urban and rural stormwater.

The following pages include summaries of the projects that were evaluated in 2012. More detailed evaluation reports for each project are available from DEQ upon request.

DEQ is committed to see that BMPs installed many years ago continue to function as designed and continue to capture sediment, phosphorous, and nitrogen. This commitment is doubly important because properly functioning BMPs result in cleaner water in Idaho, and DEQ can be confident that past annual estimated load reductions that have been submitted to EPA's GRTS system continue to be valid year after year.

Accordingly, during the 2012 evaluation season DEQ staff re-evaluated 15 projects that have been closed for up to eight years and five additional projects that were still open as of November 30, 2012. Because of all 20 re-evaluations, DEQ determined that BMPs installed on all of the projects except one (S077 Mud Creek Streambank Restoration) are functioning as good as or better than they were during our initial evaluations.

3.1 Santa Creek Phase 1 and 2 (Re-evaluated)

Subgrant: S024/S095 **Latitude and Longitude:** 47.16236, -116.48299

Description:
This project involved intensive stabilization of shoreline and riparian area within the floodplain of Santa Creek and is the main component of the Santa Creek TMDL implementation plan. The two projects provided continuous stream stabilization from Sanders Road to the highway at the downstream end of the ranch.

Completion date:
This project was first evaluated in 2003, and it was completed on schedule in 2004.

Features evaluated:
DEQ evaluated streambank and shoreline protection, exclusionary fencing, channel vegetation, drop structures, streambank reshaping, rock weir structures, a rocked inlet, low flow rock-lined channel, and prescribed grazing management (Figures 5–8).

Project status:
There are some minor signs of overgrazing, but, generally, the BMPs are holding up well.

Figure 5. About 85% of the 17,000 feet of streambank stabilization completed 10 years ago looks like this example now. Previously, uncontrolled grazing resulted in near vertical banks, little vegetation, and suppressed streamflow.

Figure 6. Log and rock drop structures, combined with bank stabilization and controlled grazing, have allowed Santa Creek to heal.

Figure 7. Drop structures eliminate down-cutting of the creek and provide good pool habitat for fish. Hardened structures like the one shown in this example are resistant to livestock intrusion.

Figure 8. A combination of rip-rap and vegetation were used. Much of the rip-rap is slowly being hidden by vegetation; this clump of willows was planted 8 years ago.

3.2 Medicine Lodge Creek (Re-evaluated)

Subgrant: S051 **Latitude and Longitude:** 44.44020, -112.61050

Description:
The goal of this project was to reduce sediment deposition within Medicine Lodge Creek and improve fish habitat.

Completion date:
This project was completed in 2006.

Features evaluated:
DEQ evaluated rock barbs, willow bundles, willow pole plantings, willow clumps, toe rock rip-rap, v-notch weirs, drop structures, grass, and livestock exclusionary fencing (Figures 9–12).

Project status:
No deficiencies were found.

Figure 9. In May 2003, work on Medicine Lodge Creek had just begun. The vertical banks were reshaped, and some toe armor had been put in place.

Figure 10. As of August 2012, sections of Medicine Lodge Creek shoreline that were reshaped, stabilized, and planted in 2003 are not producing sediment to the stream.

Figure 11. Some larger cut banks are still sloughing, but the large rock toe armor and willow plantings are capturing loose material before it gets in the creek. Eventually, vegetation will completely take over this bank.

Figure 12. Permanent irrigation head gates were installed in a segment where the rancher had previously used a bulldozer to open and close the irrigation canal, creating a major source of sediment to the creek each year.

3.3 South Fork Palouse River Restoration (Re-evaluated)

Subgrant: S076 **Latitude and Longitude:** 46.71360, -117.01880

Description:
Most of the wetlands and floodplains in the Palouse have been eliminated by modern land use, urbanization, and transportation infrastructure. BMPs installed as part of this project reduce sediment and nutrient loads to the river and restore vegetative shading.

Completion date:
This project was completed on schedule in 2004.

Features evaluated:
The intent of this re-evaluation was to check the status of BMPs, such as riparian plantings, installed in 2003–2004 (Figures 13–16).

Project status:
As shown by the accompanying photographs, the BMPs are functioning very well.

Figure 13. By July 2004 (our first evaluation), the cattle had been excluded, and hundreds of woody plants had been planted.

Figure 14. Now that the vegetation has matured, there is little sunlight getting to the water. Sediment and nutrients are prevented from entering the river as well.

Figure 15. Prior to this project, there was little or no vegetative shading in this area.

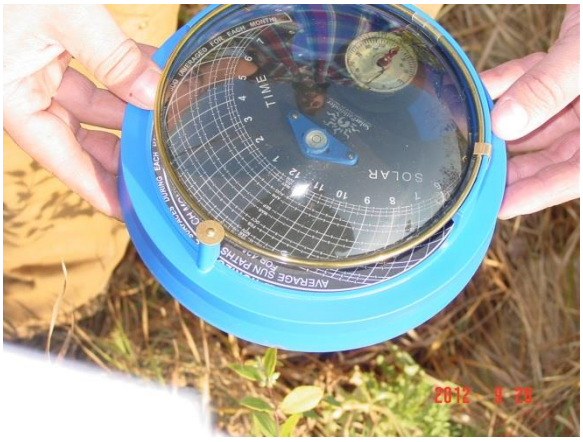

Figure 16. This Solar Pathfinder instrument is used to determine the amount of shading that occurs at a specific site in the river.

3.4 Mud Creek Streambank Restoration (Re-evaluated)

Subgrant: S077 **Latitude and Longitude:** 44.74610, -116.11280

Description:
This span of Mud Creek was impacted long ago by channelization. Channelization and impacts from uncontrolled grazing increased sediment loading to the creek.

Completion date:
This project was never completed due to a mid-project bankruptcy filing by the landowner, Tamarack Resort.

Features evaluated:
Three of the eleven-engineered structures installed in 2004 were evaluated. They are still in place and functioning but numerous streambank failures above and below the BMPs continue to affect the creek. (Figures 17–20).

Project status:
With the current landownership uncertain, no apparent effort is being taken to maintain the BMPs or to monitor their functioning condition.

Figure 17. In June 2004, several sections of Mud Creek bank were stabilized with these engineered log structures.

Figure 18. BMPs installed in 2004 were properly functioning and vegetation was beginning to reestablish since livestock had been excluded from the area.

