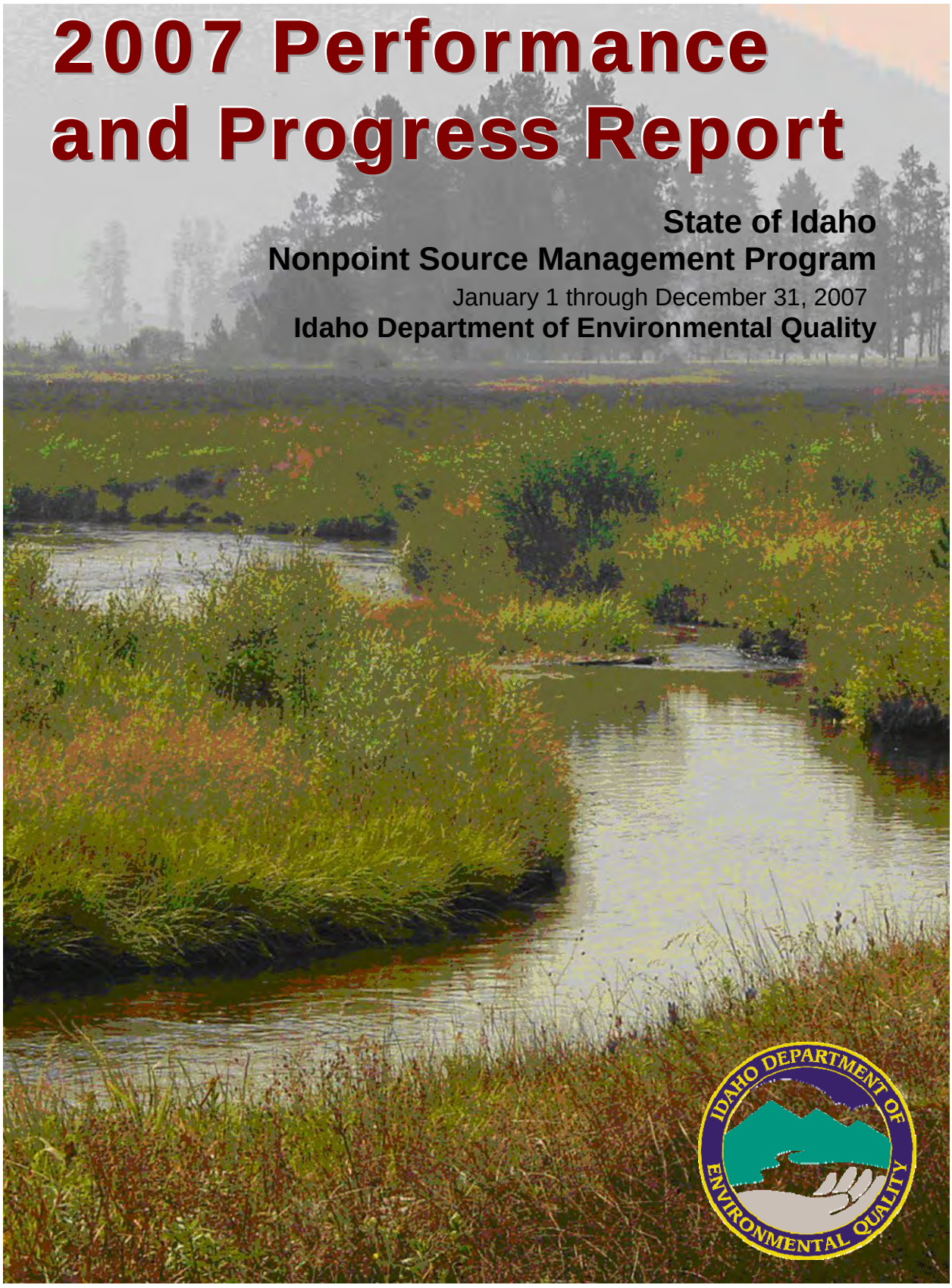
# 2007 Performance and Progress Report

**State of Idaho**
**Nonpoint Source Management Program**
January 1 through December 31, 2007
**Idaho Department of Environmental Quality**



Cover photo: Willow planting along Boulder Creek is one of the projects completed for the Cascade Reservoir Watershed Project, Phase 2.

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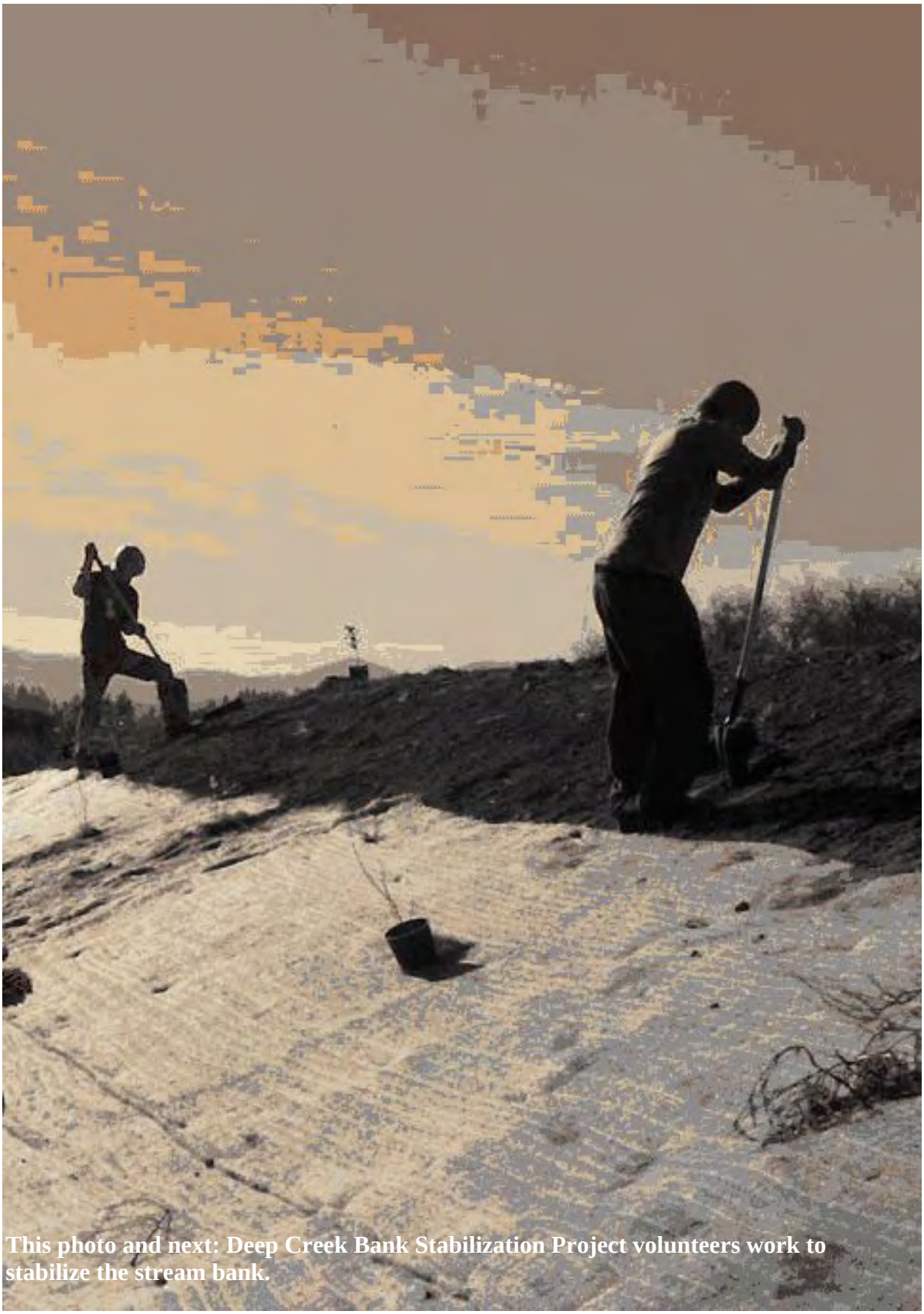
**State of Idaho Nonpoint Source Management Program**

February 2008



**This photo and next: Deep Creek Bank Stabilization Project volunteers work to stabilize the stream bank.**

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Thanks also to the following:

## Agencies and Organizations

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Bear Lake Regional Commission
Bear Lake Soil and Water Conservation District
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Nez Perce Tribe
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Twin Falls Canal Company
Twin Falls Soil and Water Conservation District
USDA Natural Resource Conservation Service
Valley Soil and Water Conservation District
West Cassia Soil and Water Conservation District

## Outstanding Projects Acknowledgments

### S023 Upper Rapid Creek Watershed Riparian Project

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# Glossary

| | |
|---|---|
| 303(d), 303(d) list | Impaired waters, or the list of impaired waters |
| AFO | Animal Feeding Operation |
| BAG | Basin Advisory Group |
| BMP | Best Management Practice |
| CAFO | Confined Animal Feeding Operation |
| CRP | Conservation Reserve Program |
| CWA | Clean Water Act |
| DEQ | Idaho Department of Environmental Quality |
| EPA | U.S. Environmental Protection Agency |
| EQIP | Environmental Quality Incentives Program |
| HUC | Hydrologic Unit Code |
| IASCD | Idaho Association of Soil Conservation Districts |
| ISCC | Idaho Soil Conservation Commission |
| ISDA | Idaho State Department of Agriculture |
| LID | Low Impact Development |
| LNFCRS | Lower North Fork Clearwater River Subbasin |
| NPS | Nonpoint Source |
| PCEI | Palouse-Clearwater Environmental Institute |
| RUSLE | Revised Universal Soil Loss Equation |
| SAWQP | State Agricultural Water Quality Program |
| SCD | Soil Conservation District |
| SECI | Stream Erosion Condition Inventory |
| SRF | State Revolving Fund |
| SWCD | Soil and Water Conservation District |
| TKN | Total Kjeldahl Nitrogen |
| TMDL | Total Maximum Daily Load |
| WAG | Watershed Advisory Group |
| WQPA | Water Quality Program for Agriculture |

# Section 1. 2007 Performance and Progress Report

This section presents the State of Idaho's Nonpoint Source Management Program Assessment Report of Program and Project Management for the period January 1 through December 31, 2007. The Department of Environmental Quality (DEQ) administers the program for the state of Idaho.

## Introduction

The Clean Water Act (CWA), Section 319(h), requires the U.S. Environmental Protection Agency (EPA) to make an annual determination of satisfactory progress in meeting the milestones of each state's nonpoint source management plan. A part of this determination is based on an annual report created by the state. The annual report assesses the program's performance and progress toward meeting the goals of achieving and maintaining clean water.

### Overview of the Idaho Nonpoint Source Program

Congress established the national Nonpoint Source (NPS) Program in 1987, when it amended the Clean Water Act with Section 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 NPS management programs to remediate and prevent NPS pollution.

In accordance with the congressional mandate, DEQ places strong emphasis on assuring that Section 319 funds are directed to on-the-ground projects that prevent, reduce, or eliminate NPS pollution in Idaho's surface water and ground water. In Idaho, NPS funding has resulted in over 187 on-the-ground projects since 1998. While a few of these projects are aimed at statewide pollution reduction education, the great majority are designed to remediate and prevent NPS pollution, resulting in measurable pollution reduction.

### Scope of the Idaho Nonpoint Source Program

DEQ currently oversees 67 active, ongoing projects, each of which is described through formal subgrant agreements established between DEQ and the project sponsors. Project sponsors may include federal and state agencies, counties, municipalities, nonprofit organizations, or private individuals.

## Assessing Program Performance

The Idaho NPS Program has adopted the goals and objectives of the 1999 Idaho Nonpoint Source Management Plan (DEQ 1999), which provide the structure for annual work plans to administer the program.

### Framework of the Program

The objectives of the NPS Program include:

- targeting compliance with water quality standards by following approved guidance, rules, and laws
- formulating watershed plans through sound science, as provided through such mechanisms as total maximum daily loads (TMDLs), drinking water and source water protection plans, and ground water management plans

- implementing TMDLs, drinking/source water protection plans, and ground water management plans
- evaluating projects and approved watershed plans through water quality and various forms of effectiveness monitoring

## Program Emphasis and Focus

DEQ identifies NPS water pollution as primarily occurring within five categories:

- agriculture
- mining
- logging
- urban storm water
- transportation

The great majority of DEQ projects focuses on nonpoint source pollution associated with agriculture. Accordingly, DEQ stresses the need for measurable calculations of load reductions for sediment, phosphorous, and nitrogen associated with these projects. While most projects are focused at a particular site or stream segment, every opportunity is taken to ensure that site-specific projects are nested within the subwatershed and watershed scales of a given river basin. Therefore, pollution load reductions from each project within a watershed can be combined to generate a cumulative load reduction over the entire basin.

## Public Participation

Public participation is a major element of the NPS Program, achieved through interaction with public advisory groups as outlined in Idaho water quality statutes. Both watershed advisory groups (WAGs) and basin advisory groups (BAGs) are required to review and recommend actions for the implementation of all projects.

In addition, coordination with other local, state, tribal, and federal agencies, entities, and governments is critical to the success of all projects. The support of designated management agencies is essential to ensure closing the feedback loop, project-by-project, at the habitat and watershed scales throughout each of the six river basins in the state.

## Providing Technical Support to Projects

The DEQ NPS Program provides technical support to project sponsors and helps facilitate cooperative engagements with agency partners to implement nonpoint source and ecological restoration activities through such actions as the following:

- acting as the lead agency and program for facilitating and coordinating the implementation of the 1999 NPS Plan
- implementing consistent approaches aimed at benefiting surface water and ground water as they relate to all five categories of NPS pollution
- encouraging the enhancement of natural resource partnerships and interagency collaboration through educational opportunities and information or knowledge transfer
- enhancing program implementation by entering into program agreements—such as memoranda of understanding (MOUs)—that support the 1999 NPS Plan

- ensuring statewide consistency for base-level implementation activities related to TMDLs, drinking water, and ground water, including technical support, education, and information transfer
- assisting with estimating load reduction for sediment, phosphorus, and nitrogen through a variety of EPA approved models and methods
- providing statewide training
- verifying project accountability by approving all invoices and associated reports prior to distribution of 319 funds to project sponsors

## Program and Project Administration

The NPS program functions include the following tasks, each of which can be measured in terms of "outputs."

### Task 1: Manage grants and projects

The program currently administers approximately 9.688 million dollars in multiple years of grant funding for 67 projects across Idaho. Grant funding from 2000, 2001, 2002, and 2003 was extended until December 31, 2007. Grant funding from 2004 will expire on February 28, 2009. Grant funding from 2005 will expire on February 28, 2010. Grant funding from 2006 will expire on March 31, 2011. Table 1 summarizes the budgets of all projects that existed during 2007. This includes 67 currently active projects and 22 projects that closed during 2007.

As of December 31, 2007, the program is administering 67 active projects (up from 60 active projects during 2006) through grants from 2000, 2001, 2002, 2003, 2004, 2005, 2006, and 2007. Project locations are displayed in Figure 1.

The program funded 22 new projects with base and incremental funding in 2007. Encompassed within these new projects were 13 agricultural pollution reduction projects, 4 recreational water quality improvement projects, 2 storm water projects, 2 logging sediment reduction projects, and 1 ground water nitrate project. These projects are included in Figure 1.

Twenty-two projects were completed and closed out in 2007 and are listed in Table 2. Work products of interest for each of these closed projects, such as final reports, are available upon request.

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**Table 1. Budget summary for active projects during 2007, including projects that were closed during 2007.**
(The column entitled *Beg. Date* gives the year the grant money became available.)

| CONTRACT | PROJECT NAME | BEG. DATE | END DATE | BUDGET | TOTAL SPENT | BALANCE |
|---|---|---|---|---|---|---|
| **2007** | | | | | | |
| S195 | Indian Creek Storm water Runoff Project Phase 2 | 2/28/2007 | 12/2/2007 | 79,383.00 | | 79,383.00 |
| S196 | Burke Canyon Wastewater Improvement Project | 4/1/2007 | 11/30/2007 | 220,000.00 | 118,800.00 | 101,200.00 |
| S197 | Malad River W Drain Wetland Project | 5/7/2007 | 2/29/2008 | 53,734.00 | 53,734.00 | 0.00 |
| S207 | Thomas Fork Stream Stabilization (Hillier Property) | 7/15/2007 | 1/30/2012 | 54,000.00 | | 54,000.00 |
| S208 | Thomas Fork Stream Stabilization (Boehme Property) | 7/15/2007 | 1/30/2012 | 46,000.00 | | 46,000.00 |
| S209 | Flannigan Creek Riparian Restoration Project | 7/15/2007 | 1/31/2012 | 96,046.00 | 46,891.10 | 49,154.90 |
| S210 | Arrowhead Point Stabilization Project | 7/18/2007 | 1/31/2012 | 15,500.00 | 15,500.00 | 0.00 |
| S211 | Lower North Fork Clearwater TMDL Project 3 | 7/1/2007 | 1/30/2012 | 248,709.00 | | 248,709.00 |
| S212 | American River Water Quality Improvement | 7/9/2007 | 1/30/2012 | 238,242.00 | 163,099.00 | 75,143.00 |
| S213 | Owyhee Restoration Incentive | 7/16/2007 | 2/27/2012 | 201,785.00 | | 201,785.00 |
| S214 | Elk Creek and Mores Creek Sediment Reduction Floodplain Restoration | 8/15/2007 | 1/31/2012 | 100,000.00 | 60,000.00 | 40,000.00 |
| S215 | Copper Creek Restoration Project | 8/15/2007 | 1/30/2012 | 150,000.00 | | 150,000.00 |
| S216 | Storm water Treatment Demonstration, South Shore Hayden Lake | 7/16/2007 | 1/30/2012 | 40,000.00 | | 40,000.00 |
| S217 | Island Ranch Bank Stabilization Project | 8/20/2007 | 1/30/2012 | 12,590.00 | | 12,590.00 |
| S219 | Big Lost River Temp and Sediment Reduction | 8/27/2007 | 1/30/2012 | 112,200.00 | | 112,200.00 |
| S220 | West Mountain Road Water Quality Implementation Campbell Creek | 10/1/2007 | 1/30/2012 | 99,000.00 | 88,690.50 | 10,309.50 |
| S221 | Bear River Basin Water Quality Improvement Jenkins, Densmore, Weston, Pegram Creeks | 10/3/2007 | 12/31/2007 | 59,163.00 | | 59,163.00 |
| S222 | Lake Pend Oreille Lake*A*Syst | 10/4/2007 | 12/31/2007 | 6,585.00 | 5,260.00 | 1,325.00 |
| S223 | Marsh Creek Watershed Project Phase 1 | 10/15/2007 | 12/15/2012 | 250,000.00 | 52,008.00 | 197,992.00 |
| S225 | Snake River Drain Nutrient/Sediment Reduction Project | 11/9/2007 | 1/31/2012 | 67,100.00 | | 67,100.00 |
| S226 | NW Owyhee Co. Water Quality Improvement | 11/14/2007 | 1/31/2012 | 249,543.00 | | 249,543.00 |
| S227 | Lindsay Creek Riparian Management Project | 12/10/2007 | 1/31/2012 | 149,774.00 | | 149,774.00 |

