Upper Salmon River Subbasin Total Maximum Daily Load Agricultural Implementation Plan

Developed for the
Idaho Department of Environmental Quality

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Table of Contents

Introduction 3
Purpose 3
Goals 3
Objectives 3
Background 3
Project Setting 3
Past and Current Efforts 5
Land Ownership 5
Private Land Use 5
Accomplishments 7
Problem Statement 7
Beneficial Use Status 7
Pollutants of Concern 7
Critical Areas 8
Stream Corridor and Riparian Areas 8
Irrigated Hay, Pasture, and Crop Lands 10
Grazed Range and Forest Lands 11
Animal Feed Operations (AFOs) 11
Threatened and Endangered Species 11
Proposed Treatment 12
Estimated BMP Implementation Costs 13
Funding 14
Outreach 15
Monitoring and Evaluation 15
Field Level 15
Watershed Level 15
Implementation Alternatives 16
Description of Alternatives 16
Alternative Selection 16
References 17

Table of Figures

Table 1. 1998 303(d) Listed Stream Segments for the Upper Salmon Subbasin 3
Figure 1. Challis Creek Watershed Area Map 4
Table 2. Challis Creek Watershed Ownership 5
Table 3. Private Land Uses in the Challis Creek Watershed 5
Figure 2. Challis Creek Watershed General Ownership 6
Table 4. Completed BMP Amounts and Costs in the Challis Creek Watershed 7
Table 5. Erosion Estimates for Challis Creek in the Upper Salmon River Subbasin (IDEQ, 2003). 8
Table 6. Stream Assessment Results on Challis Creek 8
Figure 3. Challis Creek Assessed Reaches Map 9
Table 7. Identified Problems and Recommended BMPs on Assessed Stream Reaches 10
Table 8. Treatment Units in the Challis Creek Watershed 12
Table 9. Soil Type and Problem by Treatment Units in the Challis Creek Watershed 12
Table 10. Estimated BMP Installation Costs for the Challis Creek Watershed 13
Table 11. Estimated Timeline for TMDL Agricultural Implementation 16

Introduction

Purpose

The Idaho Department of Environmental Quality (IDEQ) identified that Challis Creek is not fully supporting the beneficial uses of salmonid spawning and coldwater biota. Therefore, they developed a Total Maximum Daily Load (TMDL) for sediment to restore those beneficial uses (IDEQ, 2003).

The purpose of this plan is to recommend Best Management Practices (BMPs) that will improve or restore physical, chemical, and biological functions of Challis Creek. The plan will build upon past conservation accomplishments made through the Natural Resources Conservation Service (NRCS) and the Custer Soil and Water Conservation District (SWCD). Future projects will assist or compliment other efforts in restoring beneficial uses on 7,420 acres of private agricultural land in the Challis Creek watershed, shown in Figure 1.

Goals

The goal of this implementation plan is to restore beneficial uses on the only §303(d) listed stream segment that IDEQ developed a TMDL for in the Upper Salmon River subbasin (Table 1). The plan will assist other efforts in restoring beneficial uses for Challis Creek. The Water Quality Limited Segment is identified as Challis Creek (WQLS #3013 forest boundary to the Salmon River).

Table 1. 1998 303(d) Listed Stream Segment in the Upper Salmon River Subbasin

Stream	Boundaries	Stream Miles	Pollutant(s)
Challis Creek	Forest boundary to the Salmon River	9.4	Sediment, nutrient, flow alteration

Objectives

The objective of this plan will be to reduce the amount of sediment in this stream segment from agricultural sources. This will be accomplished by identifying critical areas and recommending BMPs.