Figure 19. In our re-evaluation in August 2012, we saw where this log bundle had tilted but was still anchored in place along the streambank. Willows and grass have grown within the BMP. Apparent uncontrolled cattle grazing in the area has resulted in an increased sediment load to Mud Creek during high-water events. All of this area, including the sandy area in the foreground, is routinely underwater during spring runoff.

Figure 20. In our August 2012 evaluation, there appeared to be no signs of on-going BMP maintenance. Apparently, the stream channel has meandered away from its previous course, leaving this log bundle several feet above full bank stream level.

3.5 Edson Fichter Nature Area (Re-evaluated)

Subgrant: S093 **Latitude and Longitude:** 42.82060, -112.40090

Description:
The goal of this project was to reduce sediment loading to the Portneuf River.

Completion date:
The project was completed on schedule in 2004.

Features evaluated:
DEQ evaluated revetments, vegetation along the streambank, the restoration of 700 feet of meandering stream channel, installation of 300 feet of water conveyance to a settling pond, a small settling pond temporarily closed for repairs, and a recently installed fishing pond (Figures 21–24).

Project status:
No deficiencies were found during this evaluation.

Figure 21. This August 2004 photograph shows a small settling pond installed to treat nutrient-contaminated water from the Portneuf River.

Figure 22. This 2012 photograph shows the much larger pond built adjacent to the old pond. Routinely stocked with fish by the Idaho Department of Fish and Game, this pond has become a popular fishing hole for Pocatello residents.

Figure 23.This original intake pump on the Portneuf River has since been replaced with a larger pump.

Figure 24. This 700-foot section of Portneuf River bank was reshaped and vegetated 8 years ago, and is now covered in mature and healthy vegetation.

3.6 Jerrell Glenn Wetland Restoration (Re-evaluated)

Subgrant: S120 **Latitude and Longitude:** 43.73190, -116.88880

Description:
The goal of this project was to reduce pollutants to the Boise River and serve as a model for other water quality improvement projects in Canyon County.

Completion date:
This project was completed on schedule in 2006.

Features evaluated:
DEQ evaluated a sediment basin, wetlands, a conveyance ditch to divert water, exclusionary fencing, filter strips, and vegetative plantings (Figures 25–28).

Project status:
The BMPs are functioning well, and serving to help reduce the amount of phosphorous, nitrogen, sediment, and bacteria in irrigation return water. The wetland is not being properly maintained, however, and is almost totally overgrown with cattail. The functioning condition of the wetland will be impacted unless maintenance is resumed in the near term.

Figure 25. When we first evaluated this project in October 2006, the manmade wetlands were just beginning to fill, and water fowl were taking up residence.

Figure 26. This ditch carries water from the Dixie Slough to the wetlands for treatment. The ditch also acts as a pretreatment settling pond. This return water typically contains high levels of nitrogen, phosphorous, sediment, and bacteria.

Figure 27. This span of wetland is overgrown with cattail.

Figure 28. This section of wetland, formerly covered with cattail, was recently burned to improve flow and provide better habitat for waterfowl.

3.7 South Fork Palouse River at Robinson Park (Re-evaluated)

Subgrant: S143 **Latitude and Longitude:** 46.75558, -116.90972

Description:
This project resulted in reducing a significant sediment load to the river. The project was first evaluated in 2006, and again in 2009. The purpose of this third evaluation was to recheck the condition and effectiveness of BMPs installed in 2005.

Completion date:
This project was completed ahead of schedule in 2006.

Features evaluated:
DEQ evaluated streambank restoration efforts, including stabilization features, and riparian area plantings (Figures 29–32).

Project status:
The BMPs are well maintained and are functioning as intended.

Figure 29. The extremely fragile banks observed along parts of the River had highly eroded.

Figure 30. In 2006, after considerable engineering and construction, the unstable streambanks were stabilized by installing multilayered coconut fiber logs. Vegetation quickly thrived on the coconut fiber logs as they broke down and provided nutrients.

Figure 31. By July 2006, streambanks were no longer a major contributor of sediment to the South Fork Palouse River as vegetation rapidly replaced the coconut fiber logs.

Figure 32. In 2012, vegetation thrives along stable streambanks.

3.8 Emerald Gardens Low Impact Development (Re-evaluated)

Subgrant: S147 **Latitude and Longitude:** 47.74970, -116.82900

Description:
This project site is located on the Spokane Valley-Rathdrum Prairie aquifer—the sole source of drinking water for more than 450,000 people —and includes numerous low impact development (LID) BMPs, such as porous pavers and biomass infiltration swales.

Completion date:
This project was completed on schedule in 2005.

Features evaluated:
DEQ evaluated the condition and effectiveness of the BMPs installed (Figures 33–36).

Project status:
All of the BMPs are functioning well. This project has become an excellent showcase for other businesses and developers on how to install "zero discharge," stormwater-capturing BMPs.

Figure 33. The grounds of the Panhandle Health District office, the project site, during an early phase of construction (2006).

Figure 34. Nonvegetated areas either are covered with porous pavers, or are sloped to allow stormwater infiltration.

Figure 35. This biomass infiltration swale is one of several installed in April 2006.

Figure 36. Six years later, the swale seen in Figure 35 includes mature vegetation that does an excellent job of capturing stormwater runoff. In periods of low precipitation, these plants are irrigated by rainwater stored in an underground collection system.

3.9 Y and Y9 Drain Irrigation Return Flow Elimination (Re-evaluated)

Subgrant: S168 **Latitude and Longitude:** 43.00213, -115.17195

Description:
The goal of this project was to eliminate a major irrigation return flow into Clover Creek and the Snake River, both of which are §303(d) listed. No longer discharging directly to the Snake River, the entire return flow from this drain is now used to irrigate local croplands.

Completion date:
This project was completed ahead of schedule in 2006.

Features evaluated:
DEQ evaluated BMPs, including two large holding ponds, conveyance canals, and headgates. This evaluation also looked at some of the 2,000 acres being irrigated because of this project (Figures 37–40).

Project status:
All of the BMPs are well maintained.

Figure 37. The main holding pond captures 100% of the irrigation return flow that formerly was discharged into the Snake River via Clover Creek. This nutrient-bearing water is now reused to irrigate and fertilize farm fields. The entire system is gravity fed and needs no pumps to function.

Figure 38. An irrigation return flow discharge point caused this entire gully. Over several decades, sediment and nutrients were washed down the hill and discharged to Clover Creek and the Snake River.

