Addendum to the Priest River Subbasin Assessment And Total Maximum Daily Load (TMDL) Implementation Plan for Agriculture

Developed for the Idaho Department of Environmental Quality
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In Cooperation With:
Bonner Soil and Water Conservation District
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Natural Resources Conservation Service
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Introduction

The Idaho Soil Conservation Commission (ISCC) is the designated management agency in Idaho for managing agricultural nonpoint source pollution and is therefore the lead in TMDL implementation activities on agricultural land. Although the ISCC does not have regulatory or licensing authority over water quality or pollution control, the mission of the ISCC is to provide support to Idaho's Soil and Water Conservation Districts for wise use and improvement of natural resources (RPU 2003). The ISCC offers technical assistance to landowners and operators and administers the Water Quality Program for Agriculture (WQPA), the Conservation Improvement Grants program, and the Resource Conservation and Rangeland Development Program (RCRDP) in cooperation with Soil and Water Conservation Districts.

The ISCC works with the Bonner Soil and Water Conservation District (BSWCD), the Idaho Association of Soil Conservation Districts (IASCD), and the Natural Resource Conservation Service (NRCS) in a partnership to reach common goals and successfully deliver conservation programs in Bonner County.

This agricultural component of the Addendum to the Priest River Subbasin Assessment and Total Maximum Daily Load (TMDL) Implementation Plan, outlines an adaptive management approach for implementation of Best Management Practices (BMPs), to meet the requirements of the addendum TMDL, as written and approved in June of 2003 (IDEQ, 2003). Agricultural sub-watersheds included in this plan are the Lower Priest River (from the mouth of the Upper West Branch of the Priest River downstream to the city of Priest River), and the main stem of the East River. Reeder Creek and Binarch Creek have been purposely excluded from this agricultural plan. Justification for this action can be found in the Subwatershed section, page 8. A separate agricultural TMDL implementation plan was prepared by the Idaho Soil Conservation Commission for the Lower West Branch of the Priest River and tributaries, and also has been excluded from this document (ISCC, 2008).

PURPOSE

The purpose of this plan is to assist and/or complement other watershed stakeholders in restoring and protecting beneficial uses for 303(d) listed stream segments. The Addendum TMDL was written primarily using the 1998 303(d) list, but it also speaks of the current 2002 Integrated 303(d)/ 305(b) list. TMDL impaired stream segments and listed pollutants, within HUC 17010215, have been summarized in Tables 1 and 2 per 303(d) lists (IDEQ, 1998 and 2005).

Table 1. 1998 303(d) list for the Addendum to the Priest River TMDL.

Water body	Listed Pollutants
Reeder Creek (Headwaters to Priest Lake)	Sediment and Temperature
Binarch Creek (Headwaters to Priest River)	Sediment
Main East River (Lower 2.8 miles to mouth)	Sediment, Temperature, D.O., and Quat.*
Priest River (Lower 34.4 miles to mouth)	Sediment

*** D.O. =Dissolved oxygen; Quat. =Flow alteration**

Table 2. 2002 Integrated 303(d)/ 305(b) list for the Addendum of the Priest River TMDL.

Water body	Listed Pollutants
Reeder Creek (Headwaters to Priest Lake)	Temperature
Binarch Creek (Headwaters to Priest River)	Temperature
East River	Not Listed
Priest River (Lower 34.4 miles to mouth)	Temperature and Unknown

GOALS AND OBJECTIVES

This implementation plan will provide guidance to the Bonner Soil and Water Conservation District and agricultural producers in the Priest River watershed to identify BMPs necessary to meet the requirements of the TMDLs on 303(d) listed streams. The main goal of this plan will be to reduce the amount of sediment entering these water bodies from agricultural sources and lower heat (incoming solar radiation), where economically feasible. Agricultural pollutant reductions will be achieved through the application of Best Management Practices (BMPs) developed and implemented on site with willing individual agricultural landowners and operators.

A long range objective of this plan will be to provide BMP effectiveness evaluation and monitoring in terms of reducing pollutant loading and impacts on designated beneficial uses of the above listed stream segments. Emphasis will also be placed on implementation of a water quality outreach program to encourage landowner participation in water quality implementation efforts within the watersheds.