Background

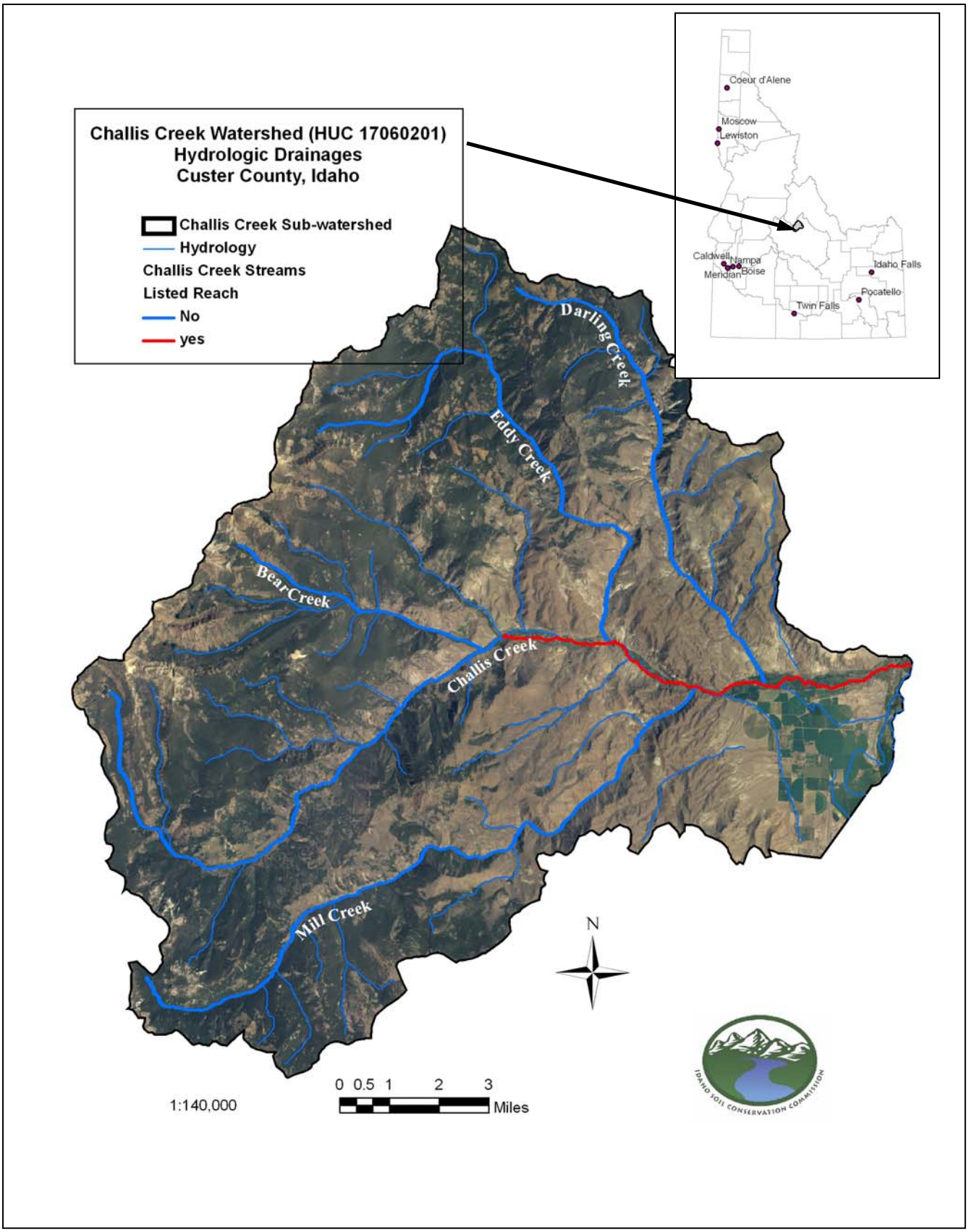
Project Setting

Custer SWCD was activated in June 1953 with the organization of the board of supervisors. The total acreage in the District is about 2.5 million acres; however, only 150,000 acres are private lands. There are 102,098 acres in the Challis Creek watershed, with private land covering about 7,420 acres.

These private lands are located primarily along watercourses and the lower end of the watershed. Agricultural lands are predominantly used for the beef cattle production. The crops raised are irrigated hay and pasture. During the past 25 years, there has been considerable conversion of agricultural lands to small acreages and ranchettes.

Historic overgrazing dramatically changed the streambank vegetation creating the potential for accelerated erosion. Riparian management has been implemented in some areas resulting in improved conditions, though increased streambank erosion from livestock use in the riparian zone remains a significant source of sediment to Challis Creek (IDEQ, 2003).

Figure 1. Challis Creek Watershed Area Map



Past and Current Efforts

Since 1992, the Custer SWCD has been a partner in the Upper Salmon Basin Watershed Project (USBWP). By teaming up with the USBWP, Lemhi SWCD, Bonneville Power Administration (BPA) and multiple natural resource agencies, the Custer SWCD has been very instrumental in assisting local landowners with on the ground conservation efforts.

In the Custer SWCD, ninety-percent (90%) of the fish rearing habitat is found on private property. Therefore, the Custer SWCD has contracted with more than 40 landowners over the past eight years to improve this important habitat. Efforts such as riparian fencing and streambank restoration projects have improved this fish habitat. Additionally, installations of fish friendly irrigation diversion structures and sprinkler irrigation systems have improved fish passage.

The Custer SWCD's four main priorities are: SWCD Operations, Water Quality and Water Resources, Pasture/Hay Land and Rangeland Management, and Recreation. These priorities include management of fish and wildlife, pasture/hay land, rangeland, riparian, vegetative (weeds/ESA), unique areas, water quality, water resources, and wetlands (Custer SWCD, 2003).

Land Ownership

Almost all (93%) of the land in the watershed is publicly owned (Table 2 and Figure 2). The Challis Creek watershed consists of approximately 102,098 acres with private land accounting for 7,420 acres. Mountain ranges are in the Salmon Challis National Forest (SCNF), and lower slopes to the valley floor are Bureau of Land Management (BLM) lands. A small portion (7%) of the watershed is privately owned. These private lands are found along Challis Creek with most being in the lower end of the watershed.

Table 2. Challis Creek Watershed Ownership

Ownership	Acres	Percent of Total
BLM	19,987	20%
Private	7,420	7%
SCNF	74,691	73%
Total	102,098	100%