Figure 39. Rather than fill the gully, thereby creating an unstable borrow pit in the process, the canal company elected to leave the gully as is but stabilize the irrigation outflow point with basalt gravel. This BMP should be successful as there should never be a higher volume of irrigation return flow than what is shown in this photograph.

Figure 40. Because of this project, local farmland now is sprinkler irrigated and fertilized with 100% irrigation return flow that formerly carried its load of sediment, phosphorous and nitrogen to Clover Creek and Snake River.

3.10 South Fork Clearwater, Kirtner and Rylaarsdam Projects (Re-evaluated)

Subgrant: S180 **Latitude and Longitude:** 45.91702, -116.00669

Description:
This project consisted of two subprojects: one at the Kirtner site adjacent to the river and the second at the Rylaarsdam site, located on a tributary to the river. Work on the Kirtner site included riparian restoration, bank stabilization, and revegetation, and, at the Rylaarsdam site, livestock exclusionary fencing and installation of a bridge. Additional work included developing off-stream watering sources, sloping and stabilizing streambank to help restore riparian areas, redeveloping a low-flow channel, riparian planting, and installing wetland swales.

Completion date:
Work at both sites was completed on schedule in 2011.

Features evaluated:
DEQ evaluated streambank stabilization including resloping and revegetation BMPs at both sites (Figures 41–44).

Project status:
Riparian area vegetative on the Kirtner site has suffered some degradation due to very high spring runoff over the past several years. Hardscape toe armor, rip-rap, and rock barbs have remained in place and are functioning as designed. All BMPs at the Rylaarsdam site are in good condition and functioning as intended. The vegetation planted in 2006–2007 is mature and functioning as designed to reduce sediment and nutrient transport to the river.

Figure 41. Prior to this project, overgrazing on the Rylaarsdam site was a major cause of increasing sediment and nutrient load to the river. The streambanks behind the volunteer work crew were at one time highly erosive.

Figure 42. Streambanks at the Rylaarsdam site were laid back and stabilized.

Figure 43. At the Kirtner site, after part of one growing season, vegetation began to become established.

Figure 44. In 2012, vegetation at the Kirtner site is so thick that it can be difficult to find the flowing water without falling in.

3.11 Deep Creek Bank Stabilization Project (Re-evaluated)

Subgrant: S182 **Latitude and Longitude:** 46.91236, -116.91858

Description:
This project was designed under the guidance of the Palouse River Tributaries WAG and the applicable TMDL (DEQ 2005). The goal of the project was to reslope streambank and replant the riparian buffer area, to reduce sediment, nutrient, bacteria, and temperature loads to the Palouse River via Deep Creek.

Completion date:
This project was completed ahead of schedule in 2008

Features evaluated:
DEQ evaluated the approximately 1,900 feet of resloped and stabilized streambank, and approximately 28,500 square feet of variable riparian buffer that was developed (Figures 45–48).

Project status:
All of the BMPs were functioning properly and no deficiencies were found during the evaluation.

Figure 45. This project began in 2006. Up until that time, uncontrolled grazing had resulted in near vertical streambanks with little to no vegetation. Exclusionary fencing was installed, and a bulldozer was used to reshape the banks to a 3:1 slope. Volunteer labor installed coconut fiber matting and thousands of riparian plants.

Figure 46. After just one growing season with no grazing allowed, the plants began to become established.

Figure 47. Five years after the work was completed, the vegetation remains and has matured, resulting in very little sediment, nutrients, and bacteria being discharged into the creek. Vegetation also serves to shade the water, resulting in cooler temperatures for fish.

Figure 48. Shade measurements were taken with a Solar Pathfinder to help assess the effects the project has had in reducing water temperature in the creek.

3.12 St. Charles Creek Watershed Restoration (Re-evaluated)

Subgrant: S189 **Latitude and Longitude:** 42.11907, -111.39367

Description:
This project involved restoring wetland habitat and improving water quality for imperiled Bonneville cutthroat trout. Efforts included screening irrigation diversion structures, providing accurate water measuring devices, improving wetland conditions, riparian restoration, and installing livestock exclusionary fencing.

Completion date:
This project was completed on schedule in 2010.

Features evaluated:
DEQ evaluated the exclusionary fencing, water gaps, water control headgates, and an installed fish ladder (Figures 49–52).

Project status:
There were no discrepancies. The project sponsor continues to monitor how well the BMPs are functioning in the watershed.

Figure 49. Two key accomplishments were the installation of livestock exclusionary fencing and the willingness of the rancher to comply with a grazing plan for his property. Thick vegetation behind the wood pole fence is evidence that livestock are being excluded from this section of riparian area.

Figure 50. This photograph shows exclusionary fencing in place along St. Charles Creek. Prior to this project, this segment of the creek was heavily grazed and was a major source of sediment, nutrients, and bacteria to the creek and ultimately to Bear Lake, located about 1,000 feet downstream of this site.

Figure 51. Another important aspect of this project is the installation and maintenance of this large irrigation headgate. The headgate controls the flow of thousands of acre-feet of nutrient- and bacteria-bearing water from a major wetland at the top end of Bear Lake.

Figure 52. The wetland located above the headgate. Hundreds of head of cattle graze here each winter, leaving behind large quantities of nitrogen, phosphorous, and bacteria that formerly discharged directly into Bear Lake. Now, this water is treated in the wetland prior to being discharged to the Lake.

3.13 Thomas Fork Streambank Stabilization Project, Hillier Property (Re-evaluated)

Subgrant: S207 **Latitude and Longitude:** 48.100381, -116.645107

Description:
This project involved reshaping streambanks on both sides of Thomas Fork to reduce sediment, phosphorus, and nitrogen loading; increasing the streamside vegetative canopy to help lower water temperature; and improving in-stream fish habitat.

Completion date:
The project was completed in 2009.

Features evaluated:
DEQ evaluated typical sections of reshaped, stabilized streambanks (Figures 53–56).

Project status:
No deficiencies were found during the evaluation.

Figure 53. Prior to implementing this project, this section of streambank was nearly devoid of vegetation, its vertical bank eroding into the river. Now, the banks are stable, vegetation is flourishing, and gravel is well deposited throughout the channel.

Figure 54. The rip-rap installed to stabilize the bank is now almost entirely overgrown by vegetation.

Figure 55. The brown swath of vegetation observed in this photograph is the location of the old river channel, after it had been straightened by the NRCS. Now abandoned, the Thomas Fork currently flows in a sinuous channel.

Figure 56. Most of the vegetation shown in this photograph was planted just 3 years ago.