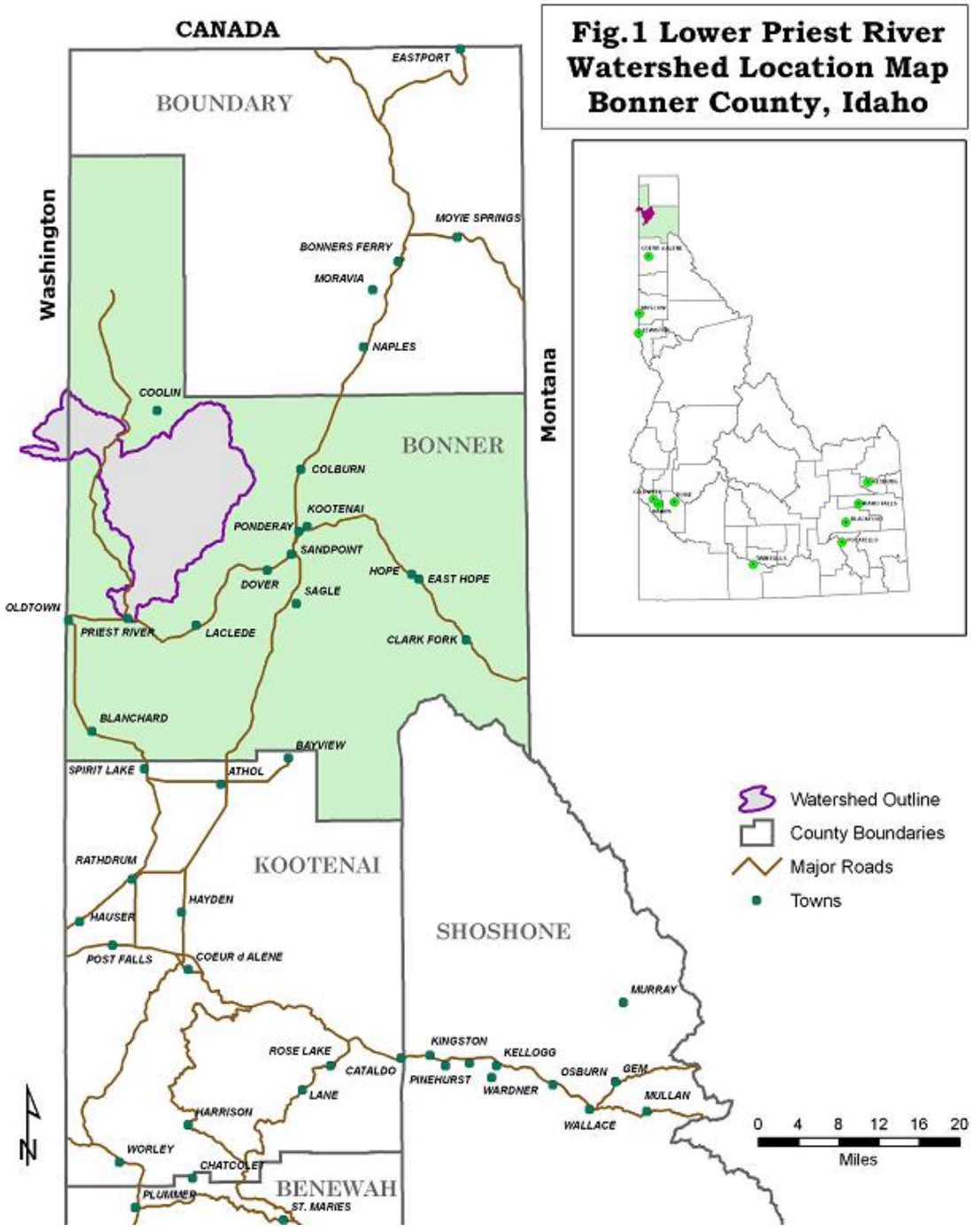
Background

PROJECT SETTING

The Priest River subbasin is 981 square miles in area, and lies primarily within the far northwest corner of the Idaho Panhandle, in Bonner and Boundary counties (see Figure 1). Headwaters of the Upper Priest River originate in the Nelson Mountains of British Columbia and flows south into Idaho. The western edge of the basin is primarily in the State of Washington, and is flanked by public lands administered by the Colville National Forest. The eastern side of the basin is flanked by the Selkirk Mountains. Elevation within the basin ranges from 7,000 feet in the upper Selkirk Mountains, to 2,075 feet at the City of Priest River.

The TMDL cites climate as transitional between a northern Pacific coastal type and a continental type. The summer months of July and August are the warmest, with the rest of the year remaining relatively mild compared to areas east of the Rocky Mountains. Average precipitation can range from 30-60 inches depending on aspect and elevation, with the wettest months being November through January. The elevation zone between 2,000 and 3,500 feet is subject to rapid snow melt from winter rain storms and can produce high discharge events.

The Priest River subbasin is predominately coniferous forest, with the higher elevations consisting mainly of subalpine fir and Englemann spruce. Depending on location, areas below 5,000 feet typically contain western red cedar, western hemlock, Douglas fir, grand fir, western larch, white pine, and ponderosa pine. Common shade providing vegetation along stream riparian areas include: birch, aspen, cottonwood, alder, dogwood, and willow (IDEQ, 2001).



SUBWATERSHEDS

The following narrative briefly describes the TMDL stream segments as discussed in the Key Findings section of the Addendum Priest River Subbasin Assessment and TMDL (IDEQ, 2003). The four subwatersheds requiring TMDL reductions and allocations are as follows: Reeder Creek, Binarch Creek, East River, and Priest River.

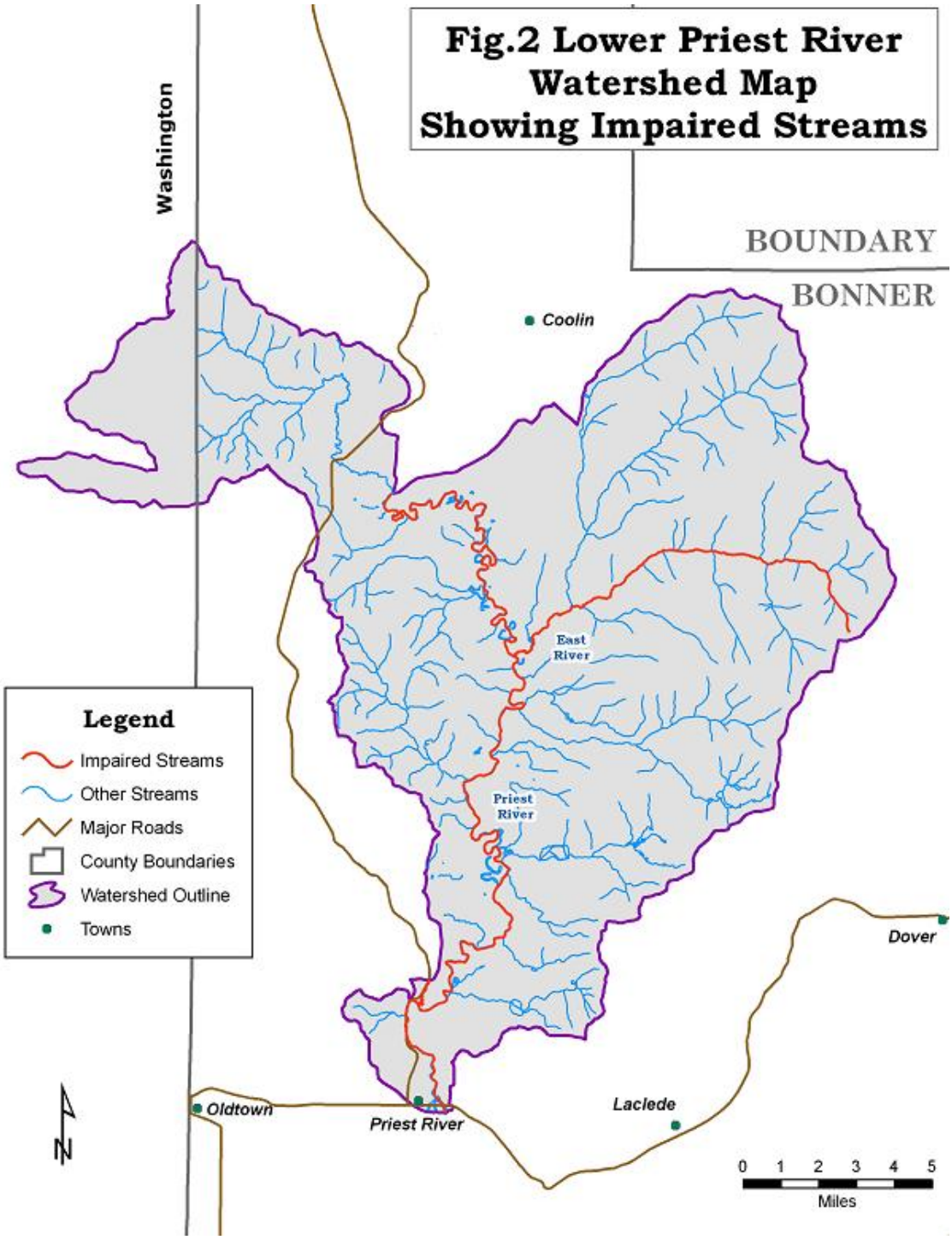
Reeder Creek is a 2nd order tributary located on the west side of Priest Lake. The main stem is roughly 8 miles long, flowing south and then due west to Priest Lake. Land management is nearly 75% under the U.S. Forest Service (USFS), with the remaining 25% being private agriculture, residential, and industrial timber lands. During the sub-basin assessment, DEQ determined that the headwaters of the stream to elevation 2,680 feet was meeting full support for cold water aquatic life (CWAL) beneficial use. The remaining 5 miles from 2,680 feet to the mouth is mainly low gradient and flows through wetlands and wet meadows. DEQ assessed and scored this lower section minimum threshold for stream macro-invertebrates, and thus reported not fully supporting for CWAL beneficial use. From this determination, DEQ prepared the sediment TMDL for this part of Reeder Creek. The middle section of Reeder Creek flows through Bismark Meadows, which encompasses about 1200 acres. Historically, a large part of these meadows were converted to agricultural haying and grazing. During 2000-2003, NRCS signed permanent conservation easements with numerous landowners within Bismark Meadow, totally around 1000 acres. This federal program is called the Wetland Reserve Program (WRP), and focuses on restoring wildlife habitat, hydrology, and riparian plant communities to predevelopment wetland conditions. Quoting from the Addendum to the Priest River TMDL, "regarding hay cropping and cattle grazing on private land, the current WRP on 1000 acres of Bismark Meadows, will serve as a TMDL Implementation Plan for this sector". The author of the TMDL states that the single most beneficial improvement to Reeder Creek will come from the WRP. The author concludes that it is likely that the sediment reduction from the WRP will exceed the sediment reduction assigned to the private sector, and pollutant trading could be applied. This outstanding NRCS locally-led effort provides sound justification for excluding Reeder Creek from this agricultural implementation plan.