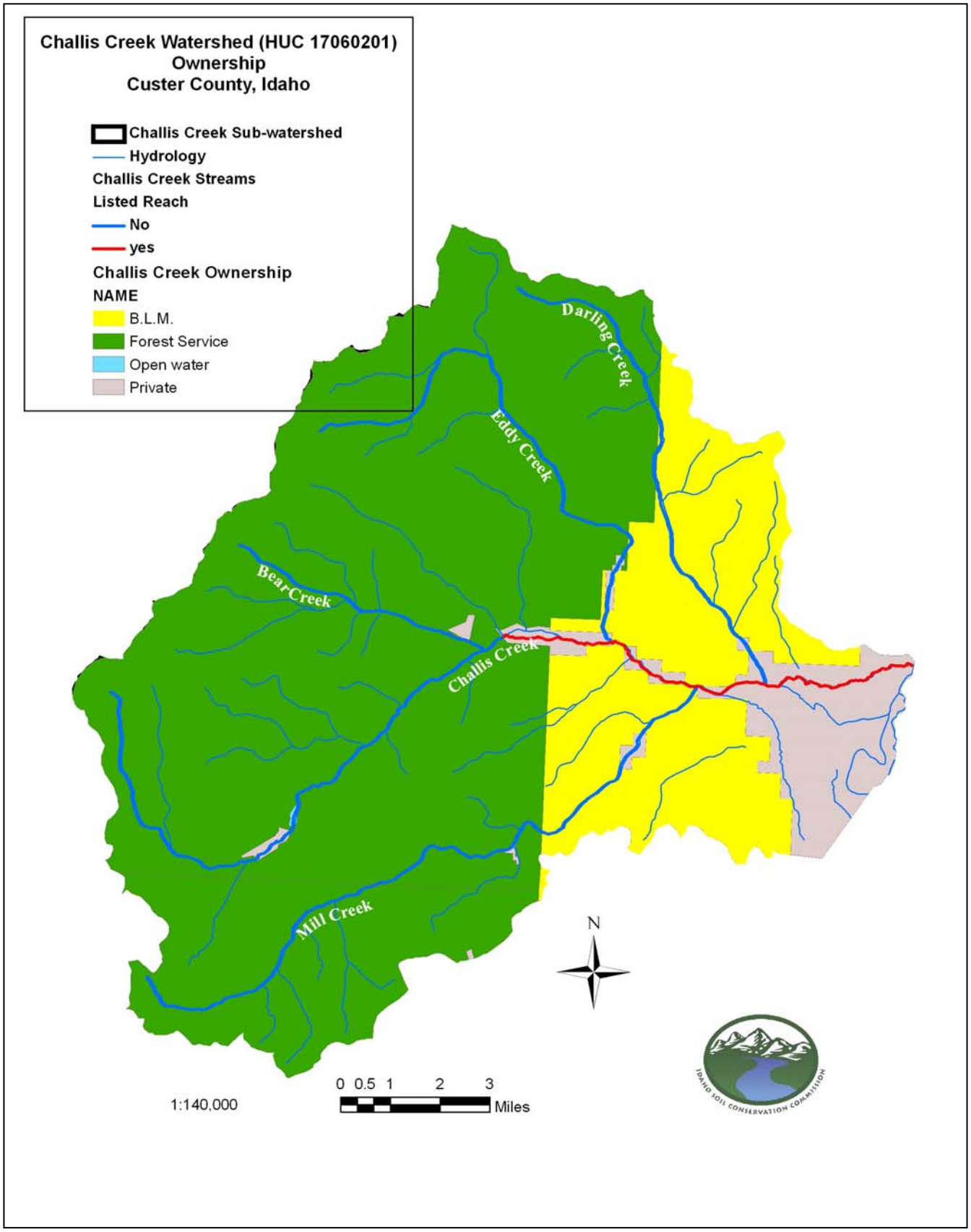
Private Land Use

The principal private land use in the watershed is irrigated hay, pasture, and crop land (Table 3). Irrigated agricultural activities occur on the valley floor and grazing throughout much of the rangeland areas. Approximately 4,531 acres (4%) of the watershed are in irrigated hay, pasture, and crop lands. While another 1,905 acres (26%) are private rangelands; and 604 acres (8%) are private forestlands. The private forest land use is predominantly the cottonwood riparian gallery. Additionally, five percent of private land use is acreages, mines, roads, commercial, or utilities.

Table 3. Private Land Uses in the Challis Creek Watershed

Land Use	Acres	Percent of Total
Irrigated Hay, Pasture, & Crop Lands	4,531	61%
Range Land	1,905	26%
Forest Land	604	8%
Rural Residential (acreages)	123	2%
Trans, Mines, Commercial & Utilities	257	3%
Total	7,420	100%

Figure 2. Challis Creek Watershed General Ownership



Accomplishments

The Custer SWCD, in conjunction with the NRCS, IDFG, and area landowners, implemented several projects in the watershed (Table 4). There were nine projects for irrigation diversion screening, consolidation, elimination, and improvement. These projects resulted in the elimination of two diversions and the modification of five diversions. There were six riparian fencing projects that installed 15 miles of fence treating 4.1 miles of riparian area. Additionally, the Custer SWCD also received a Water Quality Program for Agriculture (WQPA) from the Idaho Soil Conservation Commission (ISCC) to fund two animal feeding operation (AFO) projects in the watershed.

Table 4. Completed BMP Amounts and Costs in the Challis Creek Watershed

Type	Extent	Total Cost
Fence Riparian Exclusion	21,580 feet	$104,127
Irrigation Systems	2 projects	$27,000
Riparian Enhancement	1 project	$2,500
Streambank Protection	1 project	$15,000
Ponds	2 projects	$25,000
AFOs	2 projects	$54,752
Diversion Modifications	9 projects	$289,000
Total		$517,379

Problem Statement

Beneficial Use Status

The State of Idaho designated beneficial uses on rivers, creeks, lakes and reservoirs to meet the requirements of the Clean Water Act. Waters not specifically designated in the Idaho water quality standards are undesignated waters (IDAPA 58.01.02.101), which are generally protected for cold water aquatic life use and primary or secondary contact recreation until designated (IDEQ, 2003). Challis Creek is an undesignated water. Additionally, all waters of the state are designated for agricultural and industrial water supplies, wildlife, and aesthetics.

There were 11 §303(d) listed segments on nine waterbodies in the Upper Salmon River subbasin. IDEQ chose to develop one TMDL, which was for Challis Creek. IDEQ decided not to prepare a TMDL for pollutant loads on the remaining §303(d) listed streams, which was based on guidance provided by the Environmental Protection Agency (IDEQ, 2003).

Pollutants of Concern

The State of Idaho's 1998 §303(d) list identified sediment and nutrients as pollutants impairing beneficial uses on Challis Creek. However, IDEQ developed a TMDL only for sediment because there were no nuisance levels of aquatic plants or algae observed along inventoried reaches. Water quality in Challis Creek was limited by sediment deposition due to streambank and road erosion and historic mass wasting (IDEQ, 2003). IDEQ recommends existing sediment from streambank erosion be reduced by 36%. Beneficial uses can only be achieved if reductions in sediment are made on public as well as private lands. The Upper reach from Table 5 is on public land and has a proposed reduction in sediment of 161 tons per year. The other reaches (Lower, Middle, & Upper Middle) are located on private land. These reaches have a proposed reduction in sediment of 312 tons per year. Consequently, 66% of the proposed reduction is on private lands and 34% is on public lands.