| CONTRACT | PROJECT NAME | BEG. DATE | END DATE | BUDGET | TOTAL SPENT | BALANCE |
|---|---|---|---|---|---|---|
| | | | | $2,549,354.00 | $603,982.60 | $1,945,371.40 |
| **2006** | | | | | | |
| S175 | Palouse River Water Quality Improvement Project | 5/15/2006 | 12/31/2009 | 215,491.00 | 128,127.00 | 87,364.00 |
| S176 | Fishhook Slide Stabilization Project | 5/15/2006 | 5/30/2008 | 35,714.00 | 500.00 | 35,214.00 |
| S177 | Lower Payette River TMDL/ PH 2 | 5/15/2006 | 5/30/2008 | 184,675.00 | 98,200.00 | 86,475.00 |
| S178 | West/Middle Fork St. Maries TMDL | 5/16/2006 | 12/30/2008 | 97,200.00 | 500.00 | 96,700.00 |
| S179 | Burley/Marsh Creek | 5/22/2006 | 5/30/2008 | 157,809.00 | 157,809.00 | 0.00 |
| S180 | South Fork Clearwater, Kirtner Project | 5/15/2006 | 5/30/2008 | 181,435.00 | 125,077.30 | 56,357.70 |
| S181 | North Idaho AFO Implementation Ph 3 | 5/15/2006 | 12/31/2008 | 199,969.00 | 101,309.50 | 98,659.50 |
| S182 | Deep Creek Stabilization, Espy Property | 5/15/2006 | 1/31/2008 | 68,407.00 | 49,645.05 | 18,761.95 |
| S183 | Soldier Creek Rocking Project | 5/15/2006 | 5/30/2008 | 196,862.00 | 2,950.00 | 193,912.00 |
| S184 | Camas Prairie GW Nitrate/ Priority Area, PH 2 | 6/1/2006 | 5/31/2008 | 213,224.00 | 188,606.00 | 24,618.00 |
| S185 | Weiser Water Quality Phase 2 | 6/1/2006 | 5/31/2008 | 190,547.00 | 58,530.00 | 132,017.00 |
| S186 | Bonner County Milfoil Treatment Project | 6/6/2006 | 6/30/2008 | 20,241.00 | 11,914.31 | 8,326.69 |
| S187 | Salmon Falls Pump-back Project | 7/1/2006 | 7/1/2008 | 52,321.00 | | 52,321.00 |
| S188 | Rock Creek Riparian Fencing (Helman) | 7/1/2006 | 7/1/2008 | 150,370.00 | 78,994.60 | 71,375.40 |
| S224 | Shoshone Water Quality Improvement Project | 10/20/2007 | 12/31/2010 | 85,780.00 | 64,237.90 | 21,542.10 |
| S189 | St. Charles Creek Watershed Restoration | 7/10/2006 | 12/30/2007 | 250,061.00 | 65,000.00 | 250,061.00 |
| S190 | Bear River Dingle CAFO | 8/1/2006 | 8/31/2008 | 105,250.00 | 32,600.00 | 72,650.00 |
| S191 | Deep Cr./Bear R. Management Eco. | 8/1/2006 | 8/31/2008 | 139,870.00 | | 139,870.00 |
| S193 | Kline Mountain Road Restoration | 9/15/2006 | 3/15/2008 | 45,000.00 | 40,500.00 | 4,500.00 |
| | | | | $2,590,226.00 | $1,204,500.66 | $1,450,725.34 |
| **2005** | | | | | | |
| S138 | Lower Perrine Coulee Wetland Project | 3/23/2005 | 2/28/2007 | $53,000.00 | $53,000.00 | $0.00 |
| S139 | O-Coulee Treatment Train | 4/23/2005 | 12/28/2007 | $31,150.00 | $31,150.00 | $0.00 |
| S141 | Owyhee Watershed Restoration Incentive | 4/30/2005 | 1/31/2008 | $225,285.00 | $202,785.00 | $22,500.00 |
| S144 | Butcher/Three Mile Creek TMDL | 3/30/2005 | 1/31/2008 | $248,736.00 | $82,345.26 | $166,390.74 |

| CONTRACT | PROJECT NAME | BEG. DATE | END DATE | BUDGET | TOTAL SPENT | BALANCE |
|---|---|---|---|---|---|---|
| S145 | Middle Snake-Payette Clean Water Project | 4/1/2005 | 1/31/2008 | $232,000.00 | $131,927.87 | $100,072.13 |
| S149 | Lower North Fork Clearwater Phase II | 5/30/2005 | 1/28/2008 | $349,973.00 | $210,646.94 | $139,326.06 |
| S151 | Bear River Stream Bank Restoration | 6/1/2005 | 12/31/2008 | $32,938.00 | $28,220.23 | $4,717.77 |
| S157 | Partridge Creek Revegetation | 3/30/2005 | 12/31/2007 | $71,389.00 | $54,611.60 | $16,777.40 |
| S148 | Bear Paw Rd. Sediment Reduction | 5/30/2005 | 12/31/2007 | $23,349.00 | | $23,349.00 |
| S168 | Ydrain and Y9 drain Clover Creek | 10/1/2005 | 11/30/2007 | $110,000.00 | $136,463.18 | -$26,463.18 |
| S146 | Twenty Mile Creek Habitat Restoration | 4/30/2005 | 12/31/2007 | $85,500.00 | $80,889.20 | $4,610.80 |
| S171 | Bear River AFO Demonstration Project | 10/15/2005 | 10/15/2007 | $121,302.00 | | $121,302.00 |
| S170 | Phase 2 Cascade Reservoir Watershed | 10/1/2005 | 12/31/2007 | $175,000.00 | $157,500.00 | $17,500.00 |
| | | | | | | |
| | | | | $1,759,622.00 | $1,169,539.28 | $590,082.72 |
| **2004** | | | | | | |
| S105 | Cow Creek Water Quality Improvement | 4/1/2004 | 12/31/2007 | $240,966.00 | $215,221.87 | $25,744.13 |
| S106 | Potlatch Water Quality Improvement | 4/1/2004 | 12/31/2008 | $233,024.00 | $121,812.00 | $111,212.00 |
| S111 | Lower North Fork Clearwater TMDL Implementation | 5/15/2004 | 1/31/2008 | $235,946.00 | $235,946.00 | $0.00 |
| S107 | Ashton Ground Water Protection | 4/1/2004 | 1/31/2008 | $227,924.00 | $205,130.70 | $22,793.30 |
| S130/Ph1 | Indian Creek LID Demo Caldwell | 11/1/2004 | 2/28/2007 | $28,668.00 | $22,617.00 | $6,051.00 |
| S129 | Bliss Nitrate Priority Area BMP | 10/5/2004 | 2/29/2008 | $73,047.00 | $73,047.00 | $0.00 |
| S130/Ph2 | Indian Creek LID Demo Caldwell | 8/30/2006 | 9/30/2007 | $73,332.00 | | |
| | | | | $1,112,907.00 | $873,774.57 | $165,800.43 |
| **2003** | | | | | | |
| S072 | Tammany Creek Watershed Implementation | 4/15/2003 | 12/31/2007 | 100,800.00 | $85,840.11 | $14,959.89 |
| S074 | Weiser Water Quality Protect. Project | 4/15/2003 | 2/28/2007 | 280,141.00 | $218,540.07 | $61,600.93 |
| S075 | Pack River Watershed Sediment Reduction | 4/15/2003 | 4/15/2007 | 10,820.00 | $10,820.00 | $0.00 |
| S081 | Panhandle HD Bioretention Basin Demo Project | 6/15/2003 | 7/31/2007 | 126,158.00 | $121,907.80 | $4,250.20 |
| S095S | Santa Creek TMDL Implementation Project | 11/30/2003 | 11/30/2007 | 87,058.00 | $61,151.12 | $25,906.88 |
| | | | | $604,977.00 | $498,259.10 | $106,717.90 |

| CONTRACT | PROJECT NAME | BEG. DATE | END DATE | BUDGET | TOTAL SPENT | BALANCE |
|---|---|---|---|---|---|---|
| **2002** | | | | | | |
| S051 | Medicine Lodge Cr. Riparian TMDL Implementation | 4/1/2002 | 2/28/2007 | $485,188.00 | $394,550.00 | $90,638.00 |
| S054 | Lemhi Watershed TMDL Implementation | 4/1/2002 | 2/28/2007 | $264,215.00 | $194,174.00 | $70,041.00 |
| S147 | Emerald Gardens LID | 5/17/2005 | 10/30/2007 | $321,552.00 | $289,396.80 | $32,155.20 |
| | | | | $1,070,955.00 | $878,120.80 | $192,834.20 |

## Currently Active Projects: FY 2000-2007 Idaho Nonpoint Source Program

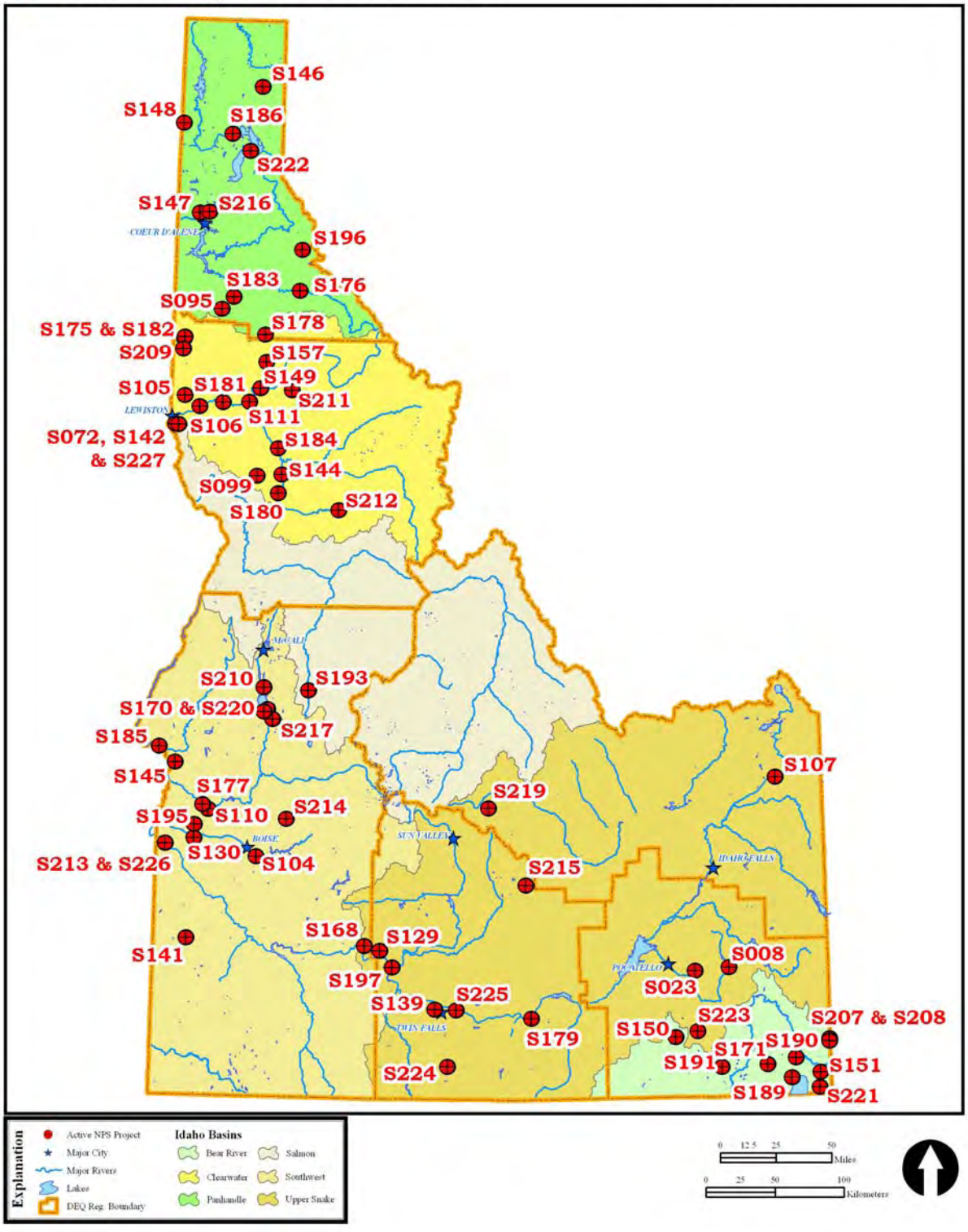


**Figure 1. Currently active nonpoint source program projects in Idaho as of December 31, 2007.**

**Table 2. Projects closed during 2007.**

| No. | Subgrant Number | Project Name |
|---|---|---|
| 1 | S011 | Winchester Lake |
| 2 | S017 | Cottonwood Creek--ICSWCD |
| 3 | S018 | Porter Riparian Restoration Cub River |
| 4 | S051 | Medicine Lodge Creek Riparian TMDL Implementation |
| 5 | S054 | Lemhi Watershed TMDL Implementation. |
| 6 | S069 | N. Idaho AFO Implementation, Phase 2 |
| 7 | S074 | Weiser Water Quality Protect. Project. |
| 8 | S075 | Pack River Watershed Sediment Redo |
| 9 | S081 | Panhandle HD Bioretention Basin Demo Project |
| 10 | S091 | Kid/Mica Creek Retention Ponds |
| 11 | S097 | Urban Livestock BMPs |
| 12 | S098 | Lower Payette River TMDL Implementation |
| 13 | S100 | Tammany Creek Restoration |
| 14 | S109 | BMPs for Rural Road Management |
| 15 | S120 | Jerrell Glenn Wetland Restoration Project. |
| 16 | S127 | Rock Creek Small Acreage Demo |
| 17 | S131 | Downtown Boise Graywater Recycling |
| 18 | S138 | Lower Perrine Coulee Wetland Project |
| 19 | S143 | PCEI-SF Rest. #2, Robinson Park |
| 20 | S169 | Milner Lake Shoreline Stabilization Riparian |
| 21 | S188 | Rock Crk. Riparian Fencing(Helman) |
| 22 | S197 | Malad River W Drain Wetland Project |

## Task 2: Develop policies and guidance materials

Output 2a. The program continues to receive valuable input from users of the online application on ways to improve or enhance the application and application process. All input was considered and several changes were made and put in place for use in the 2009 project application period. Highlights of the changes made can be seen in the application, located at http://www.deq.idaho.gov/Applications/319G.

Output 2b. In September 2007, DEQ created an opportunity for over 350 interested parties to submit pre-applications for 2008 CWA, Section 319 funding. The deadline for submitting pre-applications was November 7, 2007. DEQ received 19 pre-applications, with a total dollar amount exceeding $2.5 million.

Completed applications are required to be received by DEQ by February 8, 2008. All applications are then subject to a stringent review process to ensure proposals meet federal and state guidelines, are consistent with the 1999 NPS Plan, and are also related to DEQ statewide/regional priorities for the restoration of beneficial uses. Watershed and basin advisory groups are provided sufficient time to review and comment on all regional projects requesting funding.

### Task 3: Revise existing NPS MOUs

Output 3. Over 11 months in 2007, DEQ convened meetings of U.S. Forest Service (USFS), Bureau of Land Management (BLM), and Idaho Department of Lands (IDL) personnel with a mutual goal of forging agreement on the terms of a new memorandum of understanding (MOU) regarding the NPS-related working relationships between these parties. An agreement in principle was reached in September 2007. The MOU is expected to be signed and effective in February 2008. This MOU will replace the previous 1999 MOU with respect to these parties only. Negotiations with another select group of the remaining parties and DEQ are expected to proceed in late 2008.

### Task 4: Conduct Annual NPS Monitoring Workshop

Output 4. The 18th Annual Water Quality Conference: Monitoring, Assessment and Management was held January 8-10, 2008 at the Boise State University Student Union Building. The overall theme was contaminants of emerging concern. A national perspective of this issue was provided by three keynote speakers who discussed pharmaceuticals and other contaminants in water resources, gave examples of estrogens and their effects on fathead minnows, and discussed EPA's Office of Water activities concerning contaminants of emerging concern. Topics by 26 additional speakers included uranium, pharmaceuticals and flow direction in ground water; occurrence and attenuation of selenium; floodplain restoration and enhancement; nutrient enrichment, trading, and enhancement; mercury monitoring and sources of contamination in southern Idaho; fish tissue contaminants in Idaho lakes; temperature TMDLs; radio telemetry; aquatic biodiversity monitoring; and post-fire water quality impacts and monitoring. The conference was attended by 138 registered individuals plus a number of people who did not register. The 19th annual conference is scheduled for January 6-8, 2009.

### Task 5: Evaluate ongoing and recently completed NPS projects

Output 5. DEQ evaluated 31 projects in the field during 2007. A summary of each of the field evaluations, including photographs, appears in Section 4 of this report.

### Task 6: Provide statewide technical support, education, and information transfer on TMDL implementation activities, with an emphasis on agriculture

Output 6. DEQ continues to offer strong technical support for TMDL implementation activities on projects, ranging from urban, storm water impacted watersheds to rural, agriculturally impacted watersheds to remote logging and mining impacted watersheds.

### Task 7: Submit 2006 Performance and Progress Report

Output 7. This task was completed in early 2007.

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# Section 2. 2007 Project Field Evaluation Season

This section summarizes the 2007 field evaluations. More detailed discussions for the three highlighted projects can be found in the Section 3 "Outstanding Projects" portion of this report. A listing of those projects closed out in 2007 can be found in Table 2, page 10. Summaries for all projects that were evaluated during 2007 can be found in Section 4, starting on page 57.

## Introduction

As of December 31, 2007, DEQ oversaw 67 active projects in Idaho (Figure 1, page 9). Each project is assigned a unique tracking number once funding is awarded. To assure projects are completed in a timely manner and achieve their goal of cleaning up and preventing NPS water pollution, all projects are subject to field evaluations by DEQ. Although DEQ's goal is to annually field evaluate the progress of approximately half of all ongoing or recently completed projects, only 31 projects were actually evaluated in 2007. The number of evaluations fell short by two projects because an unusually high number of projects scheduled for closure were given extensions late in the year, which raised the number of active projects to a record high of 67. This evaluation rate still ensures that, over a two-year period, the majority of ongoing or recently completed projects will receive a field evaluation.

## Field Evaluation Process

During the summer and fall of 2007, DEQ staff evaluated field work at 31 projects across Idaho that tackle a variety of nonpoint source water quality issues (Figure 2). Twenty-four of the 31 field projects (77%) focus on a variety of BMPs for water quality protection related to agriculture; four projects (13%) focus on logging; and three projects (10%) focus on urban and rural storm water treatment.

DEQ generated a standard form for staff to use during field evaluations. For all projects, the DEQ evaluator visiting the site carefully reviewed the project's subgrant agreement prior to going to the field. The evaluator routinely contacts appropriate DEQ regional staff to make arrangements to accompany the project manager, DEQ regional staff, and any other stakeholders to the field. In all cases, the evaluation form is used as a guide to assure that NPS requirements are being met in the field.

## Results

Of the 31 projects evaluated during 2007, 30 projects appear to be fully meeting their work plan obligations by being totally completed or by demonstrating substantial progress toward completion of their designated tasks. One important project, S171 Bear River Animal Feeding Operation (AFO) Relocation, has had delays in getting started but now appears to be making some progress. Table 3 lists and briefly describes all the active NPS projects that were field evaluated during the summer and fall of 2007.