Binarch Creek is a 2nd order tributary on the west side of Lower Priest River. The main stem is roughly 9 miles long and flows southeast to the river. According to the TMDL, the entire Binarch Creek watershed is managed by the USFS, and thus there is no private land or more importantly no agricultural land use. This fact provides sound justification for excluding Binarch Creek from this agricultural TMDL implementation plan.

East River can most easily be broken down into the Middle Fork, the North Fork, and the Main Stem below the confluence of the forks (See Figure 2). The Middle and North Forks are 3rd order tributaries with both flowing about 10 miles to the confluence. At the confluence, the 4th order main stem flows nearly 3 miles to the mouth of the Lower Priest River. The Middle Fork was 303(d) delisted in 1998, and the North Fork was recommended for delisting in 2001 by DEQ. Also in 2001, DEQ recommended that the entire East River be de-listed for dissolved oxygen. 87% of the watershed is managed by the Idaho Department of Lands (IDL), with the remaining lands being managed by the USFS and private landowners (agriculture, residential and industrial timber). The TMDL emphasizes the importance of good management within the East River drainage, due to recent observations of bull trout. The main stem was assessed in 2001 as Not

Fully Supporting CWAL beneficial use. This determination was made by integration of indexes to produce an average condition rating, which failed the test. Unknown sediment loads from the watershed and eroding stream banks were cited as partial reasoning for DEQ to prepare the sediment TMDL for the entire East River drainage. A temperature TMDL was also prepared for the East River because of exceedances measured during 1997-1999. The TMDL cites impacts to the riparian vegetative cover from historic timber harvesting practices, and more recent clearing of land for agricultural purposes. A small amount of agricultural land does exist adjacent to the main stem, and it is the intent of this implementation plan to address this area.

Lower Priest River is a 5th order river that begins at the outlet to Priest Lake and flows south to the confluence with the Pend Oreille River. The 303(d) listed segment of Lower Priest River is nearly 35 river miles in length, and begins at the mouth of the Upper West Branch of the Priest River and stretches to the mouth (See Figure 2). This area encompasses a large watershed with roughly 475 miles of perennial streams. Land management within this drainage consists of: 50% USFS, 31% IDL, and the remaining 19% split amongst private landowners (agriculture, timber, residential), and industrial timber. During 1998-2002, the Lower Priest River was assessed as Not Fully Supporting CWAL beneficial use, based on a minimum threshold rating for River Fish Index by both the U.S. Geological Survey (USGS) and Idaho Fish and Game (IDFG). Further investigations prompted DEQ to recommend in the 2002 Addendum TMDL that sediment be removed from the 303(d) list for the Lower Priest River. During the draft comment period, EPA chose to leave sediment on the list, due to findings of severe back erosion on the Lower Priest River and sediment input from three major tributaries. The referenced bank erosion survey was conducted for DEQ, in 2000, by the Kootenai-Shoshone Soil and Water Conservation District in cooperation with the Bonner Soil and Water Conservation District (KSSWCD, 2000-2002). Approximately 9 miles of Lower Priest River was surveyed, and 28% of the total length (2 banks) was observed to be eroding. The average height of the eroding banks was nearly 9 feet with a lateral recession rate of 0.4 feet per year assigned. By extrapolation of the surveyed length and assuming 100% delivery, DEQ estimated that the total sediment load to nearly 35 miles of river was 16,000 tons per year (60% confidence level). In layman terms, this equates to roughly 1,600 dump trucks per year into the river from “high” bank erosion. Due to these findings, DEQ prepared the sediment TMDL for riverbank erosion. Whether treating high bank erosion is technically or economically feasible, is yet to be ascertained. The Addendum TMDL does hint that bank instability could be associated with historic log drives and vegetative clearing of adjacent banks for agricultural purposes and roads. A significant amount of agricultural land does exist adjacent to the Lower Priest River, and it is the intent of this implementation plan to address agricultural haying and grazing impacts to riparian vegetation.



LAND USE

Land use in the Lower Priest River and East River watersheds includes forestland, hay and pastureland, residential development, wildlife habitat, and recreation. The forested upland areas give way to valleys in the lower tributaries and the main stem of the Lower Priest River itself. These valleys are utilized primarily for hay production, livestock grazing, and residential

development. The Lower Priest River main stem channel meanders significantly, with several oxbow areas providing excellent wetland habitat. Figure 3 depicts land use in the Lower Priest River and East River watersheds.

Grazed forests were not delineated in this plan, due to the difficulty in assessing this land use. The United States Forest Service (USFS) and the Idaho Department of Lands (IDL) develop management plans for forested lands in their jurisdiction. IDL is the designated management agency for private forestland in Idaho. According to the sub-basin assessment, state and federal grazing allotments do exist within the Lower Priest River and East River drainages. The conservation partnership is available to provide assistance to these agencies or private landowners in developing grazing plans in grazed forest areas upon request. Grazing in privately-owned forested areas where jurisdiction is unclear or overlapping will be addressed cooperatively between the conservation partnership and IDL. Tables 3 and 4 summarize acres and percent of each land use category per TMDL sub-basin.

Table 3. Land use in the Lower Priest River watershed (Lower West Branch and Washington has been omitted).

Land Use Category	Acres	% of Sub-basin
Forestland	72,461	81
Grass, Pasture, Hay Land	7,639	9
Residential ,Water, Wetlands	8,879	10
TOTAL:	88,979	100%

Table 4. Land use in the East River watershed.

Land Use Category	Acres	% of Sub-basin
Forestland	36,321	84
Grass, Pasture, Hay Land	540	1
Shrub, Range	3,344	8
Residential ,Water, Wetlands	2,960	7
TOTAL:	43,165	100%