Table 5. Erosion Estimates for Challis Creek in the Upper Salmon River Subbasin (IDEQ, 2003).

Reach Number (downstream to upstream)	Existing Erosion Rate (t/mi/y)	Total Erosion Rate (t/y)	Proposed Erosion Rate (t/mi/y)	Load Allocations (t/y)	Erosion Rate Percent Reduction	Percent of Total Erosion
1 (Lower)	96	422	71	313	26	52%
2 (Middle)	5	6	6	8	0	<1%
3 (Upper Middle)	10	46	6	28.5	40	6%
4 (Upper)	71	318	36	159	49	39%
5 (Road)	9	24	5	14	44	3%
Totals	----------	816		522	36	100%

Critical Areas

Critical areas are private agricultural lands having the most significant impact on water quality. These critical areas include pollutant source and transport areas on all 7,420 private agricultural lands in the watershed. Critical areas that need to be treated relate directly to the treatment unit amounts in Table 9.

Critical areas include: stream channels and riparian areas with unstable and erosive streambanks, dewatered stream reaches, and barriers to fish migration; irrigated hay, pasture, and crop lands with irrigation-induced erosion and ephemeral gully erosion; range and forest lands with sheet and rill erosion, ephemeral gully erosion, and classic gully erosion; and animal feed operations (AFOs) with a lack of drinking water sources, inadequate waste storage, and runoff from corrals or pens.

Stream Corridor and Riparian Areas

Riparian conditions on Challis Creek are in fair to good condition with slight erosion. In 2006, ISCC and USBWP used the Stream Visual Assessment Protocol (SVAP) and the Streambank Erosion Condition Inventory (SECI) to assess conditions for five reaches on 2.3 miles of Challis Creek (Table 6 and Figure 3). Eighty percent or four of the assessed reaches had good aquatic habitat. All five of the assessed reaches had slight erosion. Other reaches were not assessed because permission was not granted.

Specific problems and recommendations are listed in Table 7. Future efforts should concentrate on three reaches (CC2, CC4, and CC6) that yield about two-thirds of the streambank erosion on Challis Creek. Except for CC16, all reaches could improve water quality and increase aquatic habitat with minor changes and appropriate BMPs. Reach CC15 serves as a reference showing the potential for clean water, slight erosion, and good habitat. Any work on CC16 should be considered on a site-specific basis.

Table 6. Stream Assessment Results on Challis Creek

Stream Visual Assessment	➡ 84% or 1.9 miles were in good condition ➡ 16% or 0.4 miles were in fair condition
Streambank Erosion Condition	➡ 100% or 2.3 miles had slight erosion ➡ 0% or no miles had moderate or severe erosion