**Figure 2. Locations of 31 nonpoint source projects evaluated during 2007.**

**Table 3. Active or recently completed nonpoint source projects field evaluated during the summer/fall of 2007.**

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S041 | Kinsey Corral Relocation | The intent of this project was to eliminate a corral that was located in McMullen Creek, which is tributary to Rock Creek and the Snake River. The corral was rebuilt approximately one mile away from the original site, where it is completely isolated from surface water. Prior to this animal feeding operation (AFO) relocation project, Kinsey Corral was a major source of bacteria, sediment, and nutrients to surface water. This was a reevaluation to verify that BMPs continue to function properly. | Twin Falls |
| S069 | North Idaho AFO Relocation Phase 2 | The purpose of the North Idaho AFO Implementation Project is to implement BMPs on livestock feeding operations to work towards achieving the designated beneficial uses in the Clearwater, Palouse, Salmon, and Snake River watersheds. The member conservation districts of Division II of the Idaho Association of Soil Conservation Districts, in cooperation with the Idaho State Department of Agriculture, Idaho Soil Conservation Commission, and USDA Natural Resources Conservation Service, support the implementation of this project as part of the agricultural component within regional TMDL implementation plans. Phases 1 and 2 of this project, including over 20 AFO operations, remove cattle from creeks and bring water to cattle via wells, pumps and pipelines; or in some cases, simply prevent storm water runoff from passing through AFOs and into streams. This 2007 evaluation is a continuation of a previous (2004) evaluation and includes captioned photographs from both evaluations. | Lewiston |
| S079 | Perrine Coulee Wetland Management Project | The purpose of this 2003 project is to capture a large portion of the irrigation return flow from the Main Perrine Coulee and remove the majority of sediment and nutrients via two settling ponds and associated wetlands before the water is returned to the Snake River. The evaluation conducted on July 10, 2007 was a follow-up investigation to see how the project is functioning after four years of use. | Twin Falls |
| S089 | Balanced Rock Cedar Draw/F. Coulee | The intent of the project is to treat irrigation return flow prior to discharge to the upper Snake River. BMPs include a set of settling ponds and associated wetlands. Cedar Draw is a 303(d)-listed stream. This project was completed in July 2004. This evaluation is intended to verify that the project is still performing as designed. During our visit, we determined that the system is working as intended and that vegetation is well established along pond shorelines and in wetlands. | Twin Falls |

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S095 | Santa Creek TMDL Implementation Project | This project included two phases of work conducted over a five-year period along 5 miles of historically over-grazed land along Santa Creek. The intense stream bank stabilization included reducing bank slopes from near vertical to a 3:1 slope and hardscaping with rock and vegetative planting. This project is the main component of the Santa Creek TMDL implementation plan. The local Soil Conservation Commission office had received a report that the exclusionary fencing had been partially destroyed by elk and moose over the summer of 2007, thus allowing cattle free access to the project area. The goal of this year's evaluation was to check the condition of the project area and check Phase 2 work. | Coeur d'Alene |
| S104 | Boise River Side Channel Reconstruction | This project, located at Harris Ranch in east Boise, is intended to improve water quality in the Lower Boise River. The Lower Boise River is a 303(d) water quality limited segment affected by nonpoint source activities that have affected flow alteration, sedimentation, temperature, and dissolved oxygen. The project aims to achieve water quality improvements by reestablishing a functioning riparian corridor. It will also restore spawning and rearing habitat for salmonid fishes with construction of a one mile long side channel adjacent to the Boise River. The project will provide fish passage from the Boise River to an area known as Barber Pool. This project is restoring connectivity between Barber Pool and the Boise River, which have been disconnected for nearly a century. | Boise |
| S106 | Potlatch Water Quality Improvement | The Potlatch River and select tributaries are on the State of Idaho's 1998 303(d) list of impaired water bodies. The listed water quality parameters of concern include temperature, channel stability, sediment, bacteria, flow alteration, habitat alteration and nutrients. The Potlatch River TMDL was recently completed. BMPs include continuous direct seeding and erosion and sediment control structures. This project was first evaluated on August 23, 2005 during its early stages and was re-evaluated on June 29, 2007. | Lewiston |
| S110 | Gem County Storm Water Management Demonstration | The purpose of this project is to develop a city and county ordinance relative to storm water runoff for suburban and developing lands. Components of the proposal include a land drainage inventory, public education, and the development of a BMP guidebook. The project also includes the design and installation of a zero surface water discharge demonstration storm water BMP designed to collect and treat a large area of storm water in a very shallow ground water environment. When the project was first visited on October 24, 2006, none of the above tasks had been completed. The project was re-evaluated on August 10, 2007 and August 23, 2007. | Boise |

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S123 | South Fork Palouse River Restoration | The project included work in two areas in the watershed. One subproject involved a corral modification to exclude horses from a tributary to the South Fork of the Palouse River. The other subproject involved removal of an abandoned retaining wall. The old retaining wall (20 feet long by 10 feet deep by 9 inches thick) was located on the South Fork Palouse River. The retaining wall had caused a buildup of sediment within the channel and was unstable, starting to lean inward, and threatening to topple. Both projects were initially evaluated on July 12, 2006. This evaluation only included the corral modification and associated stream bank stabilization. | Lewiston |
| S126 | LQ/LS Wetland | The intent of this project is to treat irrigation return flow by constructing seven settling ponds and associated wetlands. This project was completed in summer 2006 and officially closed on December 26, 2006. The intent of this evaluation is to check one year after completion to verify that it is still functioning properly. According to the final report, the project should be removing about 85% of the pollutants. During this evaluation, it was determined that the BMPs are being well maintained and are performing as intended. | Twin Falls |
| S130 | Indian Creek LID Demonstration Caldwell | This project is a continuation of the incorporation of low impact development (LID) concepts into the City of Caldwell Indian Creek day-lighting and downtown redevelopment project. The project is a prime candidate for a “showcase” project reducing urban runoff within the Lower Boise River watershed. This work builds on existing efforts in the Indian Creek watershed, including the 2002 redevelopment design charette and Ecosystem Sciences’ publication *Urban Ecology: Design Principles to Improve Environmental Quality, Lower Boise River Watershed*. Considerable work has been accomplished since the project was first visited on July 31, 2006. | Boise |
| S141 | Owyhee Watershed Restoration Incentive | There are 20 subprojects within this vast, remote, countywide project. Subprojects involve stream rehabilitation through development of animal waste management plans and AFO relocations. The project also involves stream bank stabilization, irrigation water management plans and systems, and reduced nutrient loading to local waterways through the development of nutrient management plans. Some of the subprojects were evaluated on August 2, 2006 (see 8/2/26 evaluation). Several other subprojects were visited on August 7, 2007 and are described in this report. | Boise |

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S142 | PCEI-Tammany Creek, BMP Demonstration Project | The Tammany Creek Best Management Practices (BMP) Demonstration Project is designed under the guidance of Tammany Creek Total Maximum Daily Load (TMDL), the TMDL Implementation Plan, and the Tammany Creek Watershed Advisory Group (WAG) to improve water quality and riparian habitat. The project will serve as a highly visible BMP demonstration to raise citizen awareness and increase knowledge about restoring the water quality of Tammany Creek. BMPs include restoration techniques on approximately 1,000 feet of Tammany Creek south of Lewiston in Nez Perce County; these include restoring connection of the stream to a functional floodplain; resloping and stabilizing eroding stream banks; reestablishing a variable-width riparian buffer; fencing for livestock exclusion and stream bank protection; and constructing small swales, wetlands, and wet meadows. | Lewiston |
| S143 | PCEI-SF Rest. #2, Robinson Park | This was a reevaluation of a project that was completed during the summer of 2006. Reevaluations are conducted to determine if BMPs are functioning as they were intended. Riparian restoration activities at the site of a former reservoir (now completely filled with sediment) include reducing in-stream erosion by stabilizing banks and reducing sediment delivery from upland erosion through filtration. The project is also designed to reduce excessive nutrient loading, reduce water temperatures, and improve riparian habitat. The restoration project is also providing flood mitigation and public safety improvements of what is now a very popular county park located just 3 miles northeast of Moscow, Idaho. | Lewiston |
| S144 | Butcher Creek and Three Mile Creek | The purpose of this project is to implement agricultural BMPs, including buffer strips, livestock exclusionary fencing, and off-site water developments. This project will reduce nonpoint source loading of TMDL-listed pollutants and meet TMDL targets and Idaho water quality standards for Butcher and Three Mile Creeks and the South Fork of the Clearwater River. These agricultural BMPs will reduce soil erosion; decrease sediment delivery, nutrients and pathogens to stream channels; improve water infiltration and storage; increase shade; and improve habitat for fish and wildlife. | Lewiston |

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S145 | Middle Snake-Payette Clean Water Project | The project area consists of 4 miles of drain ditch, servicing 2,300 acres of irrigated agricultural land and other rural land development. The entire Phase 1 project area that drains to the Snake River is approximately 3,230 acres in size. BMPs include irrigation water conveyance and sediment basins, sprinkler and surge irrigation systems, land leveling, nutrient management, and irrigation water management. To address contamination from livestock, BMPs include spring development, watering facilities with solar livestock water pump and pipeline, and installation of livestock exclusionary fencing. | Boise |
| S149 | Lower North Fork Clearwater Phase II | This project, including numerous subprojects within the Lower North Fork Clearwater Watershed, is meeting its pollutant load reductions listed in the Lower North Fork Clearwater River Subbasin (LNFCRS) TMDL Implementation Plan by logging road reconstruction, road abandonment, and road obliteration. Other BMPs include reducing stream bank erosion, improving riparian and stream channel habitat, and decreasing bacteria loading to receiving waters by reducing livestock concentrations on streams and installing off-site water developments. BMPs also include continuation of good forest management of timber stands to better manage water temperature for fisheries. | Lewiston |
| S151 | Bear River Stream Bank Restoration | This evaluation covered work to be accomplished along a 1,000-foot section of badly eroding stream bank along the Bear River. The project involved installing an estimated 500 feet of rock armor, 240 feet of riprap, and 140 feet of willow plantings. Restoring the stream bank and increasing the density and diversity of riparian plants will reduce the sediment load to the Bear River and Bear Lake. Removing cattle access to the river will allow the vegetation to reestablish itself with increased vigor. To enhance this project, the landowner has received continuous Conservation Reserve Program (CRP) status for the adjacent grazing land, which will eliminate future grazing and associated erosion. | Pocatello |

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S169 | Milner Lake Shoreline Stabilization Riparian | Approximately 0.3 mile of shoreline/stream bank along the south side of the Milner Reservoir segment of the Snake River is very vulnerable to wave erosion, resulting in large amounts of bank material sloughing off into the river annually. On the basis of historical topographic maps and aerial photographs, the bank was receding at rates as high as 12 feet per year, resulting in sediment entering the Snake River and economic loss to the landowner. Adjacent shoreline both upstream and downstream of the property has previously been treated with rock riprap and tree plantings, and is stable. Benefits derived from the project include a reduction in sedimentation and associated nutrients and bacteria. The creation of a vegetative filter strip is also helping filter nutrients and sediment that were previously being released from adjacent agricultural fields. This project was initially visited in 2006 and was revisited on July 11, 2007 to verify that BMPs continue to function as intended. | Twin Falls |
| S170 | Phase 2 Cascade Reservoir Watershed | The water quality of Cascade Reservoir/Lake Cascade has been identified as impaired under section 303(d), due to violations of water quality standards for dissolved oxygen, nutrients, and pH. Nuisance algae growth resulting from excess phosphorus loading has impaired beneficial uses of the reservoir, specifically fishing, swimming, boating, and agricultural water supply. A 37% total phosphorus reduction has been determined to be necessary for the watershed in order to improve the water quality in Cascade Reservoir. BMPs to be implemented through this project include no-till farming, gravel application on dirt roads, storm water BMPs, and livestock exclusionary fencing. Subprojects visited during this evaluation include critical area plantings, riparian fencing on Boulder Creek, irrigation return flow pipeline, the site of a future storm water infiltration swale, and 1,400 feet of exclusionary fencing. | Boise |
| S171 | Bear River AFO Demonstration Project | This project is supposed to focus on protection of riparian areas by excluding cattle from streams and providing upland watering facilities on tributaries to Bear River that have been hard hit by livestock grazing. The nutrient loads and sedimentation of 303(d)-listed water bodies would be reduced by installing BMPs such as corral berms, embankments, and relocating corrals. BMPs such as shrub and tree establishment and filter strips would restore the wildlife habitat along the Bear River and its tributaries, including Battle Creek, Mink Creek, and Strawberry Creek. This high priority evaluation had to be canceled because no action had been undertaken at the time of the scheduled evaluation. It has been reiterated to the Franklin Soil and Water Conservation District that time is running out on this important subgrant and work needs to get underway as soon as possible. | Pocatello |

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S178 | West/Middle Fork St. Maries TMDL | The project will strive to meet its pollutant load reductions listed in the St. Joe/St. Maries TMDL through reducing sediment transport to streams and tributaries through rocking on 3.4 miles of new and reconstructed road, bringing active logging roads up to the appropriate culvert standards, continuation of BMP effectiveness monitoring through photo documentation and sediment traps, field inspections, maintenance, and improving fish passage structures to address the goal of hydro-habitat modification. | Coeur d'Alene |
| S179 | Burley/Marsh Creek | In 2000 DEQ established 25 areas in the state as nitrate priority areas based on population, ground water quality, the trend of nitrate analysis, and other beneficial uses of the ground water. The Burley/Marsh Creek area was ranked the third highest area of concern in the state. DEQ facilitated the development of a Cassia County Ground Water Quality Advisory Committee to develop a management plan to address the ground water degradation by nitrate. The Cassia County Ground Water Quality Management Plan was finalized in June 2004. Within the plan, as developed by local citizens, is the recommendation to work with agriculture to implement both nutrient and irrigation management. The major goal of this project is to reduce excessive leaching of nitrates past the crop root zone by developing nutrient management plans for producers through the University of Idaho soil sampling methodology in accordance with the NRCS Nutrient Management Standard. Although the project focus is on nutrient management, irrigation water management is also playing a significant role through the monitoring of crop water use and soil moisture status on selected fields. The information gained from cooperating landowners is an educational tool for all irrigators in the project area to demonstrate the feasibility and advantages of increasing water application efficiencies and irrigating to meet crop demands. | Twin Falls |

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S180 | SF Clearwater, Kirtner Project | Activities at the Rylaarsdam property include the removal of cattle from the riparian area through livestock exclusionary fencing and a bridge access across the creek. Additional work includes off-stream watering, riparian restoration through resloping and stabilization of an estimated 2,800 feet of eroding stream bank, the redevelopment of an estimated 400 feet of low flow channel, and the planting of an estimated 42,000 square feet of variable riparian buffer. Wetland swales were installed to provide additional filtration potential and increase floodwater holding capacity. Bank stabilization includes the excavation and resloping of the stream bank and the installation of coir log and erosion control fabric. An estimated 42,000 square feet of variable riparian buffer was planted with native woody, herbaceous, and grass species. The riparian buffer now acts as a filter, reducing overland sediment flows while filtering nutrients and bacteria generated from upland land use practices. Filter strips have been shown to reduce sediment by 65%, total phosphorus by 85%, nitrogen by 70% and fecal coliform by 55%. In addition to acting as a filter for pollutants, the established riparian buffer is now providing shade, which reduces extreme summer temperatures. | Lewiston |
| S182 | Deep Creek Stabilization, Espy Property | The Deep Creek Bank Stabilization Project was designed under the guidance of the Palouse River Tributaries Watershed Advisory Group and the Palouse River Tributaries TMDL, and represents early action activities that will be identified in the Palouse River Tributaries TMDL Implementation Plan. The project is located in the lower Deep Creek Watershed on private property and is considered a critical target area for sediment reduction and temperature due to the intensive impacts from agriculture, ranching, and residential development in the watershed. The proposed project will reduce erosion by stabilizing approximately 1,900 feet of stream bank. Stream banks were resloped, and approximately 28,500 square feet of variable riparian buffer was installed. Bank stabilization will reduce sediment loading to the Palouse River, and the re-growth of the riparian vegetation will provide shade to the creek, leading to a decrease in elevated summer water temperatures. | Lewiston |
| S183 | Soldier Creek Rocking Project | The project will strive to meet its pollutant load reductions listed in the St. Joe/St. Maries TMDL. The St. Joe/St. Maries Watershed Advisory Group is currently developing the TMDL Implementation Plan. Actions already identified include implementing an aggressive road transportation management plan consisting of road rocking; installing ditches and properly sized fish-friendly culverts; and monitoring through photo documentation, field inspections, maintenance, and some on-site sediment collection monitoring. | Coeur d'Alene |

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S184 | Camas Prairie GW Nitrate/ Priority Area, PH 2 | The purpose of the project is to continue Phase 1 implementation of BMPs focused in the Camas Prairie Ground Water Priority Area. BMPs will identify problem areas through continued well sampling and will focus on reduction of nitrogen loading of the ground water aquifer on thousands of acres of Idaho's Camas Prairie through education about fertilizer application rates, wellhead protection, water use, consumption, and conservation. No-till and low-till farming techniques in this dry farming (non-irrigated) region of Idaho have been proven to reduce fertilizer demand while allowing more precipitation to be available for plant root uptake due to increased soil microorganisms and earthworm counts. This work will also improve water quality and fish habitat in the receiving surface waters of the Clearwater Basin, due to less surface runoff during storm events. | Lewiston |
| S188 | Rock Creek Riparian Fencing | This project occurred on the Fifth Fork of Rock Creek and on Rock Creek. The project excludes livestock from surface water and thereby reduces pollutants, including sediment, phosphorus, and bacteria to Rock Creek and associated tributaries. The goal of this project is to provide an important step in the overall cleanup plan for the Rock Creek and the Snake River. The project is also enhancing fisheries, in particular the salmonids, and other aquatic species in Rock Creek and the Snake River. This project will benefit the threatened and endangered snails that exist at the confluence of Rock Creek and the Snake River by improving the riparian habitat and improving water quality. | Twin Falls |
| S189 | St. Charles Creek Watershed Restoration | The area below Highway 89 in southeast Idaho experiences high-density winter livestock use as local ranchers bring their cattle from summer range in the adjacent Caribou National Forest into their privately owned ranches. Repeated spring through fall irrigation of these lands releases livestock manure into the St. Charles Creek watershed. The proposed project will eliminate this release over a 1,200 acre area while minimizing water quality impacts throughout the Big Creek, Spring Creek, and Little Creek branches of the lower St. Charles Creek Watershed. | Pocatello |
| S190 | Bear River Dingle CAFO | This area has a high density of cattle winter feeding areas located along the Bear River. These areas are a source of sediment and nutrients, due to the density of cattle confined along the waterways. To protect newly planted riparian vegetation, cattle are being fenced off of the stream, and off-site watering is being provided for livestock. Corral berms are also being installed to keep any nutrients from leaving the confined feeding areas and entering the stream. The fencing will establish a riparian buffer, which will improve the wildlife habitat and reestablish a continuous grassy/woodland corridor along the Bear River. | Pocatello |

| Subgrant Number | Project Name | Comments | DEQ Region |
|---|---|---|---|
| S191 | Deep Creek/Bear River Management Eco. | This project is still in the planning stage. Although we toured part of the project site, no photographs were taken because no work has yet been accomplished in the field. The BMPs planned for this project will help control stream bed and bank soil erosion. BMPs include livestock exclusion fencing, revegetation, channel stabilization, large woody riparian plantings, and fish and wildlife habitat development. BMP work on adjacent agricultural uplands involves irrigation management, prescribed grazing, and pest management. Structural BMPs may include off-stream water facilities, sediment basins, filter strips, AFOs, animal waste management systems, off-stream watering facilities, and spring enhancement. | Pocatello |

# Section 3. Outstanding Projects of 2007

Three projects in this year's annual progress report exemplify outstanding coordination, design, and implementation:

- S008 Twenty-Four Mile Creek 319 Implementation Project
- S023 Upper Rapid Creek Riparian Restoration
- S095 Santa Creek Stream Bank Protection

Summaries for each of these projects are presented on the following pages.