LAND OWNERSHIP

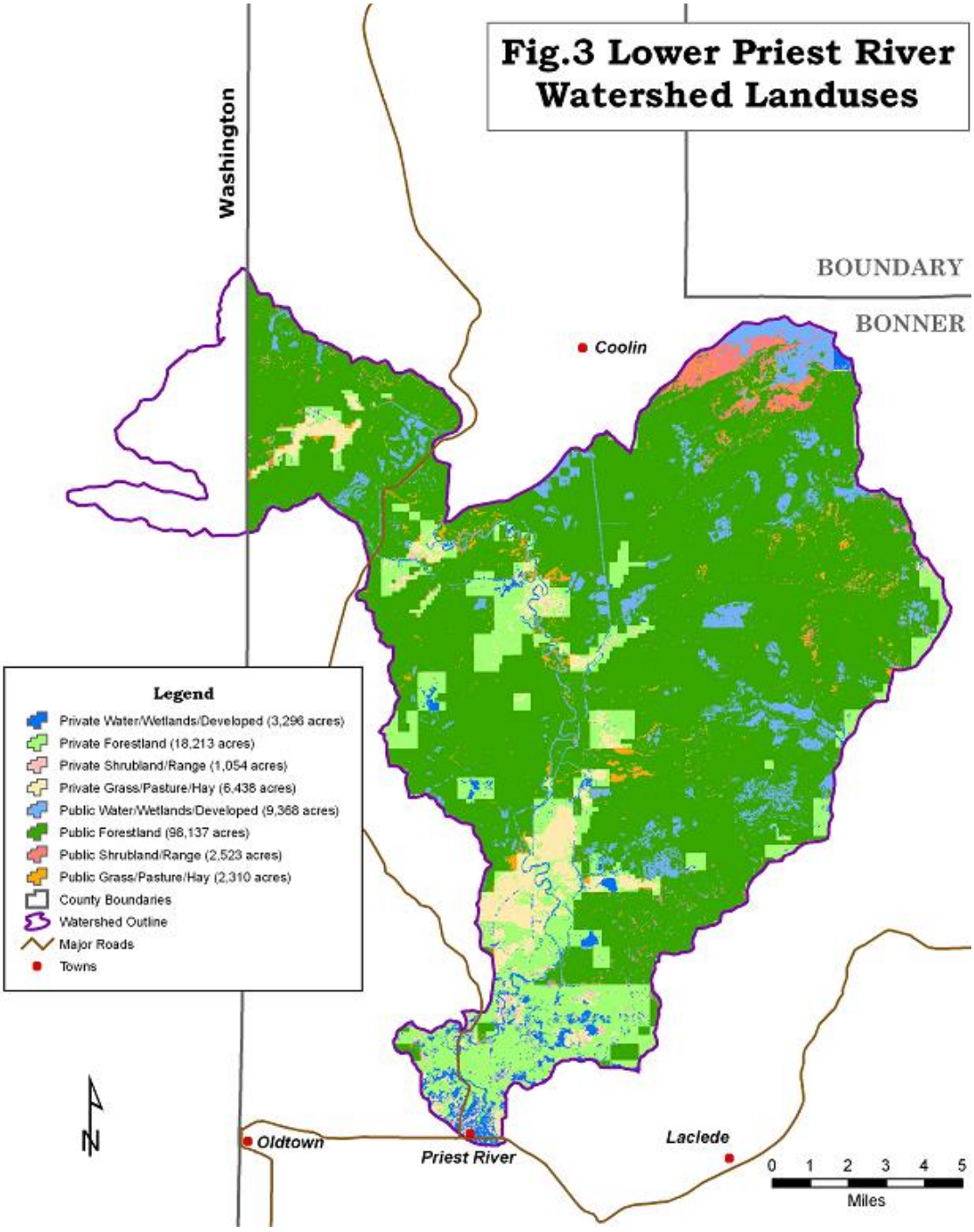
Land ownership or management in the Lower Priest River and East River watersheds includes federal, state, and private entities (See Figure 4). Tables 5 and 6 summarize acres and percent for each land management entity per TMDL sub-basins.

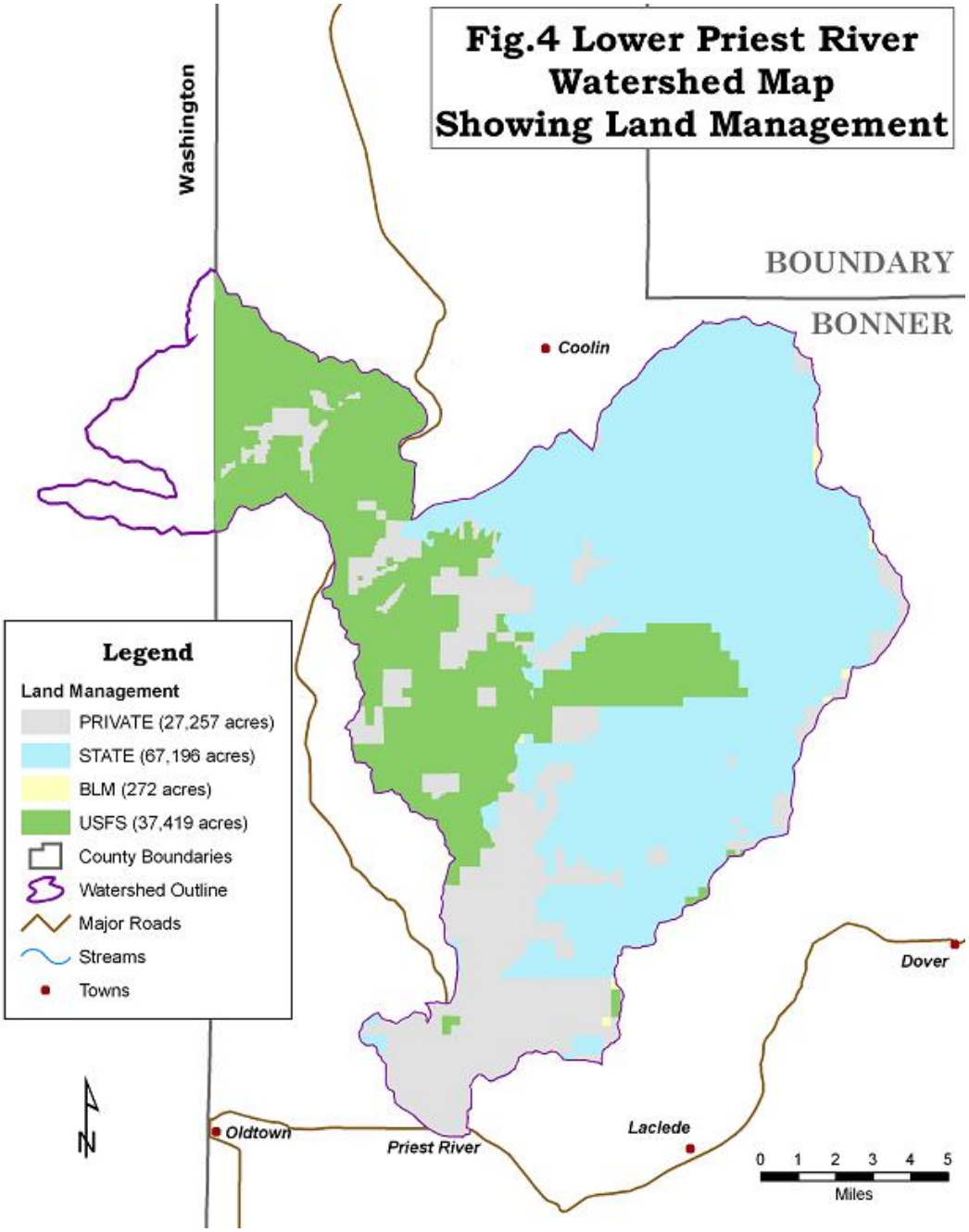
Table 5. Land ownership in the Lower Priest River TMDL watershed (Lower West Branch and Washington has been omitted).

.Land Manager	Acres	% of Sub-basin
Private	25,282	28
Federal	34,141	38
State of Idaho	29,556	34
TOTAL	88,979	100%

Table 6. Land ownership in the East River TMDL watershed.

Land Manager	Acres	% of Sub-basin
Private	1,975	5
Federal	3,550	8
State of Idaho	37,640	87
	43,165	100%





ACCOMPLISHMENTS

The conservation partnership has been active in soil and water conservation activities and public education efforts in Bonner County since the formation of the Bonner SWCD in 1946. The partnership has developed individual conservation plans for local agricultural producers and has pursued funding sources to assist in implementing BMPs. The partnership has additionally restored wetland and riparian areas, stabilized stream banks, coordinated with other agencies and individuals in educational activities for youth, and made educational materials available to the public.