Figure 3. Challis Creek Assessed Reaches Map

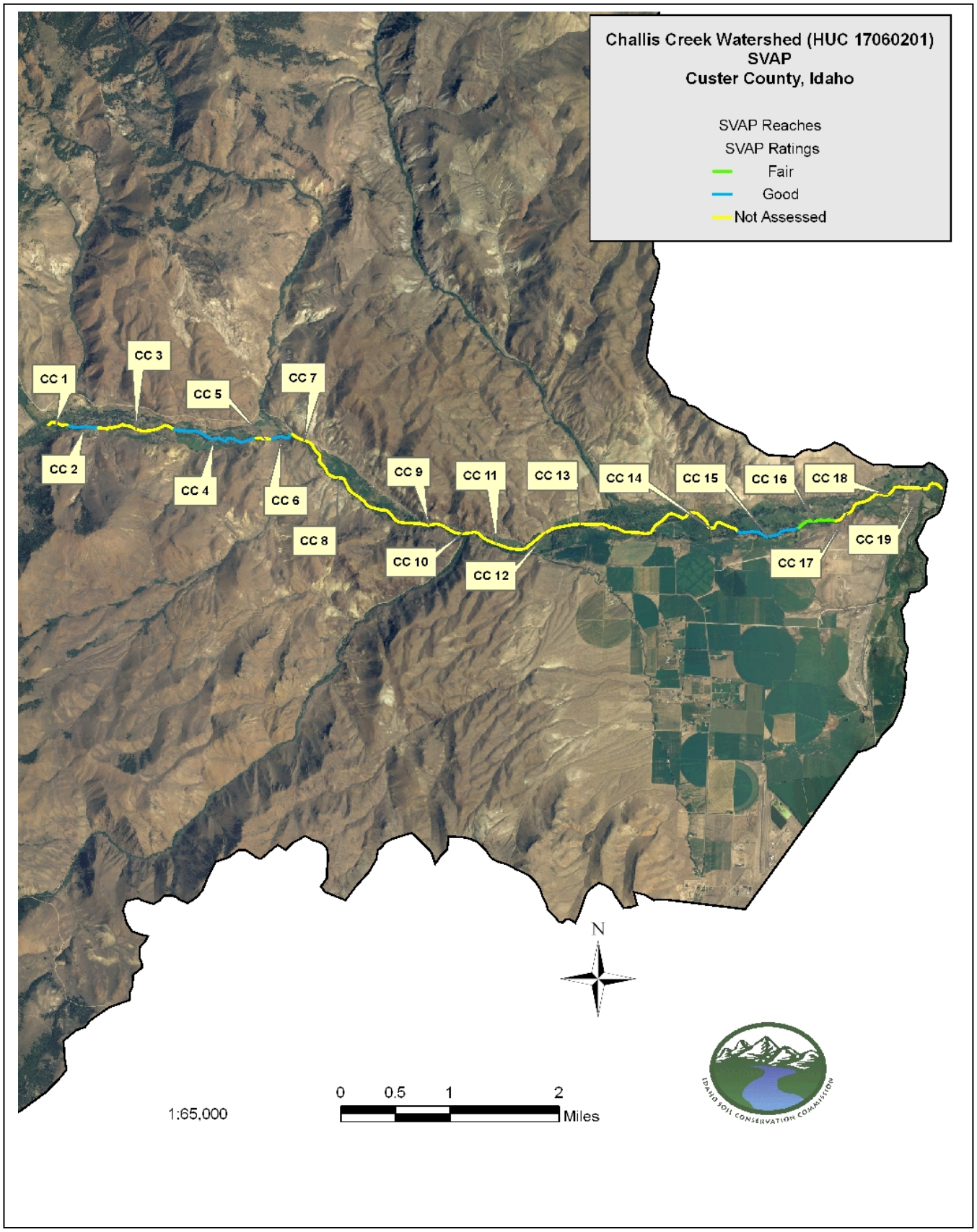


Table 7. Identified Problems and Recommended BMPs on Assessed Stream Reaches

Reach	Identified Problems	Recommended BMPs
CC2	Past channel alteration	Stream habitat improvement
CC4	Past channelization, lack of trees/shrubs, eroding banks, dewatering and lack of deep pools	Riparian buffer, tree/shrub planting, structure for water control, and stream habitat improvement
CC6	Eroding banks, past channelization, livestock access	Use exclusion, watering facilities, streambank protection, riparian buffer, tree/shrub planting, stream habitat improvement
CC15	Livestock access	Use exclusion, watering facilities, stream habitat improvement
CC16	Past channelization, eroding banks, dewatering, lack of instream cover, lack of deep pools, fish barriers, livestock access, and urbanization	Riparian buffer, tree/shrub planting, use exclusion, watering facilities, irrigation system, structures for water control, stream stabilization, fish passage, and stream habitat improvement

Challis Creek Reach #2 (CC2) – This is the uppermost reach assessed on Challis Creek. The channel is approximately 20 feet wide, the banks are high (5 feet), and stable with good canopy cover. The reach has good habitat diversity of instream fish cover.

Challis Creek Reach #4 (CC4) – This reach has the greatest potential for improvement and should be top priority for implementation. The channel is 30 feet wide, the banks are relatively low (3 feet), but stable with some levees present. Canopy cover is good on about 75% of the reach. There are several past channel alteration areas that used bedload deposits to confine the channel and armor the banks. There is one bank that is eroding into an abandoned terrace. Most of this reach could be greatly improved with minimal effort. However, the upper 25% of the reach could be improved by allowing Challis Creek to access the floodplain by removing the levees that constrain the channel.

Challis Creek Reach #6 (CC6) – Overall this reach is in good shape. This reach is the second highest priority for implementation. The channel is 30 feet wide, the banks are relatively low (3 feet), and stable with good canopy cover. There is one small eroding bank which is about 110 feet long. This bank could be stabilized through streambank protection with riparian plantings.

Challis Creek Reach #15 (CC15) – This reach had the highest rating of all assessed reaches. The channel is 30 feet wide, the banks are relatively low (3 feet), and stable with good canopy cover.

Challis Creek Reach #16 (CC16) – This reach is a low priority for implementation, and any work on this or any downstream reach would have to be considered on a case-by-case basis. The channel is 30 feet wide, the banks are moderately high (4 feet), but stable with good canopy cover. This reach typifies the remainder of Challis Creek. The area is predominantly made up of small acreages with one agricultural operation. The stream has been channelized and leveed as shown by the higher bank height than CC15.

Irrigated Hay, Pasture, and Crop Lands

There are 4,531 acres of irrigated hay, pasture, and crop lands located mainly in the lower portion of the watershed. Water quality related resource concerns include irrigation-induced erosion and ephemeral gully erosion which transport delivers eroded soil and increases suspended sediment in Challis Creek.

These lands are conventionally tilled, mostly sprinkler irrigated with some surface irrigated fields on 0 to 7% slopes. Annual precipitation is 16 inches or less per year and the growing season is approximately 100 to 160 days long. Irrigation water is diverted from Challis Creek and its tributaries by ditches and

pipelines. Any tailwater from these fields may eventually return to Challis Creek or the Salmon River. Estimated surface irrigation efficiency is 25 to 35% and sprinkler irrigation efficiency is 75 to 85%.

Plants are introduced perennial forage species, or a mixture of native and introduced species. Commercial fertilizers are occasionally used, but soil testing is rarely done. Animal waste is applied on the fields and harrowed on an irregular basis. Small grains and alfalfa hay are grown in rotation. Livestock grazing of hay, pasture, and crop aftermath usually occurs.

Grazed Range and Forest Lands

There are 2,509 acres of grazed range and forest lands located in the watershed. Water quality related resource concerns include sheet and rill erosion, ephemeral gully erosion, and classic gully erosion which transports eroded soil and increases suspended sediment in Challis Creek.

Vegetation consists of sagebrush and perennial grasses on rangelands to Ponderosa pine and drier Douglas fir habitats on forest lands. Precipitation ranges from 6 to 12 inches on lower elevations to 16 to 24 inches on higher elevations, most of which falls as snow in winter and early spring outside the growing season. Topography consists of steep slopes and high mountain valleys to nearly level flats up to benches and rolling hills. Soils are loamy to gravelly. Average frost free days are 100 to 150 days.

Livestock grazing occurs during the summer and early fall period. Overgrazing is common which can lead to noxious weed invasion on these lands. Additionally, roads, timber harvests, and wildfires degrade soils and causes sedimentation to Challis Creek and its tributaries.

Animal Feed Operations (AFOs)

In 2000, the Idaho Legislature passed Idaho law, *I.C. §22-4906, Title 22, Chapter 49, Beef Cattle Environmental Control Act*. Beef cattle AFOs were required to submit a nutrient management plan to the Idaho State Department of Agriculture (ISDA) for approval no later than January 1, 2005.