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# Twenty-Four Mile Creek 319 Implementation Project

## Introduction

The Caribou Soil Conservation District (SCD) initiated the Twenty-Four Mile Creek Subwatershed TMDL Implementation Project to address identified sediment and nutrient loading problems in the Upper Portneuf River. The tributary that contributes the largest amount of sediment, bacteria, and nutrients to a section of the Portneuf River is Twenty-Four Mile Creek. This project focused on 14,390 critical acres of agricultural land.

Twenty-Four Mile Creek is on the State of Idaho's 303(d) list of water quality impaired water bodies and is listed from its headwaters to the Portneuf River, which is approximately 12.93 miles in length. Beneficial uses that exist on Twenty-Four Mile Creek include cold water biota, secondary contact recreation, and agricultural water supply.

## Project Goals and Objectives

The overall goal of the project was to improve the quality of water in Twenty-Four Mile Creek and stabilize the banks within the targeted reach area so the stream could sustain its beneficial uses and water quality conditions could improve within the Portneuf River. There were two objectives:

- protect and restore designated and existing beneficial uses by reducing sheet, rill, and gully erosion
- develop and implement a project administration, evaluation, and environmental stewardship program, which determines the effectiveness of the proposed activities and promotes their long-term care

## Key Issues

To meet the goals and objectives stated above and to accommodate the needs of the landowner, this project addresses the following issues:

- reducing sheet, rill, and gully erosion on non-irrigated cropland, irrigated cropland, pastureland, and rangeland
- reducing stream bank and channel erosion
- reducing bacteria and nutrient contributions from cropland, rangeland, and AFOs

## Accomplishments

The Caribou SCD worked with seven project participants to implement BMPs on 14,390 critical acres. BMPs applied and their cost-share amount consisted of the following:

- 5 waste storage facilities (corral berms) for a total of $11,127.75
- 35,166 feet of fence installed for a total of $74,513.75
- heavy use protection area installed for a total of $4,966.21
- 37,159 feet of pipeline installed for a total of $63,118.95
- 83 acres of use exclusion for a total of $20,800.00
- watering facilities installed: 5 pumping plants, 2 structures for water control, 20 troughs, and 8 wells, all for a total of $55,102.60

Willows have been planted along Twenty-Four Mile Creek to lower water temperatures and increase insect and stream productivity. Increasing woody species also increased in-stream habitat for threatened and endangered species. The following is a partial listing of BMPs utilized: critical area plantings, fencing, filter strips, fish habitat improvements, livestock exclusions, riparian area plantings, waste storage facilities, off-stream water developments, livestock wells, and watering facilities.

The project greatly reduced sediment delivery to Twenty-Four Mile Creek by reducing disturbance from livestock to the stream banks and riparian areas. It also significantly reduced bacteria loading to the Portneuf River. The decreased sediment contribution has allowed the river and streams to maintain their profile, pattern, and dimension. Decreasing sediment contributions has improved sediment transport capabilities of the river and streams and helped achieve proper functioning conditions. This will ultimately result in long-term river system stability.

## BMP Financial Summary

| Financial Summary of Subgrant S008 | | | Match Ratio | |
|---|---|---|---|---|
| **Total 319 Grant Budget** | **$254,242.00** | | Landowner Match | $85,142.72 |
| Personnel/Project Administration | $22,962.93 | | Agency Match | $29,900.00 |
| Best Management Practices | $229,629.26 | | WQPA/State Match | $114,941.71 |
| Interest on Checking Account | $176.88 | | **Total Match** | **$229,984.43** |
| **Total 319 Expenditures** | **$252,592.19** | | Total Project Costs | $459,613.69 |
| Grant Balance | $1,826.69 | | Current Match Ratio | 50% |
| Funds Returned To DEQ | $1,826.69 | | | |

## Monitoring

Water quality monitoring was conducted before and after BMP implementation on Twenty-Four Mile Creek. Reductions in suspended sediment, phosphorus, and nitrogen loads were observed; however, these reductions were not statistically significant. Pollutant concentrations did not change significantly after BMP implementation, but were typically low. With the exception of nitrogen, average pollutant concentrations met the water quality targets set by DEQ in the 1999 Portneuf TMDL. The benefits of BMPs in Twenty-Four Mile Creek may be have been difficult to detect by water quality monitoring because of the impact that upstream, untreated reaches have on the stream. Additionally, the conservation practices that have been implemented, such as grazing management, may need to be implemented for a number of years before their benefits are fully realized.

## Cumulative Load Reductions

Stream erosion condition inventories (SECI) were completed in 2000 and 2007. The 2007 inventory estimates showed that the 18 reaches treated on the Twenty-Four Mile Creek subwatershed went from moderate to slight erosion evidence. The estimated stream bank sediment yield to the streams was reduced from 5,012 tons/year to 2,756 tons/year. This is a 2,256 tons/year or 45% reduction in sediment in the Twenty-Four Mile Creek subwatershed.

Cumulative total nitrogen and phosphorus reductions were as follows:

Nitrogen: 15.7 tons/year

Phosphorus: 10.5 tons/year

The calculations for the inorganic nitrogen and phosphorus were taken from the Nutrient Management Manure Calculation Sheet from the Idaho State Department of Agriculture.

## Project Organizational Structure

The Caribou SCD, consisting of a seven-person conservation district board, sponsored the project. A quorum is established and decisions are made when at least four out of the seven representatives are present. Over the past seven years, 84 meetings have taken place, totaling over 800 hours of volunteer efforts by district supervisors.

The following agencies/organizations offered support and technical assistance:

Idaho Soil Conservation Commission (ISCC)

Idaho Association of Soil Conservation Districts (IASCD)

Idaho State Department of Agriculture (ISDA)

Idaho Department of Environmental Quality (DEQ)

USDA Natural Resources Conservation Service (NRCS)

## Photographs

**Figure 3. Before (August 2003): meadow pasture with access to stream.**

**Figure 4. After (November 2007): use exclusion fencing eliminates livestock access to streams.**

**Figure 5. Before (September 2003): animal feed area without containment.**

**Figure 6. After (same area as pictured above, November 2004): waste storage facility under construction.**

**Figure 7. Livestock access to the streambed is limited by this stream crossing (June 2003).**

**Figure 8. Corral panels and off-site watering facility (May 2003).**

Figure 9. Off-site watering facility.

Figure 10. Off-site watering facility.

# Upper Rapid Creek Riparian Restoration


## Background

In 1989, the Portneuf Soil and Water Conservation District (SWCD) was awarded a State Agricultural Water Quality Program (SAWQP) grant for the Upper Rapid Creek Subwatershed. Approximately 3,839 critical upland acres were treated with BMPs to reduce soil erosion. The annual soil savings from the Upper Rapid Creek SAWQP Project and Conservation Reserve Program (CRP) provided an estimated 79% reduction in soil erosion. The SAWQP Program treated primarily upland acres, while the Upper Rapid Creek 319 project was implemented to treat riparian areas.

## Program Summary

The goal of the Upper Rapid Creek 319 project was to implement riparian BMPs on streams in the Upper Rapid Creek Subwatershed (Figure 11). This project complemented the Portneuf SWCD's five-year plan and built upon its past water quality management efforts described above.

Rapid Creek (stream segment WQLS 2334) in hydrologic unit code (HUC) 17040208, from its headwaters to the confluence with the Portneuf River, (approximately 6.25 miles) is on the State of Idaho's 1998 303(d) list of water quality impaired water bodies. Beneficial uses designated on Rapid Creek are cold water biota, salmonid spawning, secondary contact recreation, and agricultural water supply. Cold water biota is not fully supported due to sediment loads.

## Treatments

The Upper Rapid Creek 319 project implemented BMPs on 15,000 feet, or 2.8 miles, of 303(d)-listed stream segments. BMPs were designed and implemented to reduce agricultural sediment introduction into Upper Rapid Creek stream segments. During the initial inventory process, 4,800 acres of the subwatershed were designated critical; of these, 1,085 acres were treated using 319 subgrant S023 funding, 1,251 acres with Conservation Reserve Program (CRP) funding, and 506 acres with Environmental Quality Incentives Program (EQIP) funding. A Conservation Improvement Grant (CIG) was also used to assist in completion of a 319 project. A total of 2,842 acres, or 59%, of critical acres were treated using the integration of the four funding sources, as shown in Figure 12.

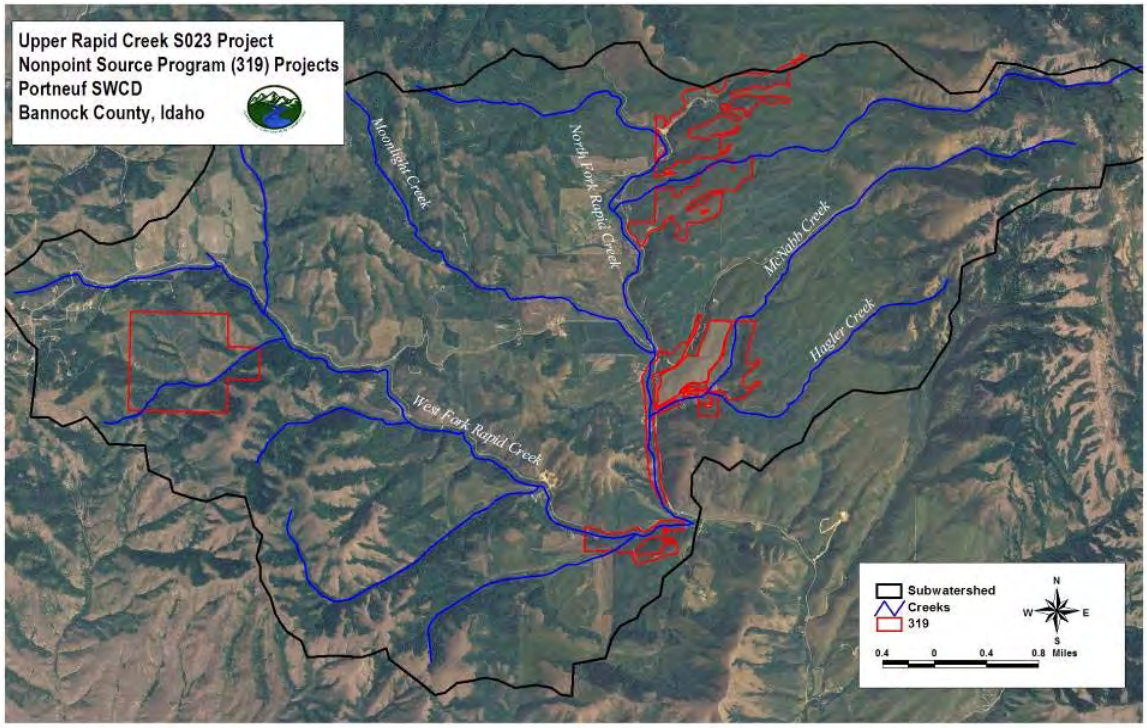


**Figure 11. Upper Rapid Creek Watershed areas treated with subgrant S023 funding.**

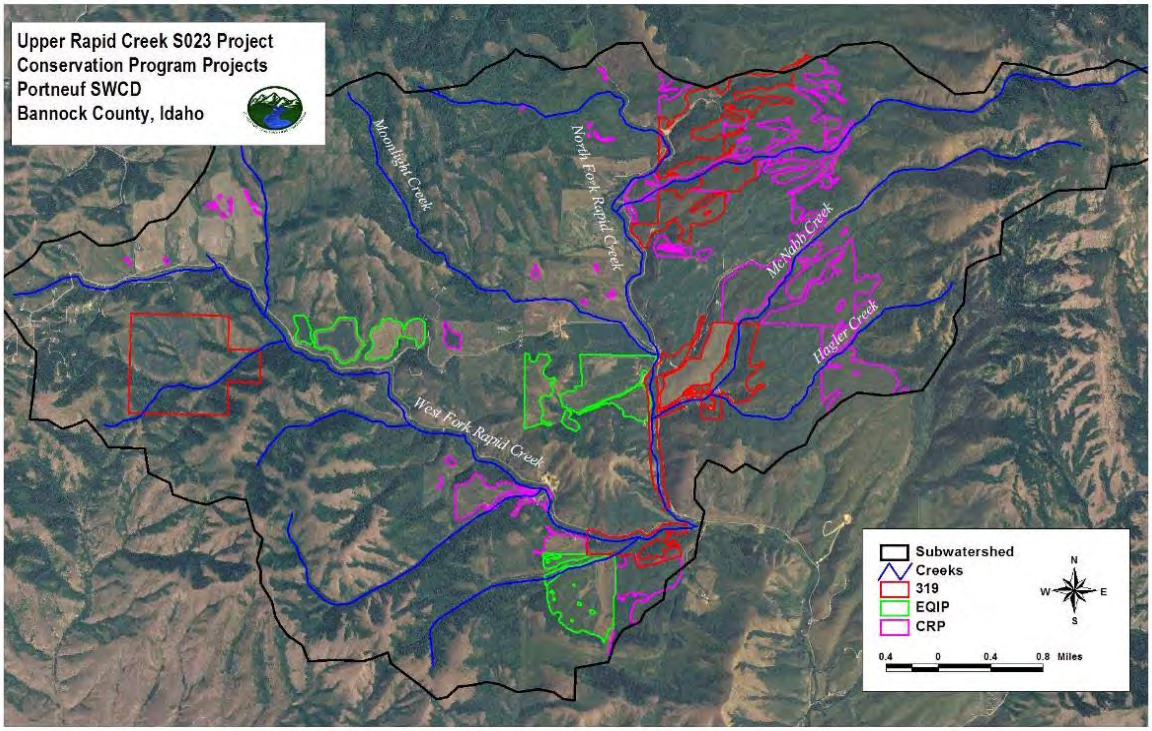


**Figure 12. Upper Rapid Creek project integration**

BMPs used in this project include off-stream water developments, critical area planting, stream crossings, livestock use exclusion, water and sediment basins, spring developments, and channel

vegetation (willows). A waterjet stinger (NRCS 2001), which uses high-pressure water to drill a hole in which to plant unrooted cuttings, facilitated willow planting along the stream banks.

## Monitoring

In December 2007, the Idaho Association of Soil Conservation Districts (IASCD) completed a water quality monitoring project in the Upper Rapid Creek subwatershed to measure the impacts of BMPs implemented on the North and West Forks of Rapid Creek. Water quality was monitored at two sites on the West Fork and two sites on the North Fork from March 2006 to September 2007. These sites had been monitored by IASCD prior to installation of BMPs. Samples were collected and analyzed for total suspended sediment (TSS), total phosphorous (TP), orthophosphorus, nitrate and nitrite, and *E. coli*. Stream discharge, temperature, dissolved oxygen, pH, and conductivity were monitored in the field.

Quantitative water quality sampling before and after BMP implementation indicated that BMPs successfully reduced pollutant loads to the West Fork of Rapid Creek. Significant reductions in suspended sediment, *E. coli*, and nitrogen concentrations were measured. Based on these water quality data, it was estimated that suspended sediment and nitrogen loads were reduced by 26 lbs/day (8%) and 4 lbs/day (34%), respectively. Additionally, prior to implementation, suspended sediment concentrations were often elevated during base flow periods, indicating that a disturbance was impacting the stream during those months. Conversely, after BMP implementation, suspended sediment concentrations increased during spring runoff events and declined to low levels throughout the rest of the year. This suggests that the disturbance was effectively treated by BMPs in the West Fork of Rapid Creek.

No significant changes in water quality were observed in the North Fork of Rapid Creek. The benefits of BMPs that have been installed may be obscured by water quality degradation that occurs on upstream reaches that have not been treated with BMPs. Additionally, the conservation practices that have been implemented, such as grazing management, may need to be implemented for a number of years before their benefits are fully realized.

Stream erosion condition inventories (SECI) were completed in 2001 and 2007. The 2007 inventory estimates showed that the seven reaches treated on the Upper Rapid Creek subwatershed went from moderate to slight evidence of erosion. The estimated stream bank sediment yield to the streams was reduced from 1,429 tons/year to 752 tons/year—a 677 tons/year or 47% reduction in sediment in the Upper Rapid Creek subwatershed.

## Project Organizational Structure

The Portneuf SWCD administered the project. The Portneuf SWCD Board of Supervisors developed and entered into contractual agreements with landowners to implement riparian area BMPs. The contractual agreements were approved/disapproved by the Portneuf SWCD Board of Supervisors during public meetings.

The following agencies and organizations provided support and technical assistance:

- Idaho Association of Soil Conservation Districts (IASCD)
- Idaho Department of Environmental Quality (DEQ)
- Idaho Soil Conservation Commission (ISCC)
- Idaho State Department of Agriculture (ISDA)
- USDA Natural Resources Conservation Service (NRCS)

## Conservation Plans and Contracts

An initial landowner meeting was held in May 2001 to discuss plans for the Upper Rapid Creek 319 project. Thirty-one landowners were given applications, ten applied, seven applications were approved, and seven landowners went forward with planning. Six of the approved plans were completed using Upper Rapid Creek 319 funding. One landowner chose not to implement the approved plan and withdrew later.

Final project engineering designs and conservation plans were developed through a collaborative effort between landowners and technical staff from conservation districts, IASCD, ISCC, ISDA, and NRCS. Final approved contracts were signed by landowner, conservation district representative, NRCS, and ISCC.

### Implementation, Review, and Payment

Upon completion, technical staff verified completion of projects according to appropriate standards and specifications. Applications for payment were submitted to the Portneuf SWCD by landowners for review and approval. Upon approval, the Portneuf SWCD provided appropriate payment to landowners.

### Tours and Demonstrations

DEQ staff participated in five field evaluations on the Upper Rapid Creek 319 project between 2001 and 2006. The Portneuf SWCD put on a demonstration to show the uses of the waterjet stinger to plant willows. The Pocatello Community Charter School undertook a monitoring project on Upper Rapid Creek just prior to the beginning of the 319 project and prepared *A Field Guide to Rapid Creek and other Riparian Areas,* which they presented to the Portneuf SWCD.

BMPs were installed on four animal feeding operations (AFOs). The estimated load reductions in the Upper Rapid Creek subwatershed, based on the ISDA's Nutrient Management Manure Calculation sheet, are shown in Table 4:

**Table 4. Estimated load reductions, Upper Rapid Creek Subwatershed.**

| Contract Number | Nitrogen Reduction (lbs/yr) | Phosphorus Reduction (lbs/yr) |
|---|---|---|
| 02-01 | 460 | 307 |
| 03-02 | 326 | 217 |
| 03-08 | 986 | 153 |
| 03-03 | 230 | 153 |
| Total Reduction (lbs/yr) | 2002 | 830 |

## BMP Financial Summary

A financial summary of the project is given below.

***Financial Summary of Subgrant S023***

| | |
|---|---|
| Total supplies/operating exp. | $1,700.89 |
| Total personnel/project admin. | $8,349.38 |
| Total BMP payments | $132,918.54 |
| Total Expenditures | $142,968.81 |
| Grant Monies received from DEQ | $159,421.96 |
| Funds returned to DEQ | $16,453.15 |

***Match Ratio***

| | |
|---|---|
| Subgrant funds expended | $142,968.81 |
| Landowner matching funds | $107,833.81 |
| Agency matching funds | $55,000.00 |
| Landowner match + agency match | $162,833.81 |
| Match Ratio | 53.25% |

See Attachment A and Attachment B for more information.