Funding sources utilized by the conservation partnership in Bonner County have included Farm Bill Programs such as Environmental Quality Incentives Program (EQIP), Conservation Reserve Program (CRP), Continuous CRP (CCRP), Wetland Reserve Program (WRP), and Wildlife Habitat Incentive Program (WHIP); Idaho's Water Quality Program for Agriculture (WQPA); and the Clean Water Act Section 319 Program. Accomplishments on agricultural land in the Priest River watershed (Lower West Branch excluded) occurring in the last seven years (2002 – 2008) are summarized in Table 7:

Table 7. Completed agricultural BMPs in the Priest River watershed

Subwatershed	BMP	Amount	Units	Project/Program
Reeder Creek	Wetland/Wildlife Habitat Restoration	1000	Acres	WRP
Sanborn Creek	Water Control Structure	2	Each	EQIP
	Pasture and Hayland Planting	68	Acres	EQIP
	Riparian Exclusion Fence	15,000	Feet	CCRP

Water Quality Problems

BENEFICIAL USE STATUS

Idaho water quality standards require that beneficial uses of all water bodies be protected. Beneficial uses can include existing uses, designated uses, and presumed existing uses. Designated uses are uses officially recognized by the state. In cases where designated uses have not been established by the state for a given water body, DEQ has established the presumed existing uses of supporting cold water aquatic life and either primary or secondary contact recreation. Beneficial uses for water bodies on the 303(d) list in the Lower Priest River and East River watersheds are listed below in Table 8. (IDEQ, 2003)

Table 8. Beneficial uses for 1998 303(d) listed stream segments in the Lower Priest River watershed.

Water Body	Boundaries	Assessment Unit ID#	Beneficial Uses	Support Status
Lower Priest River	Upper West Branch Priest River To Pend Oreille River	PN001_05	Designated: CWAL, PCR, DWS, SRW Existing: SS	CWAL and SS=Not Fully Sup-porting(NFS)
East River	Main stem Middle Fork North Fork	PN003_04 PN003_02&_03 PN004_02&_03	Existing: SS, DWS Presumed: CWAL, PCR	Main stem: CWAL=NFS
Beneficial Uses Key: CWAL = cold water aquatic life; SS = salmonid spawning; PCR = primary contact recreation; SCR = secondary contact recreation; DWS= domestic water supply; SRW = special resource water.				

POLLUTANTS

Sediment and temperature were the identified pollutants of concern discussed in the TMDL. A sediment allocation and reduction was set on the Lower Priest River to address specifically bank erosion. Both a sediment and temperature allocation and reduction was assessed on the East River watershed. Table 9 summarizes these findings:

Table 9. 1998 303(d) listed stream segments: identified pollutants and required reductions.

Water Body	303(d) Listed Pollutants	Load Allocation	Required Reduction to meet TMDL	Agricultural Concerns
Lower Priest River	Sediment from Bank Erosion	5,946 tons/yr	10,084 tons/yr	Areas of riparian encroachment
East River East River-Main Stem	Sediment Temperature	1,548 tons/yr 100% target canopy cover	1,389 tons/yr 93% increase in canopy cover	Areas of riparian encroachment

As cited in the TMDL, the Lower Priest River requires a reduction of 10,084 tons/yr of sediment, which extrapolates to 12 miles of bank remediation. The TMDL concluded that this implementation effort will be “difficult, time consuming, and expensive”. The lower 15 miles of the river is predominately private ownership, with agriculture being a significant land use.

The entire East River requires a sediment and temperature reduction by all land owners within the watershed. The only true agriculture lies adjacent to the main stem of the East River and encompasses about a total of 240 acres. Private agriculture, ranchettes, and forestry were jointly allocated 43 tons/yr of sediment, with a required reduction of 134 tons/yr. Canopy cover was estimated in 2000, using 1996 aerial photography and CWE protocol guidance (IDL, 2000a). DEQ ground truthed these estimates in 2002. Percent cover allocations and amounts required were projected at various elevations down through the watershed. Table 9 only includes the main stem, due to this being the only elevation where agriculture exists. With this being a fairly wide section of the river, 100% canopy is not a realistic goal. The TMDL also speaks of this situation, where the river is just too wide to expect shade over the entire stream surface even with tall conifer reintroduction.

WATER QUALITY MONITORING

In order to summarize water quality monitoring that has occurred in the Priest River watershed after publication of the Addendum TMDL in 2003, personal communication with DEQ Coeur d'Alene Regional Office was required. A DEQ specialist provided the following recent monitoring information (Pettit, G. 2008):

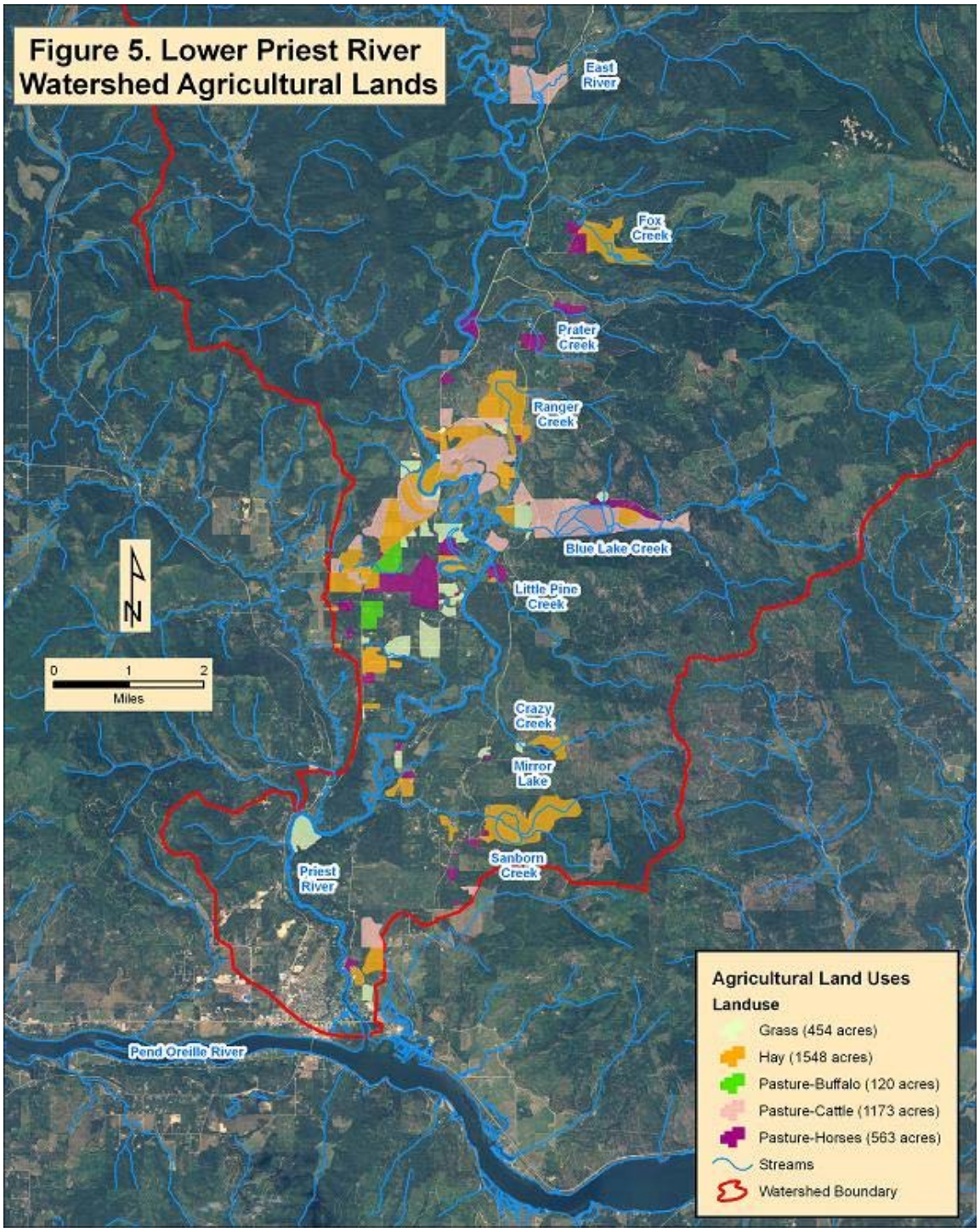
- DEQ BURP site was assessed in 2005 on the Middle Fork of the East River, and data collected.
- In 2006, DEQ detected a pathogen exceedence on one of the Lower Priest River tributaries. Open range cattle were observed in the creek and could be a contributing factor to the exceedence.
- A new Citizens Volunteer Monitoring Program (CVMP) has started sampling Priest Lake in May of 2008. Samples will be taken throughout the summer months, and will be tested for chlorophyll, total phosphorus, phytoplankton, temperature, dissolved oxygen, and clarity.