In 2004, ISDA and ISCC conducted an inventory of AFOs in the watershed. Three are now in compliance, with a fourth AFO under construction. The increasing conversion of agricultural operations to ranchettes will be a continuing source of animal impacts to Challis Creek.

Threatened and Endangered Species

The watershed supports habitat for a number of key salmonid fish species, including resident, fluvial and anadromous forms. Spawning and rearing habitat is supported for three federally-listed fish species: spring/summer chinook salmon *(Oncorhynchus tshawytscha)*, steelhead rainbow trout *(Oncorhynchus mykiss)*, bull trout *(Salvelinus confluentus)*, and the Salmon River provides a migratory corridor for a fourth species, the Snake River sockeye salmon *(Oncorhynchus nerka)* (IDFG, 2003). Challis Creek has been designated as critical habitat for spring/ summer chinook salmon, and the Salmon River has been designated as critical migratory habitat for Snake River sockeye salmon (Federal Register, Vol. 58 No. 68545). Although not designated by the IDEQ, the watershed's streams are known to support both coldwater biota and salmonid spawning beneficial uses (IDFG, 2003).

These threatened and endangered species will be addressed in site-specific conservation planning, during implementation of BMPs with individual landowners and operators, and in ways that will benefit any listed species in a project area. Future projects will potentially be funded using Partners for Wildlife, Pacific Coast Salmon Recovery Fund (PCSRF), Farm Bill, and state cost share programs. Technical assistance will be provided by the NRCS, ISCC, and ISDA.

Proposed Treatment

The watershed is divided into four treatment units (TUs) that have similar land uses, soils, productivity, resource concerns, and treatment needs. These TUs are used to evaluate land use impacts to water quality and to formulate alternatives for solving problems. Site-specific treatment alternatives will be determined through conservation planning with individual landowners, and appropriate BMPs identified.

Table 8. Treatment Units in the Challis Creek Watershed

	TU 1	TU 2	TU 3	TU 4
Watershed	**Stream Corridor and Riparian Acres**	**Hay, Pasture and Crop Lands Acres**	**Range and Forest Lands**	**Animal Facilities**
Challis Creek	179 acres	4,531 acres	2,462 acres	10 acres

Table 9. Soil Type and Problem by Treatment Units in the Challis Creek Watershed

Treatment Unit (TU1) Stream Channels and Riparian Areas		Resource Problems
108 acres	Badland-Millhi complex soils – Very deep, moderately well drained, slow permeability soils formed in clay with very little gravel.	Unstable and erosive streambanks Dewatered stream reaches Barriers to fish migration
71 acres	Bartonflat gravelly loam: Very deep, nearly level, somewhat excessively drained soil, with rapid permeability formed from gravelly to sandy loam.	Unstable and erosive streambanks Dewatered stream reaches Barriers to fish migration
Treatment Unit (TU2) Irrigated Hay, Pasture, and Crop Lands		Resource Problems
1,994 acres	Arbus gravelly loam: Very deep, nearly level, somewhat excessively drained soils formed in mixed alluvium.	Irrigation-induced erosion Ephemeral gully erosion
1,495 acres	Badland-Millhi complex: Very deep, moderately well drained, slow permeability formed in clay with very little gravel.	Irrigation-induced erosion Ephemeral gully erosion
544 acres	Bartonflat gravelly loam: Very deep, nearly level, somewhat excessively drained soil, with rapid permeability formed from gravelly to sandy loam.	Irrigation-induced erosion Ephemeral gully erosion
498 acres	Bartonflat very gravelly sandy loam: Very deep, nearly level, somewhat excessively drained, with rapid permeability soils formed from extremely gravelly to very gravelly sandy loam.	Irrigation-induced erosion Ephemeral gully erosion
Treatment Unit (TU3) Range and Forest Lands		Resource Problems
1,306 acres	Badland-Millhi complex: Very deep, moderately well drained, slow permeability formed in clay with very little gravel.	Sheet and rill erosion Ephemeral gully erosion Classic gully erosion
961 acres	Bartonflat gravelly loam: Very deep, nearly level, somewhat excessively drained soil, with rapid permeability formed from gravelly to sandy loam.	Sheet and rill erosion Ephemeral gully erosion Classic gully erosion
195 acres	Bartonflat very gravelly sandy loam: Very deep, nearly level, somewhat excessively drained, with rapid permeability soils formed from extremely gravelly to very gravelly sandy loam	Sheet and rill erosion Ephemeral gully erosion Classic gully erosion
Treatment Unit (TU4) Animal Feed Operations (AFOs)		Resource Problems
6 AFOs	Badland-Millhi complex: Very deep, moderately well drained, slow permeability formed in clay with very little gravel.	Lack of drinking water sources Inadequate waste storage Runoff from corrals or pens
4 AFOs	Bartonflat gravelly loam: Very deep, nearly level, somewhat excessively drained soil, with rapid permeability formed from gravelly to sandy loam.	Lack of drinking water sources Inadequate waste storage Runoff from corrals or pens

Estimated BMP Implementation Costs

Conservation efforts in the watershed have demonstrated that landowners will install BMPs when technical and financial assistance is available. The proposed treatment for pollutant reduction will be to implement BMPs through conservation plans. Table 10 lists the BMP amounts that may be used to restore beneficial uses in the watershed and their estimated costs. Final costs will be developed on a site specific basis with each landowner, through program and project implementation activities.