## Conclusion

The Portneuf SWCD and cooperators successfully implemented BMPs on 2.8 miles of 303(d)-listed stream segments and 1,085 critical acres in the Upper Rapid Creek 319 project subwatershed. In conjunction with other funding sources, a total of 2,842 acres of critical areas were treated. In addition, the previous SAWQP project treated 3,839 acres of critical uplands. The Portneuf SWCD is committed to improving water quality in the Portneuf River Watershed in Bannock County. With these and other cooperative efforts, the Portneuf SWCD will continue to assist Bannock County landowners in enhancing the area's natural resources.

## Photographs

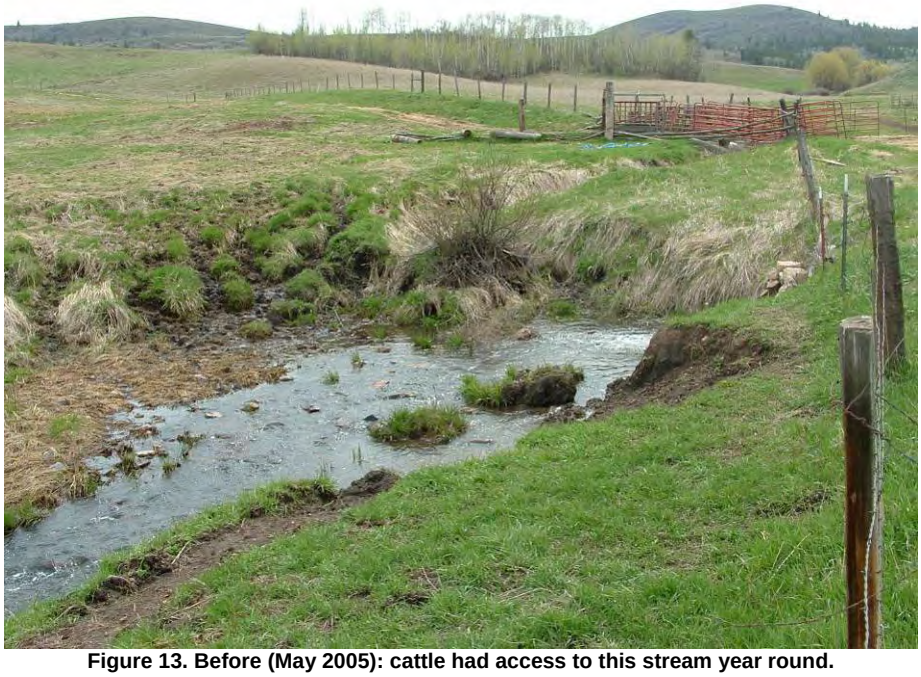

**Figure 13. Before (May 2005): cattle had access to this stream year round.**

**Figure 14. After (June 2007): recovery after two years of livestock exclusion.**

**Figure 15. Before (January 2003): old lambing facility with no containment.**

**Figure 16. After (May 2007): lambing facility relocated with containment and off-site water.**

**Figure 17. Before (July 2001): old working corrals and season-long horse/sheep grazing.**

**Figure 18. After (June 2007): relocation of working corrals and implementation of rotational grazing system.**


**Figure 19. Frost-free livestock drinkers (July 2005).**

**Figure 20. Steel water trough from spring development for off-site water (December 2004).**

**Figure 21. Willow cuttings planted with waterjet stinger (June 2005).**

**Figure 22. Containment facility/berm/off-site water development (July 2004).**

**Figure 23. Livestock exclusion fencing and prescribed grazing (October 2005).**

## Attachment A. Upper Rapid Creek 319 subgrant S023 BMP payments by practice and contract, and landowner match by practice

| Contract Numbers | 02-01 | 03-02 | 03-03 | 03-08 | 06-01 | 03-07 | Landowner Match |
|---|---|---|---|---|---|---|---|
| **4-Wire Fence / Corral Panels** | $20,231.25 | $12,712.19 | $10,536.05 | $11,316.48 | $0.00 | $0.00 | $30,793.14 |
| **Channel Vegetation / Critical Area Planting** | $1,308.25 | $738.90 | $1,303.99 | $150.78 | $0.00 | $0.00 | $1,167.96 |
| **Waste Storage Facility (Corral Berms/Barn)** | $0.00 | $495.00 | $0.00 | $20,373.75 | $0.00 | $0.00 | $15,422.91 |
| **Heavy Use Area Protection** | $661.88 | $0.00 | $0.00 | $504.13 | $750.00 | $0.00 | $1,096.87 |
| **Stock Water Pipeline** | $0.00 | $772.20 | $918.75 | $1,144.12 | $2,868.75 | $1,181.25 | $22,861.98 |
| **Pumping Plant** | $0.00 | $2,500.00 | $0.00 | $0.00 | $1,875.00 | $0.00 | $3,973.84 |
| **Spring Development** | $0.00 | $0.00 | $0.00 | $3,558.25 | $0.00 | $1,875.00 | $1,540.42 |
| **Water Gap/Stream Crossing** | $1,396.01 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $465.33 |
| **Livestock Use Exclusion** | $4,290.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| **Watering Facilities/Water Storage Tank** | $0.00 | $1,478.28 | $2,400.00 | $5,219.03 | $12,637.50 | $1,518.75 | $26,093.89 |
| **Livestock Well** | $0.00 | $6,150.00 | $0.00 | $0.00 | $0.00 | $0.00 | $4,417.47 |
| **Grand Total** | **$27,887.39** | **$24,846.57** | **$15,158.79** | **$42,266.54** | **$18,131.25** | **$4,625.00** | **Landowner Match Total $107,833.81** |
| | | | | | Total BMP Payments | $**132,918.54** | |

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## Attachment B. Project match information for Upper Rapid Creek 319 subgrant S023

Technical Support Hours:

Up to Sept 2003 - 600 hours
To Oct 2004 - 194
To Oct 2005 - 90
To May 2006 - 95
To Dec 2006 - 418
To April 2007 - 279
To Dec 2007 - 192
Total 1,868 hours technical support

1,868 x $25.00/ hour = $46,700.00

Water Quality Monitoring Hours for Project:

182 hrs for field work
150 hrs office work
332 hours

332 x 25.00/hr = $8,300.00

$8,300.00 + $46,700.00 = $55,000.00 total technical support match

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# Santa Creek TMDL Implementation Project

## Introduction

The Santa Creek project began with a 319 grant (subgrant # S024) to the Benewah SWCD in March 2001. During the initial phase, the focus on the grant was to implement BMPs for stream bank protection and stabilization along portions of Santa Creek located on the Dippel Brothers' Ranch near Emida, Idaho. The owners have approximately 1,302 acres of pasture/timberland, with Santa Creek running through the property. The grant was completed in 2005, with funds left over. Approximately half of the project area was treated for a very reasonable cost. The landowner/operator provided over 50% in matching funds, allowing only 70% of the grant funds to be used.

In the spring of 2005, the Benewah SWCD began to implement additional bank stability practices on the remaining portion of the Dippel Brothers' Ranch. The east section of the ranch had few unstable banks and little head cutting but did lack riparian areas and woody debris. The west section had intense head cutting, very unstable banks, and few riparian areas. That spring, approximately 600 willow plantings were completed. During the remainder of 2005 and spring of 2006, approximately 17,000 feet of exclusionary fencing was installed as well as rock crossings, rock weirs, rock/log barbs, and rock chutes. Additionally, over 1,200 square feet of land was planted, seeded, and mulched.

The 319 grant was extended from September 30, 2006 until November 30, 2007. Additional willow plantings were planned for fall 2006, but weather interfered. Planting in spring 2007 was assessed and due to moisture levels and soil compaction issues, fall planting was determined to be optimal.

However, due to an extremely dry summer and fall, those additional plantings were not done. The additional exclusionary fencing was completed during the spring of 2007.

In November, BMP implementation was completed and a final report was prepared, along with a display, which was taken to the annual IASCD convention in Boise. The display was well received

## Project Participants and Activities

Benewah SWCD sponsored the grant. Additional participating agencies were IASCD, ISCC, NRCS, and DEQ. ISCC personnel worked with NRCS employees to develop project design plans and conservation plans. Several tours and demonstrations were held at the project to plant willows and other plants, with several school classes assisting. The landowner, property manager, and many neighbors also participated in planting and fencing activities.

## Summary of Grant Funds Used

| | |
|---|---|
| Personnel & Fringe Benefits | $9,687.39 |
| Travel | $360.00 |
| Total BMP Payments | $53,242.43 |
| Total Costs | $63,289.82 |
| Total DEQ Grant | $87,058.00 |
| Balance of Grant Unused | $23,768.18 |

| | |
|---|---|
| Grant Funds Expended | $63,289.82 |
| Match Funds | $46,263.67 |
| Match Ratio | 42.23% |

## Water Quality Monitoring and Measurement of Load Reductions

Santa Creek, a tributary to the St. Maries River, was part of a 2001 bank erosion inventory conducted for DEQ by Kootenai-Shoshone SWCD for the purpose of implementation planning for TMDLs. The Benewah SWCD played a collaborative role in this effort. Bank erosion was calculated in tons/year, using a direct volume method.

Field measurements required for the direct volume method are eroding bank length, bank height, and assignment of a lateral recession rate. The results of the inventory for Santa Creek showed 11,950 feet of eroding bank, with an average bank height of 4.9 feet and a lateral recession rate of .28 feet per year. Total bank erosion for Santa Creek was estimated at 800 tons per year.

As part of the St. Maries River and Tributaries TMDL Agricultural Implementation Plan, the Benewah SWCD requested assistance from the IASCD. The preparation of a monitoring program was requested to provide background data for Idaho's 303(d)-listed tributaries. From November 2002 through November 2003, water quality data from several tributaries to the St. Maries River were collected. Two monitoring sites on Santa Creek, one mile apart, were part of this program. The resulting "Tributaries of the St. Maries River Monitoring Report 2003" was published in August 2004.

Information was collected for sediment, nutrients, bacteria, temperature, turbidity, and dissolved oxygen. Santa Creek had a high rate of bank erosion, high bacteria levels, and excessive stream temperature. Prior to any BMP implementation, sediment load between the monitoring stations (located on the upper end of the project area) was estimated to be 468 tons per year.

A summary of project phases and estimated sediment reduction is shown in Figure 24.

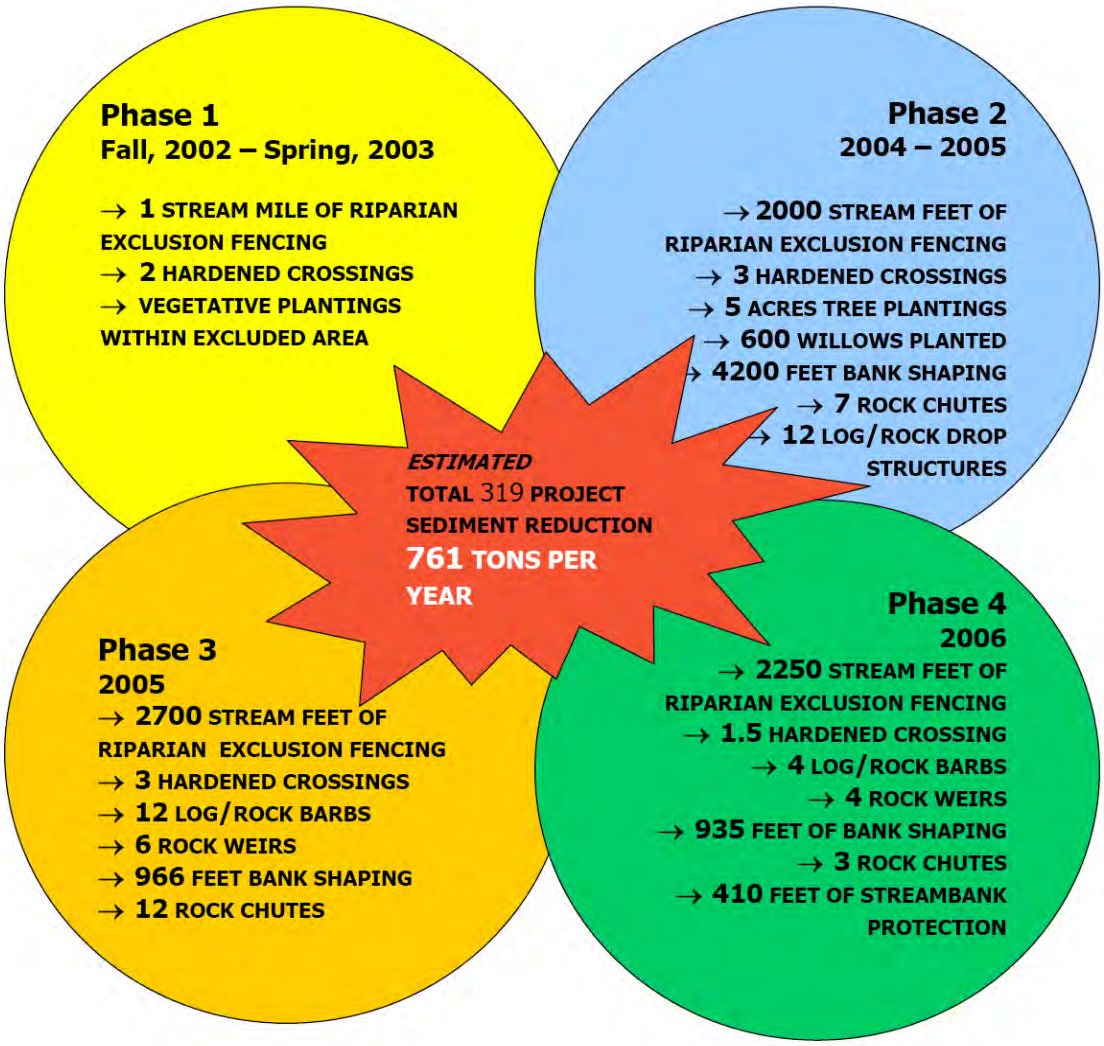


**Figure 24. Santa Creek project phases and sediment reduction.**

**Figure 25. New exclusionary fencing installed at the upper hard crossing (above). Two strands of barbed wire with two strands of electric fence (below).**

**Figure 26. Exclusionary limits cattle access to the area surrounding the stream bank. Notice the difference in the vegetation present on each side of the fence.**

Figure 27. Before the project (above) in 2004; after the project (below) in 2007.

# Section 4. 2007 Evaluation Reports

From May through October, 2007 DEQ staff traveled to 31 project sites across Idaho to evaluate and document the beneficial results that the NPS 319 program is producing:

- Twenty-four of the thirty-one field projects (77%) focus on a variety of BMPs for water quality protection related to agriculture.
- Three projects (10%) focus on urban and rural storm water treatment.
- Four projects (13%) deal with silvicultural access road stabilization.

DEQ generated a standard form for staff to use during field evaluations. The following summaries are a reduced version of the evaluations that give the reader concise information about each project that was evaluated. The full evaluation report for each of the 31 projects is available in the DEQ State Office.

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# Kinsey Corral Relocation Project

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|---|---|
| Subgrant agreement | S041 |
| Description and location | The intent of this project was to eliminate a corral that was located in McMullen Creek, which is tributary to Rock Creek and the Snake River. The corral was rebuilt approximately 1 mile away from the original site, where it is completely isolated from surface water. Prior to this AFO relocation project, Kinsey Corral was a major source of bacteria, sediment, and nutrients to surface water. |
| Anticipated completion | Summer 2004 |
| Features evaluated | This project consisted of a corral relocation away from a creek bed to a location isolated from surface water. A well and watering trough were added to the new location to supply drinking water for cattle. To keep livestock out of McMullen Creek, 3,500 feet of exclusionary fencing was installed at the old location . |
| Project status | The project was delayed due to financial hardship of the land owner. However, the project was completed during the summer of 2004. |
| TMDL | This project is part of the TMDL implementation plan for McMullen Creek, Cottonwood Creek, Rock Creek, and Snake River TMDL. |

Figure 28. This (above and below) is what the corral and McMullen Creek looked like prior to the relocation.


Figure 29. Above and below: the abandoned corral site three years later. (Overexposure of some photographs of this project evaluation was due to camera malfunction.)

# North Idaho AFO Implementation Phase 2

| | |
|---|---|
| Subgrant agreement | S069 |
| Description and location | The purpose of the North Idaho AFO Implementation Project is to implement BMPs on livestock feeding operations to work towards achieving the designated beneficial uses in the Clearwater, Palouse, Salmon, and Snake River watersheds. The member conservation districts of Division II of the IASCD , in cooperation with the ISDA, ISCC, and NRCS, support the implement of this project as part of the agricultural component within regional TMDL implementation plans. The member districts of Division II include Clearwater, Idaho, Lewis, Latah, and Nez Perce Counties. Phases 1 and 2 of this project, which involved over 20 AFO operations, remove cattle from creeks and brought water to cattle via wells, pumps, and pipelines; in some cases, the project simply prevents storm water runoff from passing through AFOs and into streams. The upcoming Phase 3 will seek additional BMP cost-share funding to continue supporting additional AFO relocations similar to Phases 1 and 2. This 2007 evaluation is a continuation of a previous (2004) evaluation and includes captioned photographs from both evaluations. |
| Anticipated completion | May 30, 2008 |
| Features evaluated | BMPs observed during this evaluation include fencing, spring development, hardened crossings, filter strips, pipeline, culverts, and road access to relocated AFOs. |
| Project status | This project needed an extension because there were numerous landowners and subprojects. There were over 20 subprojects spread over hundreds of miles across central Idaho. |
| TMDL | This project is part of numerous TMDL implementation plans in the Clearwater, Palouse, Salmon, and Snake Rivers. |

Figure 30. Looking from the new location of the AFO down to the previous location in the canyon floor.

Figure 31. Prior to this project, the valley floor was a de-vegetated AFO.

Figure 32. A well was drilled to provide water for the new AFO location.

Figure 33. Prior to this project, this area was an AFO. The creek bottom was barren of vegetation and was covered with manure.

Figure 34. This new AFO is located high and dry, away from surface water. Previously, cattle in this area were fed and watered in the creek.

Figure 35. This watering trough allows cattle access to water without polluting the nearby creek.

# Main Perrine Coulee Irrigation Return Flow Treatment

| | |
|---|---|
| Subgrant agreement | S079 |
| Description and location | The purpose of this 2003 project is to capture a large portion of the irrigation return flow from the Main Perrine Coulee (see Figure 36 below) and remove the majority of sediment and nutrients via two settling ponds and associated wetlands before the water is returned to the Snake River. The evaluation conducted on July 10, 2007 was a follow-up investigation to see how the project is functioning after four years of use. |
| Anticipated completion | December 2004 |
| Features evaluated | This evaluation was intended to be a follow-up investigation to determine the effectiveness of some of DEQ's established projects. In this project, over 12,000 acres of return flow from agricultural land irrigation is drained into the Main Perrine Coulee. This previously untreated return flow, latent with sediment, nitrogen, phosphorous, and pesticide contamination, used to be directly discharged back into the Snake River. To correct this problem, BMPs implemented included a concrete diversion structure, a large (8 acre) settling pond, and several wetlands. These features now treat 80 to 90% of all irrigation water coming through the Main Perrine Coulee prior to discharge to the Snake River. This project appears to be well maintained and operating according to its original intent. |
| Project status | This project was completed on schedule in December 2004. |
| TMDL | This project is one of many projects that comprise the TMDL Implementation Plan for the Lower Snake River. |

Figure 36. Irrigation return flow for the Main Perrine Coulee. This project now diverts 80-90% of flow to a 5 acre settling pond and two wetlands, where the great majority of pollutants are removed prior to redischarge to the Main Perrine Coulee and, ultimately, to the Snake River.