Without DNA analysis, the actual cause of the pathogen exceedences detected by DEQ, is speculative at best. Pathogen contributors can vary, and may include livestock, humans, wildlife, or a combination of these. Typically, to reduce agricultural pathogens from entering a water body, it is essential to implement BMPs that limit access or exclude livestock totally from the riparian zone.

AGRICULTURAL WATER QUALITY INVENTORY AND EVALUATION

Agricultural Land Use Inventory

In order to assess agricultural impacts to surface water on TMDL listed streams within the Priest River watershed, the first step was to inventory private agricultural land use that exists within the area of concern. As urban sprawl continues to take over historic agricultural areas within Bonner County, and certainly around a valuable recreational area, this becomes even more critical. For this plan, agricultural land use was inventoried, visually in the field, starting in 2006 and updating through 2008 (Hogen, M. 2006-2008). The main two remaining agricultural uses found for the Lower Priest River and its tributaries, were pasture and hayland. With the present high price and demand for high quality grass hay, traditional pastureland within the Priest River area is being converted to hayland, resulting in a reduction of livestock numbers. Late season grazing still exists after haying is completed and re-growth begins. Observed livestock grazing, included cattle, horses, and buffalo, with horse numbers increasing along with subdivisions. If this pattern continues into the future, impacts from small acreage horse grazing, will most likely out-weigh cattle impacts to the Lower Priest River and its tributaries. Haylands within the TMDL watersheds are typically in good to excellent condition and are on relatively flat slopes. Most of the highly productive hay fields are fertilized, but at rates well below recommended. No potential agricultural impacts were observed from hayland and/or pastures, lying outside the TMDL riparian areas. These outside agricultural areas will be considered non-critical for treatment, and will not be addressed further in this implementation plan. The agricultural land use inventory conducted for the Lower Priest River watershed has been summarized on Figure 5.



Riparian Inventory and Evaluation

It was determined from the agricultural land use inventory that the next step to assessing potential agricultural impacts to riparian areas would be to walk or float, as much of the Lower Priest River and the Main Stem of the East River as possible. The agricultural partnership works

with private landowners on a voluntary basis, thus permission to access these private agricultural lands was required. With the assistance of the BSWCD and IASCD, permission was granted to walk a large mid section of the Lower Priest River and a portion of the Main Stem of the East River. These segments represented traditional agriculture and included livestock grazing adjacent to the TMDL waterbodies. The inventory method used to assess the riparian area of the Main Stem of the East River, was NRCS's Stream Visual Assessment Protocol (SVAP) (NRCS, 1998). Representative agricultural stream reaches were evaluated for 12 assessment elements. These elements included: channel condition, hydrologic alteration, riparian zone, bank stability, water appearance, nutrient enrichment, barriers to fish movement, in-stream fish cover, invertebrate habitat, canopy cover, manure alteration, riparian zone, bank stability, water appearance, nutrient enrichment, barriers to fish movement, in-stream fish cover, invertebrate habitat, canopy cover, manure presence, riffle embeddedness, and macroinvertebrates observed. All elements were scored in the field by a team from the conservation partnership, and classified into the categories of excellent, good, fair, and poor (SVAP Team Members, 2006). SVAP results were shared with all participating landowners, and recommendations for improving water quality were discussed. In general, reaches that score in the fair to poor range are high priority candidates for BMP implementation projects, particularly where landowners are willing to participate individually or as a group. Actual SVAP scores for the Main Stem of the East River were found to lie on the lower edge of good. Browsing of willows was the most significant agricultural trend observed to the lower East River riparian area.

In July of 2008, an interdisciplinary team floated the upper section of the Priest River TMDL segment, from Whitetail Butte area (river mile 29) down to above McAbee Falls (river mile 14) (Interdisciplinary Team Members. 2008). This particular segment, is mostly public lands with a few small pockets of private land intermixed. One objective of the float was to assess and evaluate bank erosion observed. Numerous eroding banks were inventoried and documented by DEQ personnel (contact Coeur d'Alene DEQ Regional Office for inventory details). Another important objective to this agricultural implementation plan was to observe if agriculture was impacting this particular segment of the Priest River. The overall consensus by the group was that agriculture was not significantly impacting water quality within this section of the Priest River. This floated stretch will be considered non-critical for agricultural treatment, and will not be addressed further in this implementation plan.

Late summer of 2008, permission was obtained to visually assess approximately 3 miles of the Priest River. The principle land use adjacent to this stretch of river is agriculture, mainly haying and cattle grazing. Livestock were excluded from the entire 3 miles of the Priest River by permanent fencing. One water gap to the Priest River; was used to water livestock from a forested pasture. The other water sources for livestock included the mouths of two perennial tributaries to the Priest River. Soil erosion was taking place at the water gap, and the livestock were impacting the banks and riparian vegetation of the two tributaries. The hay fields adjacent to the river were well buffered and did not appear to encroach on the banks. The late season condition of the hay fields and pastures were in very good condition. Tedious control of weeds and forage management was evident throughout this highly productive agricultural operation. Overgrazing did not appear to be a problem. During a preliminary background visit, the main concern from the land manager was high bank erosion on the Priest River. One outer bend of the river has been encroaching on a critical road needed to move livestock and access fields. Rock

rip rap and riparian plantings (University of Idaho assistance), were implemented to help minimize the lateral recession rate and road damage caused by yearly high flows. Overall, the project has been successful, but the potential for more damage still exists below the project area. High bank erosion throughout the Lower Priest River is beyond the scope of this agricultural implementation plan. This author agrees with the TMDL, that if high bank erosion needs to be addressed, it should first be studied, by a team of natural resource experts, to determine if implementation is economically and technically feasible.

Animal Feeding Operations and Dairies

There are several small-scale commercial livestock operations within the lower Priest River watershed. Concerns associated with these small-scale operations are related to pastures with direct cattle access to the riparian zones. No confined areas were observed with direct runoff to surface water. No dairies exist within the scope of this TMDL agricultural implementation plan.