3.14 Thomas Fork Streambank Stabilization Project, Boehme Property (Re-evaluated)

Subgrant: S208 **Latitude and Longitude:** 42.33971, -111.05650

Description:
This project involved streambank resloping, stabilization, and planting riparian vegetation along 3,200 linear feet of degraded Thomas Fork streambank. The goal of these actions was to reduce sediment and nutrient concentrations in the river.

Completion date:
This project was completed ahead of schedule in 2010.

Features evaluated:
DEQ evaluated bank shaping, willow planting, and the placement of rip-rap, bank barbs, and willow wattles. (Figures 57–60).

Project status:
No deficiencies were found during the evaluation.

Figure 57. In just 3 years, the banks of this section of Thomas Fork have stabilized due to BMPs implemented, including resloping the banks to a 3:1 ratio, installing locally quarried rip-rap, and planting riparian vegetation.

Figure 58. In a few sections, rip-rap is still exposed, especially on south-facing banks where direct sunlight can affect the survival rate of plants.

Figure 59. Although beavers often take their toll on newly planted willows, some of the boughs used to construct this dam will take root and eventually create a source of shade to the stream.

Figure 60. BMPs installed along other stretches of the Thomas Fork in recent years are now well established and functioning as intended. A goal of this project is to have is to have similar success along this stretch of the stream.

3.15 Croy Creek Wetland Restoration (Re-evaluated)

Subgrant: S246 **Latitude and Longitude:** 43.51266, -114.32034

Description:
Wood River Land Trust restored an area of Croy Creek wetlands that had previously been used for illegal dumping. The Trust's actions included removing 5,000 cubic yards of dumped material to improve functioning conditions in this a large, natural riparian wetland. Their work also included controlling noxious weeds and planting native riparian wetland vegetation.

Completion date:
This project was completed on schedule in early 2013.

Features evaluated:
DEQ evaluated the reclaimed landfill wetland area, a new irrigation system, streambank stabilization, riparian plantings, an elevated walkway through the wetland, and several attractive and informative kiosks (Figures 61–64).

Project status:
The Wood River Land Trust continues to conduct routine oversight of the site and the BMPs associated with this project. No deficiencies were found.

Figure 61. The elevated walkway allows the public to have an up-close look at a functioning wetland.

Figure 62. The information kiosks located on site do an excellent job of describing the lifecycle of a wetland, and the history of the area. Various public and private groups and individuals are also listed to recognize their contributions to the project.

Figure 63. The wetland is situated at the mouth of Croy Creek, on the west side of the Big Wood River.

Figure 64. Because of this project, the water level at the wetland is slowly rising.

3.16 North Idaho AFOs (Phase 4)

Subgrant: S250 **Latitude and Longitude:** 46.32000, -116.08000

Description:
This project includes fourteen subprojects spread over four counties in central Idaho. BMPs include exclusionary fencing, off-site watering facilities, waste management systems, heavy use area protection, critical area plantings, and roof-runoff management systems.

Projected completion date:
The project is scheduled for completion in March 2013.

Features evaluated:
DEQ evaluated several different AFO relocations, exclusionary fencing, off-site watering facilities, waste management systems, heavy use area protection, critical area plantings, and roof-runoff management systems (Figures 65–68).

Project status:
The project manager is aware that the subgrant will expire in March 2013. His projection is that the project will be completed on time.

Figure 65. This hardened crossing constructed on a subproject site will function to reduce sediment load due to erosion from cattle and farm equipment.

Figure 66. Fencing installed along Mission Creek will function to exclude cattle from the stream.

Figure 67. Pipeline is being installed to supply well water to cattle that have been excluded from Mission Creek. The landowner is providing the trackhoe and labor to meet his portion of the matching funds required under the subgrant.

Figure 68. Old tires withstand weather extremes and livestock hooves to serve as excellent, low- cost water troughs.

3.17 E Coulee Drain (Re-evaluated)

Subgrant: S252 **Latitude and Longitude:** 42.59131, -114.88443

Description:
Prior to this project, a large volume of irrigation return water containing nitrogen, phosphorous, and sediment was discharged into the Snake River via Salmon Falls Creek. As a result of this project, BMPs were implemented to treat return flows and reduce pollutant load to the river

Completion date:
This project was completed on schedule in early 2013.

Features evaluated:
The evaluation included the construction of two sediment basins and one finishing pond built on a 4-acre conservation easement. These BMPs function to treat irrigation return flow from about 1,000 acres of farmland (Figures 69–72).

Project status:
A 2011 evaluation revealed that all BMPs were functioning as designed, and the ponds were structurally sound. The first pond was nearing holding capacity for sediment. In 2012, DEQ documented that the first pond had been cleaned. All three ponds were observed functioning as designed, resulting in improved water quality being discharged to Salmon Falls Creek and the Snake River.

Figure 69. The first pond receives return flows with the heaviest load of sediment and nutrients. As part of the pond maintenance protocol, the pond can be easily accessed with a front-end loader to be cleaned out.

Figure 70. This finishing pond is gradually becoming more vegetated. Riparian vegetation assists in capturing nitrogen and phosphorous from the irrigation return flow.

Figure 71. Rip-rap placed along the pond shoreline helps to prevent wave erosion on windy days.

Figure 72. After treatment in the ponds, cleaner irrigation return water discharges to Salmon Falls Creek.

3.18 Tammany Road Erosion Reduction (Phase 2)

Subgrant: S279 **Latitude and Longitude:** 46.35209, -116.90786

Description:
The Nez Perce SWCD developed this project to address TMDL needs within the Tammany Creek watershed. The project augments work accomplished in previous Tammany Road projects and includes no-till crop planting techniques, planting vegetation and installing filter strips to reduce erosion, and stabilizing the streambank.

Completion date:
The project was completed before the subgrant agreement expired on December 31, 2011.

Features evaluated:
In 2009, DEQ evaluated no-till planting techniques used on land adjacent to Tammany Creek. In 2012, DEQ evaluated work performed to armor a ditch with rock and check dams constructed in the ditch along Volmer Road. Adjacent farmland was re-evaluated to determine the continuing success of no-till planting techniques (Figures 73–76).

Project status:
No deficiencies were found during the evaluation.

Figure 73. Prior to this project, Volmer Road was a major source of sediment in stormwater that was discharged to Tammany Creek from this ditch,

Figure 74. Work along Volmer Road included enlarging the side ditch and installing a plastic fabric membrane secured by angular basalt rock to ensure stormwater entering the ditch would not cause downcutting and result in sediment discharge to Tammany Creek.