Figure 37. Shown above and below are the infrastructure and settling pond associated with this project.

# Cedar Draw F Coulee Project

| | |
|---|---|
| Subgrant agreement | S089 |
| Description and location | The intent of this project is to treat irrigation return flow prior to discharge to the upper Snake River. BMPs include a set of settling ponds and associated wetlands. Cedar Draw is a 303(d)-listed stream. This project was completed in July 2004. This evaluation was intended to verify that the project is still performing as designed. During the visit, DEQ determined that the system is working as intended and that vegetation is well established along pond shorelines and in wetlands. |
| Anticipated completion | The project was completed on December 31, 2004. |
| Features evaluated | This coulee system drains 9,000 acres of agricultural land that introduces nitrogen, phosphorous, bacteria, and pesticides to return flow irrigation water. BMPs evaluated include a series of three serpentine shaped ponds that are interconnected with riparian wetland areas. |
| Project status | This project was completed on time. |
| TMDL | This project is one of numerous irrigation return flow treatment projects associated with the Lower Snake TMDL Implementation Plan. |

Figure 38. Project Manager Mary Rosen is examining the upper pond.

Figure 39. Outflow to the second settling pond.

Figure 40. One of the settling ponds.

Figure 41. Flow from the upper pond to the second pond.

# Santa Creek Phase 2

| | |
|---|---|
| Subgrant agreement | S095 |
| Description and location | This project included two phases of work conducted over a five-year period along 5 miles of historically over-grazed land along Santa Creek. The intense stream bank stabilization included reducing bank slopes from near vertical to a 3:1 slope and hardscaping with rock and vegetative planting. This project is the main component of the Santa Creek TMDL implementation plan. The local Soil Conservation Commission office had received a report that the exclusionary fencing had been partially destroyed by elk and moose over the summer of 2007, thus allowing cattle free access to the project area. The goal of this year's evaluation was to check the condition of the project area. |
| Anticipated completion | This project was completed by December 31, 2006. |
| Features evaluated | A total of nine BMPs were used in this project:<br>1. Approximately 17,000 feet of stream bank and shoreline protection (1.5 miles x 2 sides + 600 feet of headcuts).<br>2. Approximately 17,000 feet of exclusion fencing.<br>3. Approximately 17,000 feet of channel vegetation.<br>4. Ten log/rock drop structures.<br>5. Approximately 400 feet of stream bank reshaping.<br>6. Four rock weir structures.<br>7. One rocked inlet (headcut entering Santa Creek).<br>8. Low flow rock-lined channel (headcut entering Santa Creek).<br>9. Prescribed grazing management.<br>During the most recent evaluation, DEQ determined that all of the BMPs held up during the grazing season, despite the fact that the exclusionary fencing had been partially destroyed by elk and moose. We attributed this to the high quality of workmanship that went into the project. The hardscaping, including basalt riprap, prevented cattle from entering some areas, and remote water sources encouraged cattle to stay out of the creek. Please see the photographs that were taken during the most recent visit. |
| Project status | The project needed a short extension in order to complete some exclusionary fencing. |
| TMDL | This project is the TMDL implementation plan for Santa Creek. |

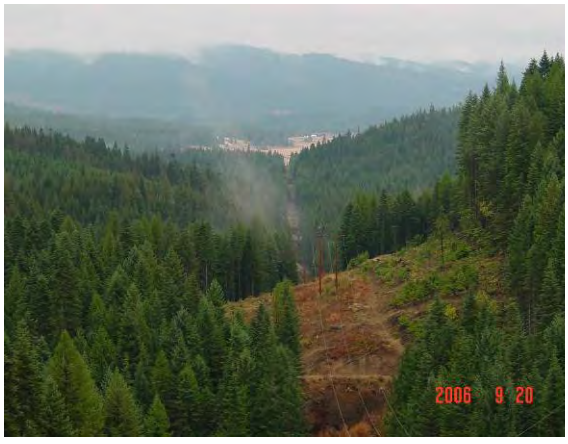


Figure 42. This view is from the top of the Santa Creek Watershed. All of the land in this photograph is part of the watershed. The work was conducted in the heavily grazed clearing seen in the distance.


Figure 43. Prior to this project, the stream bank was nearly vertical and bare of vegetation. After resloping, established native vegetation was planted.


Figure 44. Even though livestock were allowed back into Santa Creek due to partial destruction of fencing by elk and moose, the stream banks and vegetation appear to still be in good shape.


Figure 45. Livestock did not damage the BMPs, which were expertly installed and include considerable amounts of rock hardscape.


Figure 46. Although DEQ did find some electric fencing that had been damaged, most of the fencing was still in good shape.

# Boise River Side Channel Project

| | |
|---|---|
| Subgrant agreement | S104 |
| Description and location | This project, located at Harris Ranch in east Boise, is intended to improve water quality in the Boise River. The Boise River is a 303(d) water quality limited segment affected by nonpoint source activities which have affected flow alteration, sedimentation, temperature, and dissolved oxygen. The project aims to achieve water quality improvements by reestablishing a functioning riparian corridor. It will also restore spawning and rearing habitat for salmonid fishes, with construction of a one mile long side channel adjacent to the Boise River. The project will provide fish passage from the Boise River to an area known as Barber Pool. This project is restoring connectivity between Barber Pool and the Boise River, which have been disconnected for nearly a century. Thus, this project is addressing one aspect of the 303(d) listing of the Lower Boise River caused by flow alternation or "hydrologic modification." Originally visited on May 25, 2005, the project was reevaluated on July 26, 2007. |
| Anticipated completion | The original target completion date was October 30, 2005. However, delays due to property conflicts and volunteer labor caused the completion date to be postponed. |
| Features evaluated | 5,000 feet of stream channel construction and associated vegetative cover were observed during the evaluation. |
| Project status | A portion of the project has been held up due to a delay in the abandonment of the Golden Dawn Estates Trailer Park sewer lagoon system. This portion of the project may not happen until 2008. Since the 319 grant was recently extended until February 28, 2009, DEQ would like to extend the life of this project until the lagoon issue can be resolved. |
| TMDL | This project is a small part of the Lower Boise River TMDL implementation plan. |

Figure 47. When these photographs were taken during spring of 2005, vegetation was just being established.



Figure 48. (Above and below) As of July 2007, vegetation has developed very well along the earliest phase of channel development.




Figure 49. Much of the grass and all of the woody plants planted by volunteers in 2005 are flourishing.

# Potlatch Water Quality Improvement

| | |
|---|---|
| Subgrant agreement | S106 |
| Description and location | The Potlatch River and select tributaries are on the State of Idaho's 1998 303(d) list of impaired water bodies. The listed water quality parameters of concern include temperature, channel stability, sediment, bacteria, flow alteration, habitat alteration, and nutrients. The Potlatch River TMDL was recently completed. BMPs include continuous direct seeding as well as erosion and sediment control structures. This project was first evaluated on August 23, 2005 during its early stages and was reevaluated on June 29, 2007. With 2,500 acres proposed for BMP treatment within the Potlatch River Watershed, approximately 5,000 tons/year of sediment could be eliminated. A 1 ton reduction in sediment can reduce orthophosphate ($H_2P0_4$) loads by 14,000 mg and total nitrogen loads by 4,500 mg. |
| Anticipated completion | This project was initially due for completion by December 31, 2006 but was extended for one year due to strong landowner interest in the project. |
| Features evaluated | This project consists of direct seeding education and installation of gully plugs. |
| Project status | This project was extended for one year until December 31, 2007. |
| TMDL | The TMDL for this stream has not yet been completed. Upon TMDL completion, this project will be a major part of the plan. |


Figure 50. The Potlatch River watershed extends to the mountains in the background of this photograph. All of this agricultural land is highly erosive.

Figure 51. A BMP locally known as a "gully plug" has been installed in the shallow valley near the center of this photograph.

Figure 52.(Above and below): direct seeding technique results in preservation of the previous year's crop residue.






Figure 53. (All photos this page) Direct seed farming results in better yields and less erosion.

# Gem County Storm water Management Demonstration

| | |
|---|---|
| Subgrant agreement | S110 |
| Description and location | The purpose of this project is to develop a city and county ordinance relative to storm water runoff for suburban and developing lands. Components of the proposal include a land drainage inventory, public education, and the development of a BMP guidebook. The project also includes the design and installation of a zero surface water discharge demonstration storm water BMP designed to collect and treat a large area of storm water in a very shallow ground water environment. When the project was first visited on October 24, 2006, none of the above tasks had been completed. The project was reevaluated on August 10, 2007 and August 23, 2007. |
| Anticipated completion | The original expiration date of 10/31/2006 was extended to 2/25/2007 and again extended until 01/31/2008, which is the absolute deadline for completion of this project. |
| Features evaluated | The BMP manual and ordinance have been completed. The storm water BMP demonstration project will consist of bioinfiltration swales situated along the main access road to the industrial park. The right-of-way and infrastructure (gas, electric, sewer, and water) have been installed (see Figure 55 and Figure 56). However, the swales cannot be installed until after the life of this grant, when building construction is completed and final landscape grades are established. What can be accomplished is the purchase and instillation of storm water petrochemical traps that will be used to pre-treat storm water prior to conveyance to the swales. |
| Project status | This project was delayed because the location of the industrial park had to be changed, resulting in delays in land purchase. |
| TMDL | This demonstration project will be a very small part of the TMDL implementation plan for the lower Payette River. Once the storm water treatment techniques used in this project are expanded countywide, they will comprise a substantial portion of the implementation plan. |


Figure 54. This is the plan (left) and funding source (right) for the future industrial park located just west of Emmett. The bioinfiltration swales will be installed along the main east-west road shown on the sign on the left. (North is at the top of the sign on the left.)


Figure 55. Facing west (above) along the main street. Facing east (right): bioinfiltration swales will be installed along both sides of the street. Ground water is only about three feet below the surface in this area.


Figure 56. These two photographs were taken in the same location as the photographs in Figure 55, almost a year later. These photographs suggest that the only change in that time was the excavation of a shallow ditch and the addition of 4-6 inches of gravel road base.

# Mid South Fork Palouse River Restoration

| | |
|---|---|
| Subgrant agreement | S123 |
| Description and location | The project included work in two areas in the watershed. One subproject involved a corral modification to exclude horses from a tributary to the South Fork of the Palouse River. The other subproject involved removal of an abandoned retaining wall. The old retaining wall (20 feet long by 10 feet deep by 9 inches thick) was located on the South Fork Palouse River. The retaining wall had caused a buildup of sediment within the channel and was unstable, starting to lean inward and threatening to topple. Both projects were initially evaluated on July 12, 2006. This reevaluation only included the corral modification and associated stream bank stabilization. |
| Anticipated completion | This project was completed on May 8, 2006. |
| Features evaluated | BMPs observed during the first evaluation (July 2006) included the relocated corral and the concrete wall removal, including associated stream bank stabilization. This reevaluation only included the corral modification and stream bank stabilization. |
| Project status | This project was completed on time and within budget. |
| TMDL | This project is part of the pending South Fork of the Palouse River TMDL implementation plan. |


Figure 57. The Palouse-Clearwater Environmental Institute (PCEI) displays public information signs at all of its projects.


Figure 58. This corral exclusionary fencing is one of two subprojects included in this overall project. Previously, the corral included the stream (left). The stream bank was entirely denuded of vegetation. This was a major source of stream bacteria and sediment. After just one growing season, the stream bank has made a nearly complete recovery (right).


Figure 59. To assist with stream bank recovery, coconut fiber logs were installed as needed.


Figure 60. A watering trough was added to the corral to discourage horses from congregating at this one hardened crossing on the stream. This crossing can be blocked off if necessary. However, the watering trough appears to be working because horses (like people) do not like standing in water if given a choice.

# LQ/LS Wetland

| | |
|---|---|
| Subgrant agreement | S126 |
| Description and location | The intent of this project, located in south central Idaho, is to treat irrigation return flow by constructing seven settling ponds and associated wetlands. This project was completed in summer of 2006 and officially closed on December 26, 2006. The intent of this evaluation was to check one year after completion to verify that the project is still functioning properly. According to the final report, the project should be removing about 85% of the pollutants. During this evaluation, it was determined that the BMPs are being well maintained and are performing as intended. |
| Anticipated completion | October 1, 2006 |
| Features evaluated | Settling ponds and associated wetlands were visited during this evaluation. |
| Project status | This project was completed ahead of schedule. |
| TMDL | This project is one of many irrigation return flow projects that comprise the Lower Snake River TMDL Implementation Plan. The water quality of all of these projects is being monitored by the DEQ Twin Falls Regional Office. |

Figure 61. This is one of three cells associated with the settling pond complex.

Figure 62. Water flowing from cell 1 to cell 2 of the settling pond complex.

Figure 63. Finished water is being discharged to the Snake River.

# Indian Creek Caldwell - Phase 2

| | |
|---|---|
| Subgrant agreement | S130 |
| Description and location | This project is a continuation of the incorporation of low impact development (LID) concepts into the City of Caldwell Indian Creek day-lighting and downtown redevelopment project. The project is a prime candidate for a “showcase” project producing benefits in urban runoff within the Lower Boise River watershed. This work builds on existing efforts in the Indian Creek watershed, including the 2002 redevelopment design charette and Ecosystem Sciences’ publication *Urban Ecology: Design Principles to Improve Environmental Quality, Lower Boise River Watershed*. Considerable work has been accomplished since the project was first visited on July 31, 2006. |
| Anticipated completion | December 2, 2007. |
| Features evaluated | BMPs visited during this evaluation include stream channel relocation in the downtown core. This complex project includes building removal, hazardous waste removal, restoration, stabilization, and associated urban storm water BMPs in downtown Caldwell, Idaho. |
| Project status | The second phase of this project was delayed but is now on track to be completed by February 28, 2008. |
| TMDL | This project is part of the pending Indian Creek and Lower Boise River TMDL implementation plans. |


Figure 64. The Indian Creek project covers a six-block area of the downtown core of the City of Caldwell.



Figure 65. In the early 1900s, Indian Creek was concealed in some places and pushed over into a restricted channel in other places (left). Caldwell has launched a major campaign to undo all of that by eliminating some old buildings and reestablishing the stream channel through the heart of Caldwell (right).


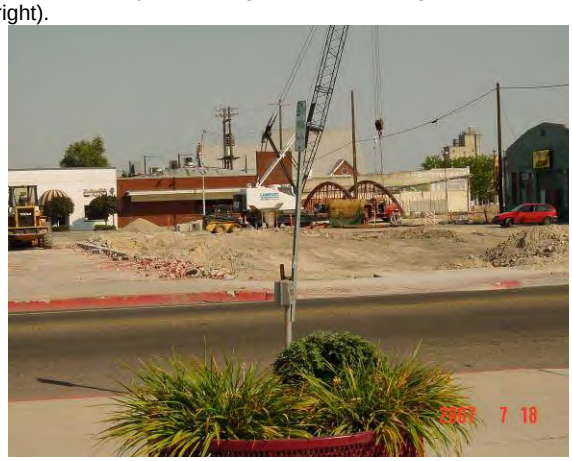


Figure 66. Where necessary, utilities are being encased in concrete to protect them from the overlying new creek channel. The steel arches (right) salvaged from one of the old buildings will be used to construct a new foot bridge over the creek.



Figure 67. At project completion, the entire six-block section of Indian Creek will look similar to this one-block section that was completed in 2006. This part of the project includes an enhanced stream bank and a storm water treatment BMP. The water wheel was paid for through other funding.

# Owyhee Restoration Incentives

| | |
|---|---|
| Subgrant agreement | S141 |
| Description and location | There are 20 subprojects within this vast, remote, countywide project. Subprojects involve stream rehabilitation through development of animal waste management plans and AFO relocations. The project also involves stream bank stabilization, irrigation water management plans and systems, and reduced nutrient loading to local waterways, through the development of nutrient management plans. Some of the subprojects were evaluated on August 2, 2006 (see 8/2/26 evaluation). Several other subprojects were visited on August 7, 2007 and are contained in this evaluation. |
| Anticipated completion | The original anticipated completion date was June 30, 2007. However, the subgrant agreement has been extended until January 1, 2008 due to weather and logistical delays. |
| Features evaluated | During the evaluation, DEQ visited three irrigation diversion projects. |
| Project status | This complex project, involving numerous ranchers and subprojects, has incurred some delays but must be completed by January 1, 2008. |
| TMDL | This project is part of the TMDL implementation plan for the listed streams. |

Figure 68. For generations, ranchers in this area used whatever methods they could to dam up creeks to create irrigation flows. If left as shown (left and right) this crude dam would have failed, flushing a large volume of sediment downstream. Funding from the 319 program was used, along with the required 40% match from the rancher, to install a properly engineered concrete weir and diversion.

Figure 69. We revisited the site one year later, after the new weir and head gate were installed.

Figure 70. Concrete structures, like the ones shown above and below, are not subject to erosion and associated surface water pollution commonly created by earthen structures. Concrete structures also allow better regulation and less waste of irrigation water.

# Tammany Creek BMP Demonstration (Woods)

| | |
|---|---|
| Subgrant agreement | S142 |
| Description and location | The Tammany Creek BMP Demonstration Project is designed under the guidance of the Tammany Creek TMDL, the TMDL Implementation Plan, and the Tammany Creek Watershed Advisory Group (WAG) to improve water quality and riparian habitat. The project will serve as a highly visible BMP demonstration to raise citizen awareness and increase knowledge about restoring the water quality of Tammany Creek. BMPs include restoration techniques on approximately 1,000 feet of Tammany Creek south of Lewiston in Nez Perce County; these include restoring connection of the stream to a functional floodplain; resloping and stabilizing eroding stream banks; reestablishing a variable-width riparian buffer; fencing for livestock exclusion and stream bank protection; and constructing small swales, wetlands, and wet meadows. |
| Anticipated completion | December 30, 2006 |
| Features evaluated | BMPs evaluated include stream bank resloping and stabilization, riparian plantings, and exclusionary fencing. |
| Project status | The project was completed on schedule. |
| TMDL | This project is one small part of the TMDL implementation plan for Tammany Creek. |

Figure 71. This section of Tammany Creek was resloped, stabilized, and replanted. However, the entire area has been overtaken with noxious weeds since this photo was taken in spring 2006.

Figure 72. This settling pond (left) catches polluted runoff from a small livestock feeding area. (Right) There is considerable labor involved in stream bank restoration.


Figure 73. With the exception of some areas of heavier noxious weed invasion, the areas shown in the previous photographs taken during and shortly after construction looked like this during the June 28, 2007 evaluation.

# South Fork Palouse Robinson Park

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| Subgrant agreement | S143 |
| Description and location | This was a reevaluation of a project that was completed during the summer of 2006. Reevaluations are conducted to determine if BMPs are functioning as they were intended. Riparian restoration activities at the site of a former reservoir (now completely filled with sediment) include reducing in-stream erosion by stabilizing banks and reducing sediment delivery from upland erosion through filtration. The project is also designed to reduce excessive nutrient loading, reduce water temperatures, and improve riparian habitat. The restoration project is also providing flood mitigation and public safety improvements of what is now a very popular county park located just 3 miles northeast of Moscow, Idaho. |
| Anticipated completion | Field work on this project was completed during the summer of 2006. |
| Features evaluated | BMPs observed include stream bank restoration, installation of stabilization features, and plantings to create and enhance a park environment. All of the BMPs visited during this reevaluation of this project appear to be functioning properly. |
| Project status | This project was completed on time. |
| TMDL | This project is one component of the TMDL implementation plan for the South Fork Palouse River. |


Figure 74. This area, now used as a popular park by local residents, used to be a reservoir.