Table 10. Estimated BMP Installation Costs for the Challis Creek Watershed

Treatment Unit	Best Management Practice	Unit Type	Unit Cost	Unit Amount	Cost-Share Funds	Participant Funds	Total Funds
TU1 Stream Channels & Riparian Areas	Channel Vegetation	acre	$7,350	50	$275,625	$91,875	$367,500
	Fence, Jack	foot	$5.75	1,000	$4,313	$1,438	$5,750
	Fence, 5-wire	foot	$2.30	20,000	$34,500	$11,500	$46,000
	Prescribed Grazing	acre	$5	100	$375	$125	$500
	Riparian Forest Buffer	acre	$2,000	10	$15,000	$5,000	$20,000
	Stream Bank Protection	foot	$75	500	$28,125	$9,375	$37,500
	Stream Channel Stabilization	foot	$80	500	$30,000	$10,000	$40,000
	Tree/Shrub Establishment	acre	$290	15	$3,263	$1,088	$4,350
	Use Exclusion	acre	$35	200	$5,250	$1,750	$7,000
				Subtotal	$396,450	$132,150	$528,600
TU2 Irrigated Ag Lands	Irrigation System, Sprinkler	acre	$700	400	$210,000	$70,000	$280,000
	Irrigation Water Management	acre	$10	400	$3,000	$1,000	$4,000
	Nutrient Management	acre	$5	750	$2,813	$938	$3,750
	Pasture & Hayland Planting	acre	$100	100	$7,500	$2,500	$10,000
	Structure for Water Control Metal	each	$2,500	5	$9,375	$3,125	$12,500
	Prescribed Grazing	acre	$5	500	$1,875	$625	$2,500
				Subtotal	$234,563	$78,188	$312,750
TU3 Range & Forest Lands	Fence, 4-wire	foot	$1.20	5,000	$4,500	$1,500	$6,000
	Pipeline, PE 100 psi, 2.0"	foot	$2.59	4,000	$7,770	$2,590	$10,360
	Prescribed Grazing	aum	$1	4,000	$3,000	$1,000	$4,000
	Spring Development	each	$2,350	3	$5,288	$1,763	$7,050
	Watering Facility, Trough	each	$1,800	6	$8,100	$2,700	$10,800
				Subtotal	$28,658	$9,553	$38,210
TU4 AFOs	Corral Berm, Imported	cuyd	$21	250	$3,938	$1,313	$5,250
	Corral Berm, Earthen Fill	cuyd	$4	1,850	$5,550	$1,850	$7,400
	Nutrient Management	acre	$5	100	$375	$125	$500
	Fence, Corral	foot	$15	3,000	$33,750	$11,250	$45,000
	Pipeline, PE 100 psi, 2.0"	foot	$2.59	1,500	$2,914	$971	$3,885
	Watering Facility, Trough	each	$1,800	5	$6,750	$2,250	$9,000
	Water Well	foot	$40	250	$7,500	$2,500	$10,000
				Subtotal	$60,776	$20,259	$81,035
				Total	$720,446	$240,149	$960,595

Funding

Financial and technical assistance for BMPs are needed to ensure success of this implementation plan. There are many potential sources for funding that will be actively pursued by the Custer SWCD to implement improvements on private agriculture and grazing lands. Some of the sources are listed below:

NPS (319) – These are EPA funds, which are allocated to the IDEQ to be distributed on a competitive basis. These funds are used to treat non-point sources identified in the TMDL implementation plan. http://www.deq.idaho.gov/water/prog_issues/surface_water/nonpoint.cfm#management

HIP – The IDFG's objective is to provide technical and financial assistance to private landowners and public land managers who want to enhance upland game bird and waterfowl habitat. Funds are available for cost sharing on habitat projects in partnership with private landowners, non-profit organizations, and state and federal agencies. http://fishandgame.idaho.gov/cms/wildlife/hip/default.cfm

The Partners for Fish and Wildlife Program in Idaho – In Idaho, the focus has been on the restoration of degraded riparian areas along streams, and shallow wetland restoration. Recently, there has been increasing interest for in-stream restoration. http://www.fws.gov/partners/pdfs/ID-needs.pdf

WQPA – The ISCC administers the Water Quality Program for Agriculture is coordinated with the TMDLs and identifies the high priority areas. http://www.scc.state.id.us/programs.htm

RCRDP – The ISCC administers the Resource Conservation and Rangeland Development Program which offers low interest loans with terms up to 15 years. http://www.scc.state.id.us/programs.htm

Conservation Improvement Grants – Administered by the ISCC, these grants provide 50% over 1 to 2 year project timeframe. http://www.scc.state.id.us/programs.htm

SRF – The ISCC administers the State Revolving Fund which offers loans for BMPs. Loans have a minimum of $500,000 with a maximum term of 20 years. http://www.scc.state.id.us/programs.htm

CRP – The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners. Through CRP, you can receive annual rental payments and cost-share assistance to establish long-term, resource-conserving covers on eligible farmland. http://www.fsa.usda.gov/dafp/cepd/crp.htm

EQIP – Environmental Quality Incentives Program is a voluntary program from the NRCS. Participants receive help with BMPs on agricultural land. http://www.id.nrcs.usda.gov/programs/eqip/

CTA – NRCS provides free conservation technical assistance (CTA) to help farmers and ranchers identify and solve natural resource problems on their farms and ranches. This is provided through the soil conservation districts and ISCC. http://www.nrcs.usda.gov/programs/cta/

CSP – Conservation Security Program (CSP) is a voluntary program that rewards the Nation's premier farm and ranch land conservationists who meet the highest standards of conservation environmental management. http://www.nrcs.usda.gov/programs/csp/

CCPI – The Cooperative Conservation Partnership Initiative (CCPI) is a voluntary program established to foster conservation partnerships that focus technical and financial resources on conservation priorities in watersheds and airsheds of special significance. CCPI funds are awarded to State and local agencies;

Indian tribes; and non-governmental organizations that have a history of working with agricultural producers. http://www.nrcs.usda.gov/Programs/ccpi/index.html