Figure 75. Poor local planning practiced years ago led to Volmer Road being constructed in a manner that did not take into account erosion on adjacent lands.

Figure 76. Much of the adjacent farmland is now under contract to use no-till farming practices to reduce erosion.

3.19 Marsh Creek Restoration (Re-evaluated)

Subgrant: S291 **Latitude and Longitude:** 42.46854, -113.51438

Description:
The purpose of this project was to improve water quality, supplement late-season streamflows, and restore off-channel wetland habitat in the lower Marsh Creek watershed. The project led to the restoration of 60 acres of high quality seasonal and permanent wetlands in four areas found along a 10-mile reach of Marsh Creek.

Completion date:
This project was completed ahead of schedule in 2010.

Features evaluated:
DEQ evaluated four large constructed wetlands spread over 2,500 acres of prime wildlife habitat. Each engineered wetland included levees, headgates, and spillways built to NRCS standards. A recent evaluation revealed that one wetland went dry shortly after the waterfowl nesting period, due to IDWR's responsibility to meet downstream landowner irrigation commitments (Figures 77–80).

Project status:
No deficiencies were found during the evaluation.

Figure 77. The first of a series of settling ponds to receive flow from Marsh Creek receives the heaviest sediment load. At the time of this evaluation, the pond had been emptied and was being allowed to dry out prior to sediment removal.

Figure 78. The second pond in the series serves to filter sediment, and mature vegetation helps take up nutrients found in Marsh Creek water.

Figure 79. The upper end of pond 3 provides important habitat for waterfowl during the hottest months of the summer. Wildlife habitat is an important beneficial use for Marsh Creek.

Figure 80. The lowermost pond in the system includes the discharge point for water re-entering Marsh Creek.

3.20 Potlatch River Watershed Management Plan (Phase 1) (Re-evaluated)

Subgrant: S310 **Latitude and Longitude:** 46.84798, -116.40130

Description:
The purpose of this project was to restore and recover steelhead habitat in the watershed, and to improve water quality. The *Potlatch River Watershed Management Plan* calls for BMPs to be implemented on forest lands and agricultural lands in the watershed, and to address impacts livestock operations and rural roads are having on water quality.

Projected completion date:
The project is on schedule to finish by the end of 2013.

Features evaluated:
DEQ evaluated the construction and placement of exclusionary fencing, the improvements made to rural roads, road decommissioning, and streambank restoration practices (Figures 81–83).

Project status:
BMP implementation is continuing. Evaluation of the earlier implemented BMPs documented they were being well maintained and remain functional.

Figure 81. Fencing was installed along 2 miles of Fly Creek to exclude cattle from the Creek. Fly Creek is a tributary to the Potlatch River.

Figure 82. A section of fencing along Fly Creek.

Figure 83. Volunteer workers plant vegetation adjacent to a culvert intake to reduce sediment transport to a nearby tributary of the Potlatch River. The temporary fencing will keep browsing wildlife away from the new plantings.

3.21 Latour Creek Road Improvement Project (Re-evaluated)

Subgrant: S321 **Latitude and Longitude:** 47.50875, -116.41888

Description:
The Latour Creek road system, heavily used by logging operations, recreationists, and residents, had been neglected through the years. BMPs, including installing new bridges and culverts, reclaiming the roadbed, and upgrading its surface, were implemented to reduce sediment transport to Latour Creek. Additional work along this 5.7-mile stretch of road included installing filter cloth, a new coarse-rock road base, silt fence, straw wattles, mulching, and grass seed. Road base reconstruction used a process that ground up native rock within the existing roadbed and redistributed it. Nine culverts were replaced with larger, fish-friendly culverts.

Projected completion date:
All of the project fieldwork is complete. Idaho Department of Lands is in the process of completing the administrative tasks needed to close out the subgrant.

Features evaluated:
In 2010, DEQ evaluated two new bridges and upgrades made to a third bridge. A 2012 evaluation determined that the remaining BMPs installed are functioning properly and have held up following periods of heavy spring runoff and high volumes of logging truck traffic (Figures 84–87).

Project status:
The project manager was on site daily during construction and continues to drive the road on a regular basis to ensure the BMPs are functioning as intended. No deficiencies were found during the evaluation.

Figure 84. This section of road, including a roadbed, crowned top dressing, ditches, and coconut fiber logs adjacent to the creek was completed just before the 2010 evaluation, when this photograph was taken. .

Figure 85. The same location in 2012 shows that the temporary coconut fiber log BMPs have almost completely decomposed, vegetation is well established, and the road bed is holding up well under heavy logging truck traffic.

Figure 86. The new lower bridge, including its abutments, is holding up well.

Figure 87. The lower bridge was constructed to accommodate high water, heavy trucks, and light vehicles.

3.22 Canyon County BMPs for Water Quality Improvement

Subgrant: S323 **Latitude and Longitude:** 43.68626, -116.79801

Description:
This project included implementing nutrient management BMPs on seven farms along the lower Boise River. Proposed BMPs include converting flood irrigated croplands to drip irrigation, reducing the amount of fertilizer applied, installing sediment basins, constructing wetlands, placing exclusionary fencing, and growing buffer strips adjacent to croplands.

Projected completion date:
This project is on track to finish ahead of schedule, before the end of 2013.

Features evaluated:
DEQ evaluated drip irrigation, reduced fertilizer application, sediment basins, wetlands, cattle exclusionary fencing, and buffer strips. Local farmers and ranchers have been very receptive to working with the Lower Boise Watershed Council and the conservation district to improve water quality (Figures 88–91).

Project status:
All of the BMPs evaluated were being well maintained and functioning as designed.

Figure 88. Prior to this project, flood irrigation return flow was discharged directly to the Boise River. This drip irrigation and fertilization pumping station now supplies water for a 37-acre field and has zero discharge to the river.

Figure 89. A portion of a field converted from flood to drip irrigation. Drip irrigation uses less water and results in a more even distribution of water to crops. Drip irrigation serves to eliminate sediment discharge to the Boise River

Figure 90. Some landowners continue to grow row crops like corn, using flood irrigation. Where flood irrigation still occurs, settling ponds are used to handle runoff and reduce sediment discharge to the river.

Figure 91. Settling ponds serve to collect sediment, excess fertilizer, and herbicide before these pollutants can be discharged to the river. This drained settling pond is in the process drying. Once dry, a backhoe will excavate the sediment for redistribution to croplands.