Figure 75. Soil from the foreground up to the large trees (left and right) consists of sediments that were deposited in the reservoir since its creation in the early 1900s. With time, the reservoir completely filled with sediment. Once the dam was breached, annual spring runoff began flushing vast quantities of sediment into the South Fork of the Palouse River.

Figure 76. This project involved resloping near-vertical stream banks and planting riparian vegetation. Plastic tubes protect young plants from dear, elk, beaver, and burrowing animals.


Figure 77. Meander curves, where high energy flows could cause further erosion, required additional fortification like these coconut fiber logs anchored to the toe of the bank.



Figure 78. The photographs depict the area as of June 2007. Vegetation has matured, and the stream banks are stable.

# Butcher Creek and Three-Mile Creek

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| Subgrant agreement | S144 |
| Description and location | The purpose of this project is to use a watershed approach to implement agricultural BMPs, including buffer strips, livestock exclusionary fencing, and off-site water developments. This project will reduce nonpoint source loading of TMDL-listed pollutants and meet TMDL targets and Idaho water quality standards for Butcher and Three Mile Creek and the South Fork of the Clearwater River. These agricultural BMPs will reduce soil erosion; decrease sediment delivery, nutrients, and pathogens to stream channels; improve water infiltration and storage; increase shade; and improve habitat for fish and wildlife. |
| Anticipated completion | Originally, the project was to be completed by June 30, 2006. However, the project will need an extension. |
| Features evaluated | Not much has been accomplished on this project due to staff turnover. DEQ did see a remote watering site and a concrete manure-holding pad. (See Figure 79 and Figure 80.) |
| Project status | This project has been delayed due to staff turnover. |
| TMDL | This project is one small portion of the South Fork of the Clearwater River TMDL and is the main portion of the Butcher and Three Mile Creeks TMDL. |



Figure 79. The farmer has agreed to keep this pasture (left) in hay to reduce erosion. The watering trough (right) allows cattle to get to water without getting into the nearby creek.


Figure 80. This concrete pad is used to store manure during the winter months, keeping nutrients, bacteria, and other pollutants from entering ground water and the nearby creek.

# Payette and Middle Snake Rivers Clean Water Project

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| Subgrant agreement | S145 |
| Description and location | The project area consists of 4 miles of drain ditch servicing 2,300 acres of irrigated agricultural land and other rural land development. The entire Phase I project area that drains to the Snake River is approximately 3,230 acres in size. BMPs include irrigation water conveyance and sediment basins, sprinkler and surge irrigation systems, land leveling, nutrient management, and irrigation water management. To address contamination from livestock, BMPs include spring development, watering facilities with solar livestock water pump and pipeline, and installation of livestock exclusionary fencing. |
| Anticipated completion | This project was originally intended to be completed by June 30, 2007. However, due to the high interest of local farmers the project has been extended until January 31, 2008. |
| Features evaluated | During this evaluation, DEQ visited settling ponds, irrigation conveyances, and improvements including sprinkler irrigation and exclusionary fencing. We also took photographs of some major sources of agricultural pollution coming from farms across the Snake River in Oregon. |
| Project status | A one-year extension and additional funding were granted by DEQ to accommodate the higher than anticipated interest of farmers in the project area to install water quality BMPs on their farmland. |
| TMDL | This project is a major component of the Snake River and Hells Canyon TMDL implementation plan. |

Figure 81.One of many irrigation diversion head gates being constructed. Properly constructed head gates save irrigation water and reduce sediment and nutrient loading to water being returned to the river.

Figure 82. A panoramic view across the Snake River into Oregon, showing two farmhouses and what appear to be sources of agricultural pollution.


Figure 83. The lift station for irrigation water pumped from the Snake River (left). Part of the filtering system to allow water to be sprinkler applied (right). Sprinkler application uses far less water and causes less surface water pollution than flood irrigation.


Figure 84. Some of the hundreds of sprinkler-irrigated acres of crops associated with this project.


Figure 85. Another aspect of this project is that all irrigation return flow is captured in elongated settling ponds and, whenever possible, reused for irrigation.

# Lower North Fork Clearwater Phase 2

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| Subgrant agreement | S149 |
| Description and location | This project, including numerous subprojects within the Lower North Fork Clearwater Watershed, is meeting its pollutant load reductions listed in the LNFCRS TMDL Implementation Plan by road reconstruction, road abandonment, and road obliteration. Other BMPs include reducing stream bank erosion, improving riparian and stream channel habitat, and decreasing bacteria loading to receiving waters by reducing livestock concentrations on streams and installing off-site water developments. BMPs also include continuation of good forest management of timber stands to better manage the temperature regime needed for water quality improvements. Finally, the project improves fish and wildlife habitat through better watershed management. Water quality monitoring and photo monitoring assure the continuation of BMP effectiveness. |
| Anticipated completion | January 28, 2008 |
| Features evaluated | One main aspect of this project is logging road closures including abandonment, where roads are closed to be reentered in a few years, and road obliteration, where right-of-ways are permanently eliminated, recontoured to their original topography, and replanted with native vegetation. Other BMPs include installation of culverts, gravel, ditching, and rolling water bars on logging roads that are currently in use. A combination of cattle ponds and exclusionary fencing were installed to reduce cattle damage to creeks. |
| Project status | This project is on schedule to be completed by January 30, 2008. |
| TMDL | This project is the major component of the Lower North Fork of the Clearwater River TMDL Implementation Plan. |


Figure 86. Project Manager Kellie Rosellini stands beside one of the numerous temporary logging road closures completed through this project. Restricting vehicle access when logging roads are not needed reduced erosion and sediment in streams.

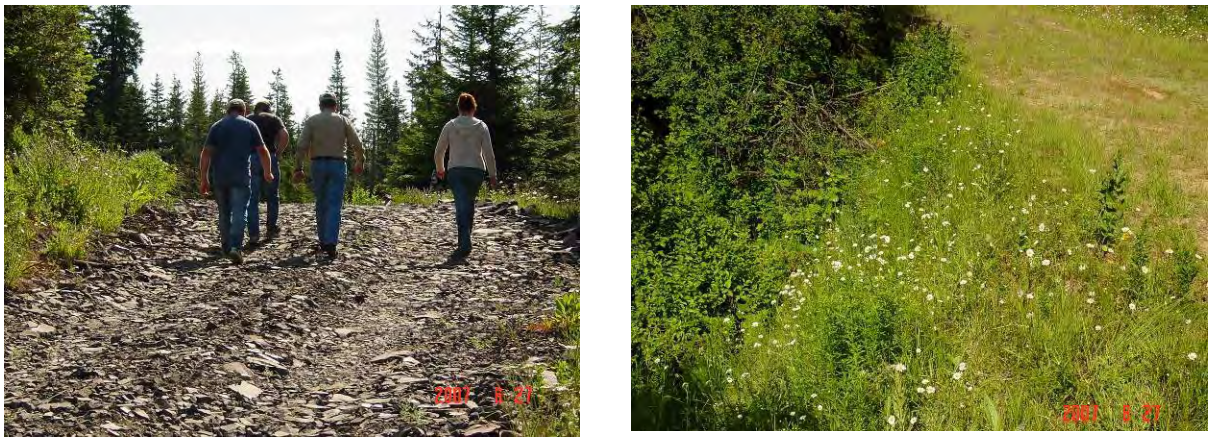

Figure 87. Logging roads that are currently in use need heavy armament to eliminate erosion (left). A former road cut has been eliminated in an obliterated section of road (right).

Figure 88. This barrier (left) is meant to temporarily exclude vehicular traffic. The culverts shown below came from a road that was temporarily closed.

Figure 89. Watering tanks have been installed throughout the project area to help keep livestock from damaging nearby creeks.

# Bear River Stream Bank Restoration at Martin Mast Property

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| Subgrant agreement | S151 |
| Description and location | This evaluation covers work to be accomplished along a 1,000-foot section of badly eroding stream bank along the Bear River. The project involved installation an estimated 500 feet of rock armor, 240 feet of riprap, and 140 feet of willow plantings. Restoring the stream bank and increasing the density and diversity of riparian plants will reduce the sediment load to the Bear River and Bear Lake. Removing cattle access to the river will allow the vegetation to reestablish itself with increased vigor. To enhance this project, the landowner has received continuous CRP status for the adjacent grazing land, which will eliminate future grazing and associated erosion. |
| Anticipated completion | The original anticipated completion date was February 28, 2007. This project had to be extended, however, due to the landowner's request. |
| Features evaluated | All BMPs have been installed as of late November 2007. The accompanying photographs show the construction and completed project. |
| Project status | The project was delayed due to landowner request but is now complete. |
| TMDL | This project is one small part of the much larger TMDL implementation plan for the Bear River. |



Figure 90. Prior to this project, the shoreline was eroding at a very high rate. Work involved resloping this section of stream bank on the Bear River. The bank was knocked down to a 3:1 or 4:1 angle. Riprap was placed at the toe of the slope; rock barbs were keyed into the bank; and vegetation was planted along the slope to assure stability.

Figure 91. The entire slope was reshaped from near vertical to a 3:1 slope. Riprap and keyed rock barbs were added.

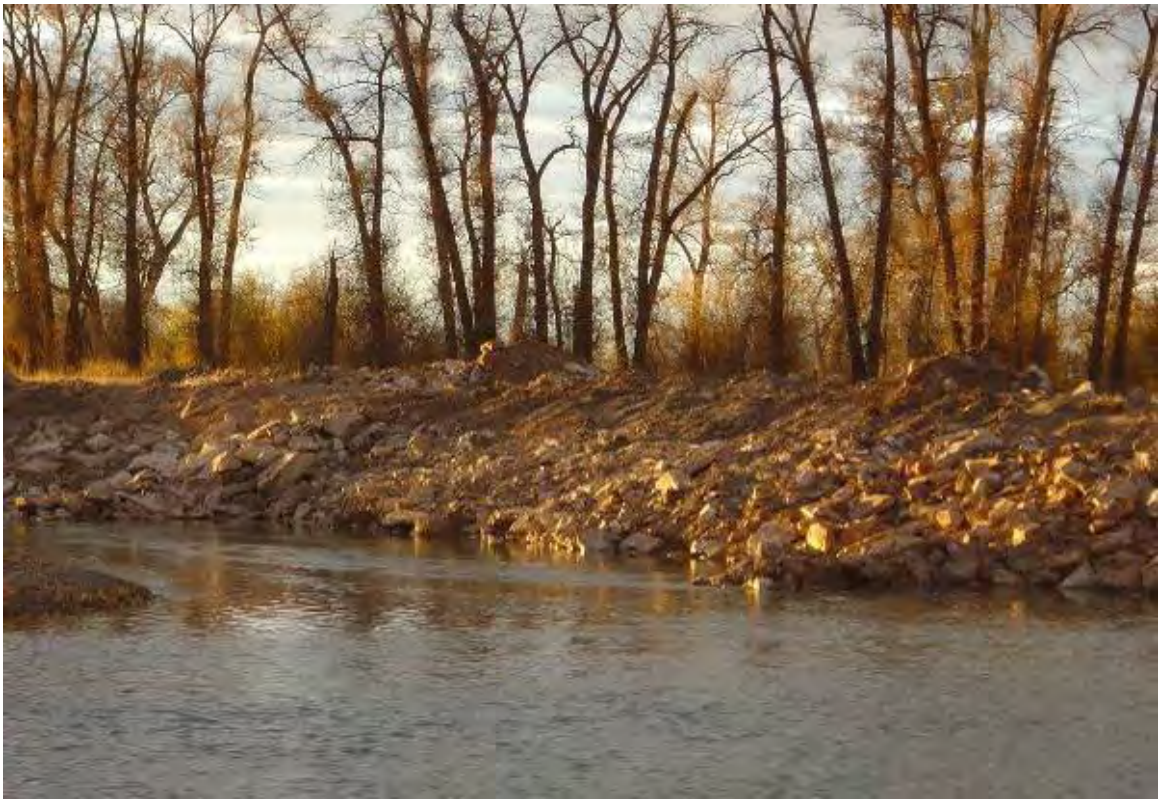

Figure 92. (Above and below) The project was completed by adding native vegetation within the riprap.

# Milner Lake Shoreline Stabilization

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| Subgrant agreement | S169 |
| Description and location | Approximately 0.3 mile of shoreline/stream bank along the south side of the Milner Lake segment of the Snake River is very vulnerable to wave erosion, resulting in large amounts of bank material sloughing off into the river annually. On the basis of historical topographic maps and aerial photographs, the bank was receding at rates as high as 12 feet per year, resulting in sediment entering the Snake River and economic loss to the landowner. Adjacent shoreline, both upstream and downstream of the property, has previously been treated with rock riprap and tree plantings, and is stable. Benefits derived from the project include a reduction in sedimentation and associated nutrients and bacteria. The creation of a vegetative filter strip is also helping filter nutrients and sediment that were previously being released from adjacent agricultural fields. This project was initially visited in 2006 and was revisited on July 11, 2007 to determine if the BMPs were still functioning as intended. |
| Anticipated completion | The project was completed in early winter 2006. |
| Features evaluated | Shoreline stabilization BMPs, including riprap and vegetative plantings, and agricultural BMPs, including filter strips. |
| Project status | This project finished ahead of the contracted schedule in order to take advantage of seasonal low water levels for construction. |
| TMDL | This project is part of the Milner Lake and Upper Snake River TMDL implementation plans. |


Figure 93. This portion of Milner Lake is adjacent to the project area. The riprap and filter strip vegetation were installed several years earlier and is good evidence that these BMPs are an effective means of shoreline stabilization.

Figure 94. This is the project area. The cultivated field in the foreground is a potential source of eroding sediment and nutrients, so a vegetative filter strip is being planted between the field and the shoreline. Riprap has been installed along the shoreline.

Figure 95. After one growing season, the new project area will be just as stable as this adjacent area.

# Cascade Reservoir Watershed Phase 2

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| Subgrant agreement | S170 |
| Description and location | The water quality of Cascade Reservoir/Lake Cascade has been identified as impaired under section 303(d), due to violations of water quality standards for dissolved oxygen, nutrients, and pH. Nuisance algae growth resulting from excess phosphorus loading has impaired beneficial uses of the reservoir, specifically fishing, swimming, boating, and agricultural water supply. A 37% total phosphorus reduction has been determined to be necessary for the watershed in order to improve the water quality in Cascade Reservoir. BMPs to be implemented include no-till farming, gravel application on dirt roads, storm water BMPs, and livestock exclusionary fencing. Subprojects visited during this evaluation include critical area plantings, riparian fencing on Boulder Creek, irrigation return flow pipeline, the site of a future storm water infiltration swale, and 1,400 feet of exclusionary fencing. |
| Anticipated completion | The current completion date is October 1, 2007. The project manager will request an extension until December 31, 2007, due to unavoidable delays. |
| Features evaluated | |
| Project status | This project has had a several month delay due to landowner conflicts, resulting in some work plan amendments that have now been resolved. |
| TMDL | This project is part of the Cascade Reservoir TMDL implementation plan. |


Figure 96. At the time of this site visit, the fieldwork had just begun. One section of exclusionary fencing was all that had been accomplished. Fencing livestock out of surface water bodies is one of the most effective means of water protection in ranch country.


Figure 97. With the assistance of a hydraulic tool, willow stalks were imbedded 4-5 feet in the creek bank. The stalks sprouted roots and are now living. Willows and spruce were planted along several hundred feet of this landowner's section of Boulder Creek.


Figure 98.Willow planting along Boulder Creek (left). A buried irrigation pipeline reduces surface erosion (right).


Figure 99. A pressure release and drain for the irrigation pipeline (left). Exclusionary fencing (right) funded by the 319 grant.

# Bear River AFO Relocation

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| Subgrant agreement | S171 |
| Description and location | This project is supposed to focus on protection of riparian areas by excluding cattle from streams and providing upland watering facilities on tributaries to the Bear River that have been hard hit by livestock grazing. The nutrient loads and sedimentation of 303(d)-listed water bodies would be reduced by installing BMPs such as corral berms, embankments, and relocating corrals. BMPs such as shrub and tree establishment and filter strips would restore the wildlife habitat along the Bear River and its tributaries, including Battle Creek, Mink Creek, and Strawberry Creek. This high priority evaluation had to be canceled because no action has been undertaken to date. It has been stressed to the Franklin Soil and Water Conservation District that time is running out on this important subgrant and work needs to get underway as soon as possible. |
| Anticipated completion | This project was supposed to have been completed by October 15, 2007. Based on the current situation, however, it appears that the subgrant agreement expiration date will need to be extended. |
| Features evaluated | At the first evaluation (July 26, 2006), this project was in its beginning phase. The evaluation consisted of visiting several farms where AFOs will be closed out and relocated to more suitable sites removed from surface water. Although the project was scheduled to be re-evaluated again in 2007, no work had been accomplished. Please see the attached photographs for description of problems and solutions involved with this project. |
| Project status | The project has fallen behind schedule. |
| TMDL | This project is part of the Middle Bear River TMDL implementation plan. |


Figure 100. Sheep have been allowed total access to this Bear River tributary for generations.


Figure 101. A typical example of how livestock have been confined in the past. This project will separate livestock from surface water through the use of exclusionary fencing.

Figure 102. It is easy to understand why this 303(d)-listed stream has elevated nutrients, sediment, and bacteria. This project will involve moving the corral away from the creek and reestablishing riparian vegetation. In a few years, this stream will become unrecognizable due to riparian growth and good water quality.

# West and Middle Fork St. Maries River TMDL Implementation

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| Subgrant agreement | S178 |
| Description and location | The project will strive to meet its pollutant load reductions listed in the St. Joe/St. Maries TMDL by reducing sediment transport to streams and tributaries through rocking on 3.4 miles of new and reconstructed road; bringing active logging roads up to the appropriate culvert standards; continuing BMP effectiveness monitoring through photo documentation, sediment traps, field inspections, and maintenance; and improving fish passage structures to address the goal of hydro-habitat modification. |
| Anticipated completion | This project is scheduled to be completed on December 30, 2008. |
| Features evaluated | This project involves logging road BMPs including culvert upgrades, gravel application, ditches, water bars, and sediment collection/monitoring boxes. All BMPs must be able to accommodate major spring runoff and large 18-wheeler logging trucks. |
| Project status | This project appears to be on schedule. |
| TMDL | This project is the main component of the West Fork Middle St. Maries TMDL Implementation Plan. |


Figure 103. Spring runoff in the northern high country of Idaho can be heavy. One aspect of this project involves installation of numerous large (6-8 foot diameter) culverts on logging roads.


Figure 104. All of the culverts installed are fish-friendly. The road base for all roads must be sufficient to support fully loaded logging trucks.



Figure 105. (Left and right) This fish-friendly culvert is 6 feet in diameter.

Figure 106. A typical logging road in this project area. Roads must be able to hold up to heavy logging truck traffic over many years.

Figure 107. Shown are two of the sediment traps installed for monitoring purposes along recently upgraded logging roads.