THREATENED AND ENDANGERED SPECIES

Section 7 of the Endangered Species Act of 1973 (ESA) requires federal agencies to determine how to use their authorities to further the purpose of the ESA to aid in recovering listed species and address existing and potential conservation issues. Section 7 (a)(2) further states that agencies shall consult with the U.S. Fish and Wildlife Service or NOAA Fisheries to ensure that any action they authorize, fund, or carry out "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of (designated critical habitat)." As a federal agency, the NRCS is required to follow this mandate for all projects implemented with federal funding. NRCS policy, as outlined in their General Manual, also includes provisions to consider State species of concern in their conservation activities (190-GM, Amend. 8, December 2003).

Impacts to T&E species and species of concern in the Lower Priest River watershed will be taken into account in TMDL project implementation. If a proposed action is determined to be within close proximity to habitat used by a Threatened or Endangered (T&E) species or the known location of a T&E species, consultation will be initiated with the appropriate agency. Consultation involves describing the proposed project, assessing potential impacts, describing mitigation efforts for the project, and determining the effect of the project on the species of concern. The consultation process results in development of reasonable alternatives, and helps to minimize impacts of conservation practices to critical habitat.

The Idaho Department of Fish and Game Conservation Data Center, 2002 Threatened and Endangered Species GIS database is available as a tool in conservation planning. The database contains documented locations for terrestrial species. This can help identify known locations of T&E species and identify critical habitat types that may harbor T&E species. Conservation planners can reference habitat requirements to help land users determine the potential benefits and impacts of their project implementation. These discussions remain confidential between the land user and planners.

Species listed as Threatened or Endangered under the ESA for Bonner County are summarized in Table 10.

Table 10. Federally-listed Threatened and Endangered Species occurring in Bonner County, Idaho (NRCS Field Office Technical Guide)

Species	***Status****
Mammals	
Canada lynx (Lynx canadensis)	LT
Grizzly bear (Ursus arctos horribilis)	LT
Gray wolf (*Canis lupus*)	LE
Woodland caribou (Rangifer tarandus caribou)	LE
Birds	
Bald eagle (Haliaeetus leucocephalus)	LT
Fish	
Bull trout (Salvelinus confluentus)	LT
Plants	
Ute Ladies'-tresses (*Spiranthes diluvialus*)	LT

*LT – Listed as Threatened, LE – Listed as Endangered

Implementation Priority

The TMDL implementation planning process included assessing impacts to water quality from agricultural lands on 303(d) listed streams, and recommending a priority for installing BMPs to meet water quality objectives stated in the Addendum to the Priest River TMDL. Data from water quality monitoring and field inventories were used to identify critical agricultural areas affecting water quality, and to set priorities for treatment.

CRITICAL AREAS

Agricultural areas that have the potential to contribute excess pollutants to waterways are defined as critical areas for BMP implementation. Critical areas prioritized for this plan were identified during field observations in 2006, 2007, and 2008. Agricultural critical areas within the Priest River TMDL watershed include: those areas where livestock have direct access to streams and riparian areas; and areas adjacent to stream corridors that lack adequate riparian buffering. A narrative description and location of these critical agricultural areas follows:

- Livestock access points on the Priest River (estimate three or 60 feet).
- Livestock access at the mouth of Blue Creek (1,320 feet).
- Livestock access on Blue Creek above East Side Road (1,320 feet).
- Livestock access at the mouth of Ranger Creek (600 feet).
- Historical channelization of Ranger Creek for agricultural use (5,280 feet).
- Livestock access on the Main Stem of the East River (3,300 feet).

In summary, approximately 11,880 linear feet of stream bank, consisting of nearly 27 acres of impacted riparian area, have been identified as critical areas for treatment in the Priest River watershed for this agricultural implementation plan.

RECOMMENDED PRIORITIES FOR BMP IMPLEMENTATION

The following waterbodies contain riparian areas impacted by agriculture, as determined visually, by actual SVAP assessment, or by the NRCS planning process:

- Lower Priest River (Above McAbee Falls area to mouth)
- Tributaries to Lower Priest River:
  Blue Creek
  Ranger Creek
  Sanborn Creek
- East River (Main Stem)

Riparian zone agricultural BMP implementation on any of the waterbodies listed above should result in sediment reductions for the Priest River Addendum TMDL, and thus have equal priority. Temperature reductions could feasibly be achieved by the implementation of shading BMP's on the smaller tributaries. Completion of the Sanborn Creek EQIP and CCRP projects (see accomplishment section and Table 11), should remain a priority for agricultural treatment on this tributary.

The recommended voluntary treatment process for private agricultural landowners within the entire Priest River watershed, begins with contacting the local conservation district, the Bonner Soil and Water Conservation District. The Bonner SWCD's 5 year plan identifies water quality as one of their top priorities for Bonner County. The BSWCD works in partnership with the Natural Resources Conservation Service and the Idaho Soil Conservation Commission, to provide free technical assistance to landowners wanting to improve their agricultural lands. The process begins with a thorough NRCS resources inventory of the farm or ranch (soil, water, air, plants, and animals), and ultimately the development of a good conservation plan (for more insight on planning, go to www.oneplan.org). Once the planning process is complete, the BSWCD can assist the landowner in seeking grants or cost-sharing type programs, to help pay for needed BMP installation. A list of funding opportunities for private landowners has been included in Funding Potentials section. Contact information for the BSWCD is:

1224 Washington Ave.
Sandpoint, Idaho 83864
Phone 208-263-5310
www.icehouse.net/ksswcd/bonner/index.htm

Treatment

TREATMENT UNITS (TU)

The following Treatment Unit (TU) describes critical areas in the Priest River watershed with similar land uses, soils, productivity, resource concerns, and treatment needs. This TU not only provides a method for delineating and describing land use, but are also used to evaluate land use impacts to water quality and in the formulation of alternatives for solving water quality problems. BMPs to improve water quality are suggested for this treatment unit.

Agricultural BMPs are voluntary in nature and, therefore, rely on operator participation. The BMPs proposed in this plan to address the resource concerns are based on field inventory. Since inventory was not performed on every acre of private agricultural land, actual implementation may vary as site-specific plans are developed with agricultural operators. The primary TU for the Priest River watershed includes riparian areas impacted by agriculture.

Treatment Unit #1 - Riparian Areas
The riparian resources of the Priest River watershed vary from pasture and hayland vegetation to mixed woody and herbaceous riparian zones extending down from adjacent agricultural, residential, and forested areas. There are approximately 27 acres within this treatment unit, which consists of riparian zones impacted by agricultural areas. The acreage was calculated using the total length riparian area impacted, multiplied by a 100-foot wide buffer.

Riparian area degradation can occur as a result of livestock grazing and direct vegetative removal for facilitation of farming and ranching operations. Bare, exposed soil and unstable banks resulting from the lack of vegetation can contribute sediment to waterways through erosion and sediment delivery to water. Lack of vegetation also inhibits a stream's ability to filter excess pollutants flowing into the water body from surface runoff and reduces effective shade on the stream. Poorly functioning riparian zones can contribute to degraded habitat and increased water temperatures.

Varying levels of treatment are recommended for riparian areas, based on the level of impact observed during stream assessments. Combinations of riparian exclusion fence; riparian vegetation; livestock water gaps, hardened crossings, or offsite watering facilities will help restore the functioning condition of riparian areas. In locations where more severe riparian degradation and streambank erosion is occurring, streambank shaping, stabilization, and bioengineering can be applied to restore the condition of the streambanks and riparian vegetation.