3.23 Lower Payette River TMDL (Phase 3)

Subgrant: S327 **Latitude and Longitude:** 43.89613847, -116.62547901

Description:
The goal of this project is to reduce sediment, phosphorous, and nitrogen discharge to the lower Payette River. The project involves multiple subprojects involving farmers who have agricultural land adjacent to the Payette River.

Projected completion date:
Work that had fallen behind schedule is now on track to be completed by December 31, 2013.

Features evaluated:
70 acres of cropland converted from flood irrigation to low-pressure sprinklers (Figure 92)
850 feet of 8-inch PVC pipeline to eliminate mass erosion along the boundaries of farmland (Figure 93)
52 acres of cropland converted from flood irrigation to low-pressure sprinklers (Figure 94)

Project status:
Delays were experienced early in the project due to the loss of one major landowner. New landowners volunteered to implement various BMPs on their lands in 2013.

Figure 92. 70 acres of formerly flood-irrigated cropland converted to low-pressure sprinkler irrigation. A successful corn crop resulted, and runoff to the Boise River is expected to be negligable.

Figure 93. This badly eroded ditch will soon be replaced with 850 feet of 8-inch PVC pipeline to eliminate mass erosion along the boundaries of farmland.

Figure 94. This temporary dam provides flood irrigation to the adjacent fields. Flood irrigation is wasteful because it uses far too much water, resulting in irrigation runoff that carries sediment, phosphorous, and nitrogen to the Payette River. This project will soon replace flood irrigation with sprinkler irrigation to over 52 acres, resulting in less water consumption and no irrigation runoff.

3.24 East Fork Potlatch River Riparian Canopy Enhancement (Re-evaluated)

Subgrant: S331 **Latitude and Longitude:** 46.79862, -116.42239

Description:
The goal of this project was to revegetate 2000 linear feet of riparian area along a section of river to increase the canopy and to serve as a buffer strip. Creating a buffer strip will help reduce sediment-laden runoff from entering the river, and will further act to shade the river to aid in reducing water temperature.

Projected Completion date:
The majority of the fieldwork planned for this project is complete. A DEQ field evaluation was conducted on September 27, 2012 to verify the success of BMP implementation. The remaining project tasks are administrative in nature, and must be completed by December 31, 2013.

Features evaluated:
DEQ evaluated different methods of installing and securing tree trunks with root wads, embedded tree trunk barbs, anchored willow bundles, and planting of woody vegetation along streambanks (Figures 95–98).

Project status:
Funding awarded to this project was used to plant trees and shrubs over 2000 Lf of riparian area. DEQ's 2012 field evaluation found that the planting was successfully implemented. Once the project sponsor submits its final invoice and report the project will be complete, with no further action required.

Figure 95. A July 2010 site visit revealed that the BMPs were well constructed and would hold up during periods of high flow.

Figure 96. The main feature of the BMP installation was the high density of root wads. Each root wad and log barb was carefully spaced, angled, and anchored to capture debris and sediment being carried by the stream and to provide good habitat for riparian vegetation.

Figure 97. After 2 years, the massive jumble of root wads shown in the previous photograph has been largely overgrown with riparian vegetation.

Figure 98. A classic symbiotic relationship is evolving between beaver and vegetation. Beaver pools create a favorable riparian plant environment that provides food and lodging for the beaver.

3.25 Boulder Creek Restoration

Subgrant: S381 **Latitude and Longitude:** 44.73079, -116.07399

Description:
The goal of this project was to stabilize approximately 1,000 feet of receding streambank with the assistance of local students. The proposed BMPs included installing 100 feet of log cribbing and planting 750 feet of riparian area.

Completion date:
The work was completed in June 2010.

Features evaluated:
The BMPs looked good (Figures 99–102). The cribbing is holding up well and is quickly being overgrown with grass and other vegetation. The students are active in maintaining the BMPs and monitoring water quality.

Project status:
The hardscape and plantings were successfully installed and are functioning as intended.

Figure 99. Prior to this project, this section of streambank had become unstable following realignment of Boulder Creek to accommodate construction activity on the adjacent site.

Figure 100. Installing cribbing and planting vegetation has allowed the streambank to stabilize.

Figure 101. This gabion (wire basket full of rock) was built to stabilize the toe of the bank.

Figure 102. Runoff from a driveway adjacent to the project site will be directed to an infiltration gallery where it eventually will seep over the cribbed area of the streambank.

3.26 I Coulee Wetland Construction (Re-evaluated)

Subgrant: S385 **Latitude and Longitude:** 42.64554661, -114.70541027

Description:
The goal of the project was to construct three in-line elongated settling ponds downslope of a large irrigated farm field. The ponds would capture and passively treat about 11 cubic feet per second of irrigation return flow. Treating the return flow will help to reduce the amount of sediment and nutrient in the water that discharges to the Coulee and then continues downstream to the Snake River.

Completion date:
This project was completed ahead of schedule in July 2012.

Features evaluated:
DEQ evaluated the condition of the ponds one year after construction (Figures 103–106).

Project status:
All ponds are functioning as intended.

Figure 103. When we first evaluated this project in August 2011, the settling ponds were in the process of being constructed.

Figure 104. During our re-evaluation one year later the vegetation had established itself and the ponds were functioning as designed. Two additional ponds were constructed below this one.

Figure 105. The upper end of the top pond was already filling with sediment after less than one season of receiving irrigation return flow. Routine pond cleaning will be necessary maintenance to keep the ponds in proper functioning condition.

Figure 106. One of the two remaining ponds observed in 2012.

3.27 Little Salmon River Watershed Riparian Restoration (Re-evaluated)

Subgrant: S389 **Latitude and Longitude:** 45.07568125, -116.30469881

Description:
The goal of the project is to reduce sediment and nutrient load in the river by excluding livestock from the riparian areas, and restoring vegetation that had been severely depleted as a result of overgrazing

Projected completion date:
This project is on schedule to be completed by the end of 2014.

Features evaluated:
DEQ evaluated woody plantings in the riparian area and exclusionary fencing installed at 3 locations along the river and Fourmile Creek, a tributary to the river (Figures 107–110). Woody plantings observed included dogwood, willow, cottonwood, and alder.

Project status:
2012 is the second growing season for many of the plantings. The vegetation has enjoyed a nearly 100% survival rate and looks very healthy and stable. The fencing is in good condition and functioning as intended to keep livestock out of the riparian areas and creeks.

Figure 107. Willows and other woody vegetation were planted in an abandoned corral that straddled Four Mile Creek. The area once was totally denuded of vegetation.