# Burley/Marsh Creek Nitrate Priority Area Ground Water Improvement Project

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| Subgrant agreement | S179 |
| Description and location | In 2000 DEQ established 25 areas in the state as nitrate priority areas based on population, ground water quality, the trend of nitrate analysis, and other beneficial uses of the ground water. The Burley/Marsh Creek area was ranked the third highest area of concern in the state. DEQ facilitated the development of a Cassia County Ground Water Quality Advisory Committee to develop a management plan to address the ground water degradation by nitrate. The Cassia County Ground Water Quality Management Plan was finalized in June 2004. Within the plan, as developed by local citizens, is the recommendation to work with agriculture to implement both nutrient and irrigation management. The major goal of this project is to reduce excessive leaching of nitrates past the crop root zone by developing nutrient management plans for producers through the University of Idaho soil sampling methodology in accordance with the NRCS Nutrient Management Standard. Although the project focus is on nutrient management, irrigation water management is also playing a significant role through the monitoring of crop water use and soil moisture status on selected fields. The information gained from cooperating landowners is an educational tool for all irrigators in the project area to demonstrate the feasibility and advantages of increasing water application efficiencies and irrigating to meet crop demands. |
| Anticipated completion | May 30, 2008 |
| Features evaluated | Although the project focus is on nutrient management, irrigation water management is playing a significant role through the monitoring of crop water use with soil moisture sensors. The information gained from cooperating landowners is an educational tool for all irrigators in the project area to demonstrate the feasibility and advantages of decreasing water use and fertilizer applications. One hundred domestic wells have been chosen in the project area for periodic sampling. The entire nitrate priority area consists of 169,000 acres. This project covers 31,000 acres. |
| Project status | This project appears to be on schedule. |
| TMDL | This is an elevated ground water nitrate reduction project and is not directly related to TMDLs. |

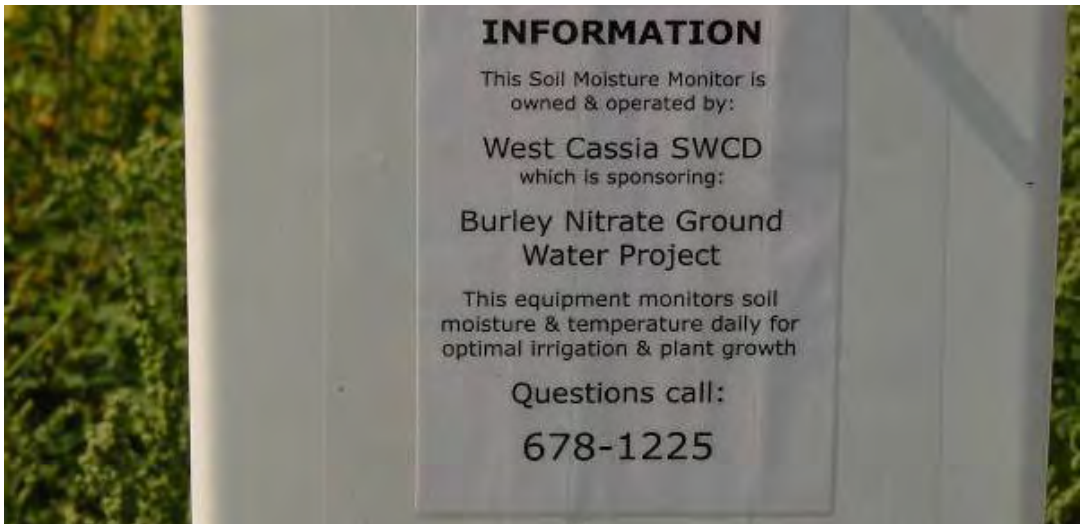
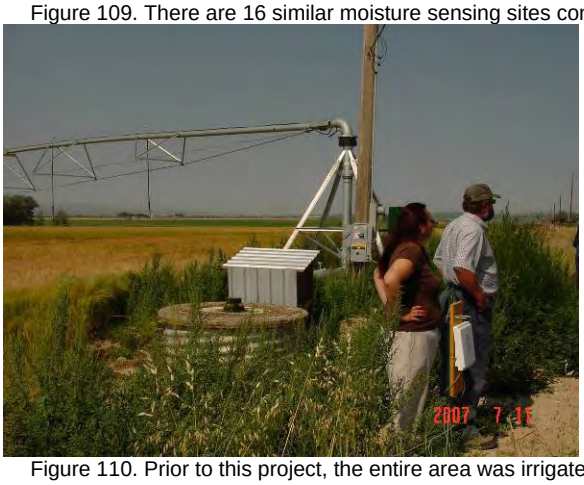



Figure 108. This state-of-the-art project involves controlling sprinkler irrigation and fertilizer application rates over 31,000 acres through the use of computerized soil sensors connected to pivot sprinklers.



Figure 109. There are 16 similar moisture sensing sites connected to pivot sprinklers spread over this project area.



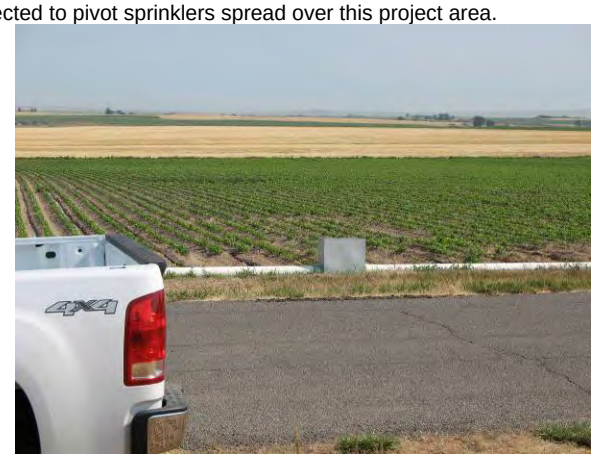




Figure 110. Prior to this project, the entire area was irrigated with flood irrigation, which is highly wasteful. In addition to wasting water, flood irrigation forces nutrients below the crop root zones and into ground water. Because of this project, the farmer has been able to save money by greatly reducing fertilizer application and water use.

# South Fork Clearwater, Kirtner, and Rylaarsdam

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| Subgrant agreement | S180 |
| Description and location | Activities at the Rylaarsdam property include the removal of cattle from the riparian area through livestock exclusionary fencing and a bridge access across the creek. Additional work includes off-stream watering, riparian restoration through resloping and stabilization of an estimated 2,800 feet of eroding stream bank, the redevelopment of an estimated 400 feet of low flow channel, and the planting of an estimated 42,000 square feet of variable riparian buffer. Wetland swales were installed to provide additional filtration potential and increase floodwater holding capacity. Bank stabilization includes the excavation and resloping of the stream bank and the installation of coir log and erosion control fabric. An estimated 42,000 square feet of variable riparian buffer was planted with native woody, herbaceous, and grass species. The riparian buffer now acts as a filter, reducing overland sediment flows while filtering nutrients and bacteria generated from upland land use practices. Filter strips have been shown to reduce sediment by 65%, total phosphorus by 85%, nitrogen by 70%, and fecal coliform by 55%. In addition to acting as a filter for pollutants, the established riparian buffer is now providing shade, which reduces extreme summer temperatures. |
| Anticipated completion | May 30, 2008 |
| Features evaluated | BMPs observed included off-stream watering, riparian restoration through resloping and stabilization of an estimated 2,800 feet of eroding stream bank, the redevelopment of an estimated 400 feet of low flow channel, and the planting of an estimated 42,000 square feet of variable riparian buffer. |
| Project status | This project is currently on schedule. |
| TMDL | This project is part of the South Fork Clearwater TMDL Implementation Plan. |


Figure 111. Many of the people involved in PCEI projects are local Job Corp volunteers.

Figure 112. After all the work is done, it's time for nature to take over to allow vegetation to mature.


Figure 113. Shown above is the livestock and equipment crossing. Below :now that grazing has been restricted, this farmland will no longer be a major source of sediment, nutrient, and bacterial contamination to the South Fork Clearwater River.

# Deep Creek Bank Stabilization Project

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| Subgrant agreement | S182 |
| Description and location | The Deep Creek Bank Stabilization Project was designed under the guidance of the Palouse River Tributaries Watershed Advisory Group and the Palouse River Tributaries TMDL, and represents early action activities that will be identified in the Palouse River Tributaries TMDL Implementation Plan. The project is located in the lower Deep Creek Watershed on private property and is considered a critical target area for sediment reduction and temperature due to the intensive impacts from agriculture, ranching, and residential development in the watershed. The proposed project will reduce erosion by stabilizing approximately 1,900 feet of stream bank. To complete the project, stream banks were resloped and approximately 28,500 square feet of variable riparian buffer was installed. Bank stabilization will reduce sediment loading to the Palouse River and the regrowth of the riparian vegetation will provide shade to the creek, leading to a decrease in elevated summer water temperatures. |
| Anticipated completion | December 31, 2008 |
| Features evaluated | BMPs observed included approximately 1,900 feet of stream bank stabilization. Stream banks were resloped, and approximately 28,500 square feet of variable riparian buffer was installed. |
| Project status | This project appears to be ahead of schedule. |
| TMDL | This project is part of the Deep Creek TMDL Implementation Plan. |

Figure 114. Over 1,900 feet of stream bank was knocked down from near vertical to a 3:1 slope. Much of the work was conducted by volunteer labor from the AmeriCorps.

Figure 115. (Left) Tributaries to Deep Creek also need work. (Right) Fencing was installed to keep cattle off the creek.


Figure 116. These AmeriCorps volunteers were enjoying hard work for a good cause.


Figure 117. This hardened crossing (above) limits cattle and equipment to this narrow, low sediment-producing spot of crossing and watering. This allows the stream banks below to become revegetated and stable.


Figure 118. Electric fences can be very effective for excluding cattle from steam banks.

# Soldier Creek Rocking Project

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| Subgrant agreement | S183 |
| Description and location | This project will strive to meet the pollutant load reductions listed in the St. Joe/St. Maries TMDL. The St. Joe/St. Maries Watershed Advisory Group is currently in the process of developing the TMDL Implementation Plan. Action already identified include implementing aggressive road transportation management consisting of rocking road surfaces, installing ditches and properly sized fish-friendly culverts, and monitoring through photo documentation, field inspections, maintenance, and some on-site sediment collection monitoring. |
| Anticipated completion | This project is scheduled to be completed by May 30, 2008. |
| Features evaluated | BMPs visited during this evaluation include road surface rocking, installed ditches, properly sized fish-friendly culverts, and on-site sediment collection monitoring boxes. |
| Project status | This project is on schedule to be completed by May 2008. |
| TMDL | This project is a major component of the Soldier Creek Implementation Plan that is currently being written. |

Figure 119. This project primarily consists of rocking road surfaces and adding ditched and properly sized fish-friendly culverts on logging roads.

Figure 120. The trucks carrying road gravel for this project are about the same size and weight as the logging trucks that these roads are being prepared for.

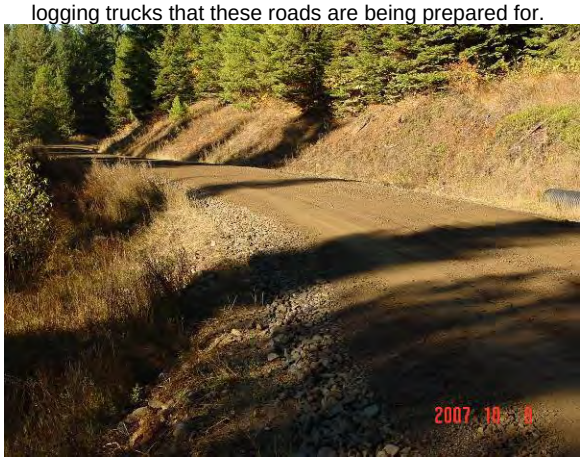

Figure 121. Typical high quality road construction on this project. Roads constructed to these standards minimize sedimentation of adjacent creeks.



Figure 122. Sediment boxes like these are used to verify that minimal sediment is being created by these roads.


Figure 123. Culverts must be installed in such a manner that they cause minimal damage at their points of discharge.

# Camas Prairie Ground Water Nitrate Priority Project, Phase 2

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| Subgrant agreement | S184 |
| Description and location | The purpose of the project is to continue Phase 1 implementation of BMPs focused in the Camas Prairie Ground Water Priority Area. BMPs will identify problem areas through continued well sampling and will focus on reduction of nitrogen loading of the ground water aquifer on thousands of acres of Idaho's Camas Prairie through education about fertilizer application rates, wellhead protection, water use, consumption, and conservation. No-till and low-till farming techniques in this dry-farming (non-irrigated) region of Idaho have been proven to reduce fertilizer demand while allowing more precipitation to be available for plant root uptake due to increased soil microorganisms and earthworm counts. This work will also improve water quality and fish habitat in the receiving surface waters of the Clearwater Basin, due to less surface runoff during storm events. |
| Anticipated completion | 5/31/2008 |
| Features evaluated | BMPs observed include farm community education about fertilizer application rates, wellhead protection, and water use, consumption, and conservation. Testing for nitrates in private wells has also increased awareness of nitrate contaminations and serves as a way to monitor the effectiveness of implemented BMPs. |
| Project status | This project will require additional time because of scheduling delays due to staff turnover at the conservation district. |
| TMDL | This is a nitrate priority area project dealing with ground water. However, it will also benefit the TMDL Implementation Plan for Lawyer Creek. |

Figure 124. Eileen Ronan (in pit) from the Lewis SWCD is explaining the benefits of no-till farming techniques. No-till techniques result in healthier soil, due to more microorganisms and earthworms.

Figure 125. This healthier soil from no-till farming results in better precipitation infiltration and better root uptake of water and nutrients. This results in better crop yield requiring less fertilization.

Figure 126. The bottom line is more yields at a lower cost over the thousands of acres surrounding these people.

# Rock Creek Riparian Fencing

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| Subgrant agreement | S188 |
| Description and location | This project occurred on the Fifth Fork Rock Creek and on Rock Creek. The project excluded livestock from surface water and thereby reduced pollutants including sediment, phosphorus, and bacteria to Rock Creek and associated tributaries. The goal of this project is to provide an important step in the overall cleanup plan for Rock Creek and the Snake River. The project is also enhancing fisheries and affecting other aquatic species in Rock Creek and the Snake River, particularly salmonids. This project will also benefit the threatened and endangered snails that exist at the confluence of Rock Creek and the Snake River by improving the riparian habitat and improving water quality. |
| Anticipated completion | July 1, 2008 |
| Features evaluated | The evaluation covered exclusionary fencing and remote watering troughs that deliver water to livestock but prevent livestock from entering surface water. |
| Project status | The project is on schedule but will likely be modified based on other priorities. |
| TMDL | This project is one small component of the TMDL Implementation Plans for the Snake River and Rock Creek. |


Figure 127. (Left) Prior to this project, exclusionary fencing was intermittent and poorly maintained, resulting in considerable livestock-caused damage to the riparian environment and discharge of nutrients and bacteria to Rock Creek. (Right) One of the new watering troughs installed for livestock. (Photographs for this project evaluation were accidentally overexposed.)


Figure 128. Some of the 3,100 feet of exclusionary fencing installed on one of two subprojects within this overall project area.



Figure 129. Although livestock was scarce during the evaluation, there are several hundred head of cattle plus other varieties of critters in the project area during certain times of the year.



Figure 130. Over 6,500 feet of exclusionary fencing was installed within the overall project area.

# St. Charles Creek Watershed Restoration

| | |
|---|---|
| Subgrant agreement | S189 |
| Description and location | The area below Highway 89 experiences high density, winter livestock use as local ranchers bring their cattle from summer range in the adjacent Caribou National Forest into their privately owned ranches. Repeated spring and fall irrigation of these lands releases livestock manure into the St. Charles Creek Watershed. The proposed project would eliminate this release over a 1,200 acre area while minimizing water quality impacts throughout the Big Creek, Spring Creek, and Little Creek branches of the lower St. Charles Creek Watershed. |
| Anticipated completion | December 30, 2007 |
| Features evaluated | BMPs include exclusionary fencing, grazing land restoration, and surface water diversion. |
| Project status | This project has been delayed due to land ownership issues. Similar BMPs will be installed in the same watershed as originally planned but the work will be done on a different landowner's land. |
| TMDL | This project is part of the St. Charles Creek and Bear Lake TMDL Implementation Plans. |

Figure 131. Looking north of the area used for winter feeding. Specifically, the grassy area that extends from the left of the picture to a significant distance in the background is underwater in the spring. Months of manure deposition are flushed into St. Charles Creek when waters are released in the spring.

Figure 132. Looking north up the valley where livestock are wintered. Over 1,200 acres are used as winter feeding grounds then flooded in the spring.


Figure 133. Looking northwest toward Paris Peak. Fencing can be seen weaving in and out of the swales along St. Charles Creek.


Figure 134. Looking north at the terminus of the fencing project. This BMP is 95% complete and should be totally completed by early summer 2008. Over 2.5 miles of riparian exclusionary fencing is planned here.

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# Bear Ridge River Dingle AFO

| | |
|---|---|
| Subgrant agreement | S190 |
| Description and location | This area has a high density of cattle winter-feeding areas located along the Bear River. These areas are a source of sediment and nutrients from the density of cattle confined along the waterways. To protect newly planted riparian vegetation, cattle are being fenced off the stream, and off-site watering is being provided for livestock. Corral berms are being installed to keep any nutrients from leaving the confined feeding area and entering the stream. The fencing will establish a riparian buffer, which will improve the wildlife habitat and reestablish a continuous woodland corridor along the Bear River. |
| Anticipated completion | August 31, 2008 |
| Features evaluated | This project is in its early stages. BMPs to be installed include exclusionary fencing, pipeline, and livestock watering troughs. |
| Project status | This project is currently on schedule. |
| TMDL | This project is part of the Bear River TMDL Implementation Plan. |


Figure 135. This corral will be abandoned, and the animals will be watered via a trough.
(Photographs of this project evaluation were accidentally overexposed.)


Figure 136. This corral will be pulled back away from Paris Creek and will have a single watering point. The corral will be bermed on the stream side to prevent contaminants from entering the stream.



Figure 137. This corral (left and right) will be abandoned.


Figure 138. The rancher is standing in front of the pipeline that will be buried for protection to take drinking water to cattle watering troughs that are far removed from Paris Creek.

# Deep Creek/Bear River Management

| | |
|---|---|
| Subgrant agreement | S191 |
| Description and location | This project is still in the planning stage. Although DEQ toured part of the project site, no photographs were taken because no work has yet been accomplished in the field. The BMPs planned for this project are aimed at controlling stream bed and bank soil erosion, including livestock exclusion (fencing), revegetation, channel stabilization, large woody riparian plantings, and fish and wildlife habitat development.<br><br>Work on adjacent agricultural uplands involves management practices such as irrigation management, prescribed grazing, and pest management. Structural BMPs may include off-stream water facilities, sediment basins and filter strips, an animal waste management system, off-stream watering facilities, and spring enhancement. |
| Anticipated completion | August 31, 2008 |
| Features evaluated | The BMPs planned for this project include livestock exclusion (fencing), revegetation, channel stabilization, large woody riparian plantings, and fish & wildlife habitat development. BMPs on adjacent agricultural upland involve management practices such as irrigation management, prescribed grazing, and pest management. Structural BMPs may include off-stream water facilities, sediment basins and filter strips, an animal waste management system, off-stream watering facilities, and spring enhancement. |
| Project status | This project has just begun and is on schedule. |
| TMDL | This project is part of the Deep Creek and Bear River TMDL Implementation Plans. |

**Because this project is still in the early planning stages, no photographs were taken during the evaluation. Although the types of BMPs to be implemented have been decided, the exact locations have not yet been established.**

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