WHIP – The Wildlife Habitat Incentives Program (WHIP) is a voluntary program from the NRCS. People who want to develop and improve wildlife habitat primarily on private land can receive technical assistance and up to 75% cost-share assistance. http://www.id.nrcs.usda.gov/programs/whip/index.html

WRP – The Wetland Reserve Program (WRP) offers landowners the opportunity to protect, restore, and enhance wetlands on their property. WRP provides technical and financial support to help landowners with easements and restoration cost-share on wetlands. http://www.id.nrcs.usda.gov/programs/wrp/

GRP – The Grassland Reserve Program (GRP) is a voluntary program offering landowners the opportunity to protect, restore and enhance grasslands on their property. GRP helps landowners restore, protect, or rehabilitate grass, range, pasture, shrub lands. http://www.id.nrcs.usda.gov/programs/grp/

GLCI – The Grazing Land Conservation Initiative (GLCI) provides high quality technical assistance on privately owned grazing lands on a voluntary basis and to increase the awareness of the importance of grazing land resources. http://www.glci.org/index.htm

PCSRF – The Idaho Pacific Coast Salmon Recovery Fund (PCSRF) Board allocates monies to projects that will contribute to the conservation, restoration, and sustainability of Idaho's salmon populations and their habitats. http://species.idaho.gov/list/salmon_steelhead.html

FRIMA – The Fisheries Restoration and Irrigation Mitigation Act of 2000 (FRIMA) is a federal fish screening and passage partnership program in Idaho. The program matches federal funds with local, state, and tribal programs to increase fish survival, reduce entrainment in existing water distribution systems, and increase access to productive fish habitat. http://www.fws.gov/pacific/Fisheries/FRIMA/

Outreach

Custer SWCD and ISCC staff will assist each other in public outreach activities to provide information to landowners and operators in the watershed in accordance with the Custer SWCD's Five Year plan.

Monitoring and Evaluation

Field Level

At the field level, annual contract status reviews will be conducted to insure that the contract is on schedule and that BMPs are being installed according to standards and specifications. BMP effectiveness monitoring will be conducted using the ISCC's BMP Effectiveness Field Guide (ISCC, 2003).

Watershed Level

The IDEQ monitors water quality and determines the beneficial use status of impaired waterbodies. For funded projects, annual project reviews are conducted to ensure the projects are kept on schedule. Because many projects are being implemented across the state, the ISCC developed a software program to the track costs and the amount of each BMP installed. This program can show what has been installed by project, watershed, subbasin, or state level.

Implementation Alternatives

Implementation alternatives were developed that focused on the identified treatment units and utilized treatment levels discussed below:

1. No Planned Action
2. Level I-High priority actions would be implemented
3. Level II-High and medium priority actions would be implemented

Description of Alternatives

Alternative 1 – No Planned Action – This alternative represents existing resource conditions if no new actions take place. The identified problems would continue to negatively impact beneficial uses.

Alternative 2 – Level I – This alternative would implement high priority actions. This alternative would reduce sediment and nutrient runoff from AFOs, reduce surface and sprinkler irrigation erosion, and ephemeral gully erosion from fields with direct impact to the stream improving water quality in the watershed and reducing pollutant loading to Challis Creek. Developing water conservation agreements, voluntary landowner participation in the reducing streambank erosion, eliminating barriers to fish passage, and where possible, returning flow to dewatered reaches would improve water quality, riparian vegetation, aquatic habitat, and fish passage. Beneficial uses may be achieved or improved with implementation of this alternative which includes voluntary and mandatory landowner participation.

Alternative 3 – Level II – This alternative would implement the high priority actions mentioned above and medium priority actions. Reduce irrigation-induced erosion, and ephemeral gully erosion from fields with indirect, yet substantial impact to the stream. Reduce sheet and rill erosion, ephemeral gully erosion, and classic gully erosion on range and forest lands that indirectly influence the stream. This will improve water quality in the watershed and reduce pollutant loading to Challis Creek. Beneficial uses will be improved or achieved with this alternative, which includes voluntary landowner participation.

Alternative Selection

The Custer SWCD selected Alternative 2 for this watershed. These alternatives meet objectives set forth in their Five Year plan by improving water quality in this watershed (Custer SWCD, 2007).

Table 11. Estimated Timeline for TMDL Agricultural Implementation

Task	Output	Milestone
Develop conservation plans and contracts	Completed contract agreements	2008
Finalize BMP designs	Completed BMP plans and designs	2009
Design and install approved BMPs	Certify BMP installations	2012
Track BMP installation	Implementation progress report	2012
Evaluate BMP & project effectiveness	Complete project effectiveness report	2014

References

CSWCD, 2007. Custer Soil and Water Conservation District Five Year Plan. Challis, Idaho

Ferguson, D.F., 2001. Challis Creek of Custer County, Idaho Initial Riparian Assessment.

IDEQ, 2003. Upper Salmon River Subbasin Assessment and Total Maximum Daily Load. Idaho Department of Environmental Quality. Boise, Idaho.

IDFG, 2003. Challis Creek Fisheries Report. Anadromous Screen Program. Region 7-Salmon, Idaho.

ISCC, 2003. Idaho Agricultural Pollution Abatement Plan. Idaho Soil Conservation Commission. Boise, Idaho.

ISCC, 2003. Idaho Agricultural Best Management Practices, *A Field Guide for Evaluating BMP Effectiveness*. Idaho Soil Conservation Commission. Boise, Idaho.

Natural Resources Conservation Service. 1998. Stream Visual Assessment Protocol. NWCC-TN-99-1. National Water and Climate Center, Portland, OR

NRCS, 2007. NRCS eFOTG "Guidance Documents for Resource Management Systems Field Office Technical Guide, Section III". http://ias.sc.egov.usda.gov/auth/CSG/CSGReporteFOTG.aspx