Figure 108. Prior to installing exclusionary fencing, this tributary stream had little established vegetation and was a major source of sediment, fecal bacteria, and nutrients discharging to the river.

Figure 109. This section of streambank along the Little Salmon River has been fenced off from cattle and is recovering on its own.

Figure 110. Vegetation is negatively impacted when landowners allow cattle to remain in riparian areas too long.

3.28 Marsh Creek and Middle Portneuf Watershed Improvements

Subgrant: S399 **Latitude and Longitude:** 42.77595, -112.23270

Description:
The project workplan includes several subprojects. One involves stabilizing streambank to protect land holding a water flow gaging station from eroding and collapsing into the river. Other subprojects will address AFO relocations and on-site improvements needed, including constructing fence along Marsh Creek to exclude cattle.

Projected completion date:
This project is on schedule to be completed by the end of 2014.

Features evaluated:
DEQ evaluated BMPs including streambank stabilization to protect a USGS water flow gaging station on the Portneuf River, AFO improvements or relocations, and exclusionary fencing (Figures 111–114).

Project status:
All of the BMPs are in good condition and functioning as intended.

Figure 111. This USGS water flow gaging station on the Portneuf River was about to be destroyed by a caving streambank caused by uncontrolled livestock grazing. This subproject involved installing rip-rap, rock barbs, livestock exclusionary fencing, and planting vegetation to stabilize the streambank.

Figure 112. When complete, this rock barb will serve to deflect flow in the channel away from the bank where the gaging station is located.

Figure 113. This AFO site formerly allowed waste, nutrients, and sediment generated by 400 head of cattle to be discharged through a culvert into Marsh Creek. The landowner installed a berm at the lower end of the AFO, upslope feeding troughs and a watering station, and a second berm at the upper end of the site to prevent stormwater from flowing onto the site.

Figure 114. One of several watering stations installed: it can be activated by cattle pushing their noses down on a floating plunger. The supply well is located upslope of the AFO and is protected by exclusionary fencing. These stations are designed to eliminate excess water from pooling on the site, reducing mud and conserving clean water for stock.

3.29 Potlatch River Watershed Management Plan (Phase 3)

Subgrant: S425 **Latitude and Longitude:** 46.84804, -116.40134

Description:
This project is a continuation of work done during earlier Phases 1 and 2, under subgrants S310 and S396. Efforts are being directed at implementing BMPs that will serve to improve water quality and fish habitat over a large area of Potlatch River watershed.

Projected completion date:
This project is on schedule to be completed by the end of May 2015.

Features evaluated:
DEQ evaluated the early phases while in this remote area completing evaluations of other projects (Figures 115-118). This 2011 grant year project has only recently begun, so this evaluation only covers parts of two subprojects including regraveling a road and installation of a solar watering facility.

Project status:
The BMPs DEQ visited were recently installed and are in good condition.

Figure 115.A new layer of gravel was applied to this campsite access road to reduce the amount of fine sediment leaving the road during storm events and eventually being deposited into local surface waters.

Figure 116. Fencing is installed to restrict cattle access to local surface waters. A water line runs from the pond to the blue plastic trough in the background to provide a source of water for livestock.

Figure 117. A solar-powered pump delivers water to the pond where it is then gravity fed to the water trough.

Figure 118. The storage pond is fenced off to prevent damage by cattle and large game animals, but the trough is available for cattle and wildlife. There will be three systems like this at the end of the project.

3.30 Palisades Creek Bank Stabilization and Channel Reconstruction

Subgrant: S426 **Latitude and Longitude:** 43.38449, -111.23147

Description:
Palisades Creek is a major spawning stream for threatened Yellowstone Cutthroat Trout. Over many decades, this tributary to the South Fork of the Snake River has seen its channel altered and pushed to one side of the valley, resulting in increased gradient and unstable streambank conditions. The goal of this project is to decrease stream gradient by restoring sinuosity to the channel. Work includes creating a new channel with meanders, drop structures, root wads, and bio-logs, with a goal of improving water quality and re-establishing a functional floodplain.

Completion date:
This project was completed in March 2012.

Features evaluated:
DEQ evaluated practices that were implemented to protect the streambank, including drop structures, rock barbs, root wads, constructed channel meanders, and vegetative plantings (Figures 119-122).

Project status:
No deficiencies were found during the evaluation.

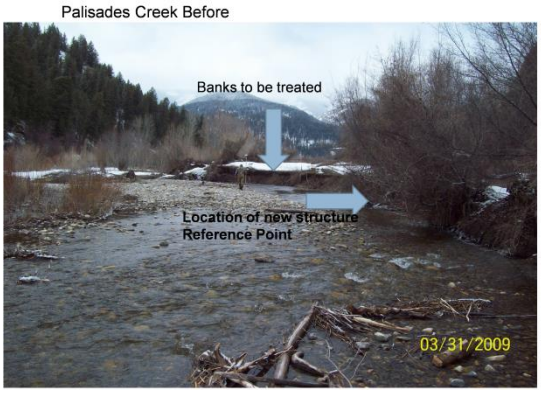

Figure 119. Prior to this project, Palisades Creek had many unstable banks, which increased sediment load.

Figure 120. One of the well designed and installed drop structures.

Figure 121. Drop structures were keyed into the streambank, oriented in an upstream “V” design, and constructed with large, angular boulders to withstand high spring runoff.

Figure 122. Artificial bio-logs were keyed into the bank and sloped into the channel to deflect flows in critical areas. Root wads were placed immediately below the bio-logs and planted with willows to help stabilize the bank and shade the creek.

3.31 St. Maries River Road (Phase 1)

Subgrant: S427 **Latitude and Longitude:** 47.26983, -116.59618

Description:
This project involves removing timber from and widening the right-of-way, upgrading existing culverts and adding additional culverts where needed, and resurfacing approximately 2 miles of road to improve drainage.

Projected completion date:
This project is on schedule to be completed by the end of May 2015.

Features evaluated:
DEQ evaluated several BMPs, including the widened right-of-way, upgraded culverts, placement of new culverts, sediment traps, and the initial stages of a new road base (Figures 123 through 125).

Project status:
No deficiencies were found during the evaluation.

Figure 123. This photograph highlights one of the challenges of working on remote forest roads: a tight canyon that also contains a river and a rail line.

Figure 124. The first step to upgrade this 2-mile section of road was to remove timber adjacent to the road.

Figure 125. Where space allowed, timber was left undisturbed.

3.32 Grimes Creek Restoration Cooling Waters

Subgrant: S428 **Latitude and Longitude:** 43.89155, -115.90349

Description:
The Grimes Creek portion of the project has received treatments to narrow and deepen the channel and increase the pool ratio through approximately 3 miles. These treatments were performed to lower the elevated temperatures for which Grimes Creek is on the §303(d) list.

Projected completion date:
The project slipped behind schedule due to a 6-month absence of the project manager. With the staffing issue now resolved, adjustments to the workplan schedule are being made to ensure the project is completed before the subgrant expires on May 31, 2015.

Features evaluated:
DEQ evaluated BMP installations, including floodplain creation and areas where native trees and shrubs were planted in the riparian corridor (Figures 126 through 129). Floodplains provide a suitable environment for riparian plants to take hold and serve to filter sediment during periods of high flow.

Project status:
No deficiencies were found during the evaluation.

Figure 126. This untreated section of Grimes Creek shows part of the problem: several miles of the creek were redirected from the original channel by placer mining from the mid-1800s to the mid-1900s.

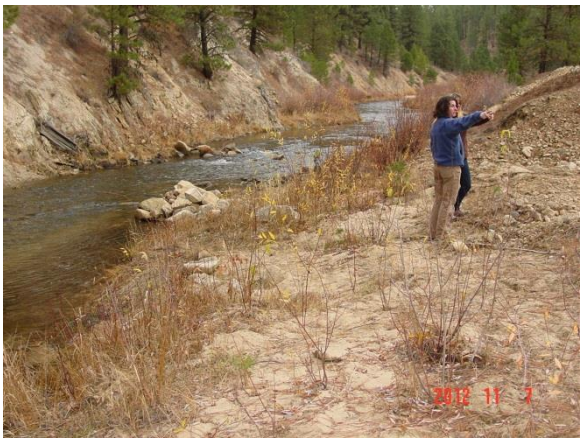

Figure 127. Miners channelized the Creek, eliminating the original meandering pattern of the creek and the floodplain. Straightening the channel increased the Creek's gradient and velocity, resulting in mass erosion of the stream bank.

Figure 128. This constructed floodway will accommodate large volumes of floodwater.

Figure 129. Plants in this constructed floodway are protected from grazing with wire fencing.

3.33 Kootenai River Bank Restoration

Subgrant: S429 **Latitude and Longitude:** 48.69813, -116.20388

Description:
Decades of over-gazing led to mass erosion along this section of the Kootenai River bank. This project was implemented on two separate sites in the watershed, totaling approximately 5,230 feet of streambank treatments. It was completed in five months, from August through December 2011.

Completion date:
This project was completed ahead of schedule in 2011.

Features evaluated:
DEQ evaluated root wads, log barbs, bio-logs, and plantings (Figures 130 through 133).

Project status:
All of the BMPs were in good condition and holding up well after one spring runoff. Some of the temporary exclusionary fencing had been damaged by wildlife and will be repaired by the contractor.

Figure 130. From a distance, the BMPs—including root wads, log barbs, bio-logs, and plantings—look like many other streambank stabilizing projects around Idaho.

Figure 131. Upon closer evaluation, the team could appreciate the massive scale of the work. Each tree trunk has about as much buried length as is exposed in this photograph.

Figure 132. As another means of stream bank stabilization, these bio-logs are keyed into the bank and have willow canes sandwiched between them.

Figure 133. Each of these root wads is keyed into the bank about 20 feet. These BMPs act to trap debris that floats down river, protecting the bank from further erosion and creating good fish habitat.

3.34 Bear River and Whiskey Creek

Subgrant: S431 **Latitude and Longitude:** 42.44645, -111.73365

Description:
This project consists of rerouting and stabilizing a tributary to Bear River around a former dairy barn and existing manure stockpile area, rejuvenating (new pump and plumbing) an old domestic well for livestock watering, installing exclusionary fencing, and installing pipeline to supply water to watering troughs.

Projected completion date:
This project is on schedule to be completed by the end of May 2015.

Features evaluated:
DEQ evaluated exclusion fencing, a water trough, installed pipeline, a water well, the new site of manure storage and the old site that was formerly located in the creek bed, and a portion of the rerouted creek channel (Figures 134 through 137).

Project status:
No deficiencies were observed during the evaluation.

Figure 134. Ranchers often use recycled truck and heavy equipment tires as watering troughs. The wire screen on the left side of the trough provides a surface for escape in instances where birds and other wildlife enter the trough looking for water.

Figure 135. Site of a former dairy barn. Prior to this project, the Creek ran through this area and through a stockpile of manure, increasing its nutrient and sediment load before before eventually discharging into Bear River.

Figure 136. The new location of the manure pile, away from the creek.

Figure 137. This old domestic well adjacent to an abandoned house received a new pump and pluming and now supplies water to approximately 250 head of cattle on 27 acres of pastureland.

3.35 Boulder and Willow Creek Restoration

Subgrant: S432 **Latitude and Longitude:** 44.71406, -116.07837

Description:
This project includes planting over 500 trees and shrubs in the riparian area along the two streams. In April and May 2012, project officials and volunteers planted 2500 feet of Boulder Creek riparian area with willow, dogwood, aspen, cottonwood, alder, and Engelmann spruce. An additional100 feet of Willow Creek riparian area that had been previously planted and later lost its plantings after a major storm, was replanted.

Projected completion date:
This project is on schedule to be completed by the end of May 2015.

Features evaluated:
DEQ evaluated the recently planted riparian vegetation, and observed how the plantings are serving to stabilize the streambanks (Figures 138 through 141).

Project status:
No deficiencies were found during the evaluation.

Figure 138. An IDFG employee stands in one of the many "pods" excavated along Boulder Creek. These pods collect surface water, providing planted trees a better chance to be rooted in the moist vadose zone.

Figure 139. Most pods were excavated to a depth of approximately 2.5 feet and then planted. During periods of high temperatures, project staff and volunteers hand water each pod to increase the chances of survival.

Figure 140. A well-planned section of streambank stabilization. Willow canes were inserted about 3 feet deep into the soil and far enough back from the cut bank to allow for eventual bank sluffing. Over time, the willows will stabilize the bank at a more favorable 3:1 slope. Willow weavings have also been anchored at the toe of the bank near the water line. Woody debris from the area was collected and placed around new plantings to make it more difficult for wildlife to browse the new willows.

Figure 141. After less than one year, this section of streambank is well on its way to becoming stable.

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