RECOMMENDED BMPS AND ESTIMATED COSTS

The BMPs recommended for this implementation plan, in addition to those already scheduled, are broken down for Treatment Unit #1, Riparian Areas. Table 11 shows BMPs and associated costs. Costs are based on the NRCS 2008 Environmental Quality Incentive Program approved cost list.

Table 11. Recommended BMPs and estimated costs by subwatershed.

Subwatershed	BMP's	Amount (Unit)	Estimated Cost
Priest River	Heavy Use Area Protection	3,600 (sq ft)	$13,680
Blue Creek	Riparian Exclusion Fence	5,280 (feet)	$15,310
	Heavy Use Area Protection	2,000 (sq ft)	$7,600
	Riparian Forest Buffer	6 (acres)	$13,890
Ranger Creek	Riparian Exclusion Fence	1,200 (feet)	$3,480
	Heavy Use Area Protection	1000 (sq ft)	$3,800
	Riparian Forest Buffer	13.5 (acres)	$31,250
Sanborn Creek	Cross Fence	5,000 (feet)	EQIP Funded
	Pasture and Hayland Planting	60 (acres)	EQIP Funded
	Spring Development	1 (each)	EQIP Funded
	Pipeline	3,000 (feet)	EQIP Funded
	Troughs	3 (each)	EQIP Funded
	Nutrient Management	120 (acres)	EQIP Funded
	Pest Management	200 (acres)	EQIP Funded
	Livestock Crossing	1 (each)	CCRP Funded
East River-Main Stem	Riparian Exclusion Fence	4,700 (feet)	$13,630
	Channel Bank Veg.	1,300 (feet)	$3,550
	Heavy Use Area Protection	3,600 (sq ft)	$13,680

The estimated cost for implementation, excluding scheduled BMPs in the existing Sanborn Creek conservation plan, totals $119,870. This total is based on 2008 costs, and is likely to increase annually. Therefore, implementation within the next 3-5 years should be a priority.

Funding

Financial and technical assistance for installation of BMPs is needed to ensure success of this implementation plan. The Bonner Soil and Water Conservation District will actively pursue multiple potential funding sources to implement water quality improvements on private agricultural and grazing lands. Many of these programs can be used in combination with each other to implement BMPs. These sources include (but are not limited to):

CWA 319 –These are Environmental Protection Agency funds allocated to the Nez Perce Tribe and the State of Idaho. The Idaho Department of Environmental Quality (DEQ) administers the Clean Water Act §319 Non-point Source Management Program for areas outside the Nez Perce

Reservation. Funds focus on projects to improve water quality and are usually related to the TMDL process. The Nez Perce tribe has CWA 319 funds available for projects on Tribal lands on a competitive basis. Source: DEQ http://www.deq.idaho.gov/water/prog_issues/surface_water/nonpoint.cfm#management

Water Quality Program for Agriculture (WQPA) –The WQPA is administered by the Idaho Soil Conservation Commission (ISCC). This program is also coordinated with the TMDL process. Source: ISCC http://www.scc.state.id.us/programs.htm

Resource Conservation and Rangeland Development Program (RCRDP) –The RCRDP is a loan program administered by the ISCC for implementation of agricultural and rangeland best management practices or loans to purchase equipment to increase conservation. Source: ISCC http://www.scc.state.id.us/programs.htm

Conservation Improvement Grants – These grants are administered by the ISCC. Source: ISCC http://www.scc.state.id.us/programs.htm

PL-566 –This is the small watershed program administered by the USDA Natural Resources Conservation Service (NRCS).

Agricultural Management Assistance (AMA) –The AMA provides cost-share assistance to agricultural producers for constructing or improving water management structures or irrigation structures; planting trees for windbreaks or to improve water quality; and mitigating risk through production diversification or resource conservation practices, including soil erosion control, integrated pest management, or transition to organic farming. Source: NRCS http://www.nrcs.usda.gov/programs/ama/

Conservation Reserve Program (CRP) –The CRP is a land retirement program for blocks of land or strips of land that protect the soil and water resources, such as buffers and grassed waterways. Source: NRCS http://www.nrcs.usda.gov/programs/crp/

Conservation Technical Assistance (CTA) –The CTA provides free technical assistance to help farmers and ranchers identify and solve natural resource problems on their farms and ranches. This might come as advice and counsel, through the design and implementation of a practice or treatment, or as part of an active conservation plan. Source: local Conservation District and NRCS: http://www.nrcs.usda.gov/programs/cta/

Environmental Quality Incentives Program (EQIP): EQIP offers cost-share and incentive payments and technical help to assist eligible participants in installing or implementing structural and management practices on eligible agricultural land. Source: NRCS http://www.nrcs.usda.gov/programs/eqip/

Wetlands Reserve Program (WRP) –The WRP is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. Easements and restoration payments are offered as part of the program. Source: NRCS http://www.nrcs.usda.gov/programs/wrp/

Wildlife Habitat Incentives Program (WHIP) –WHIP is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land. Cost-share payments for construction or re-establishment of wetlands may be included. Source: NRCS http://www.nrcs.usda.gov/programs/whip/

State Revolving Loan Funds (**SRF) –**These funds are administered through the ISCC. Source: ISCC http://www.scc.state.id.us/programs.htm

Grassland Reserve Program (GRP) –The GRP is a voluntary program offering landowners the opportunity to protect, restore, and enhance grasslands on their property. Source: NRCS. http://www.nrcs.usda.gov/programs/GRP/

Conservation Security Program (**CSP) –**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. Source: NRCS http://www.nrcs.usda.gov

Grazing Land Conservation Initiative (**GLCI) –**The GLCI's mission is to provide 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. Source: http://www.glci.org/

HIP – This is an Idaho Department of Fish and Game program 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. Source: IDFG http://fishandgame.idaho.gov/cms/wildlife/hip/default.cfm

Partners for Fish and Wildlife Program in Idaho – This is a U.S. Fish and Wildlife program providing funds for the restoration of degraded riparian areas along streams, and shallow wetland restoration. Source: USFWS http://www.fws.gov/partners/pdfs/ID-needs.pdf

Outreach

Conservation partners in the Priest River watershed will use their combined resources to provide information about BMPs to agricultural landowners and operators to improve water quality. Newspaper articles, Bonner SWCD newsletter, watershed and project tours, landowner meetings, and one-on-one personal contact may be used as outreach tools. Outreach efforts will be coordinated with the other TMDL designated agencies where possible.

Outreach efforts will:

- provide information about the TMDL process
- supply water quality monitoring results
- accelerate the development of conservation plans and program participation
- distribute progress reports
- enhance technology transfer related to BMP implementation
- increase public understanding of agriculture's contribution to conserve and enhance natural resources
- improve public appreciation of agriculture's commitment to meeting the TMDL challenge, and
- identify and encourage the use of BMPs for private land management and recreation activities

Applications for technical and financial assistance will be solicited with emphasis in the Priest River watershed, through cooperation of all conservation partners. As assistance is requested from this area, high priority will be given to these and other applicants in areas critical to TMDL implementation. Assistance requests resulting in field visits allow direct contact with land managers and observation of the land. One-on-one time will be utilized to dispense information on water quality, BMPs, and available resources. Treatment applicable to the needs of the Priest River watershed will be the focus of discussions with landowners in the vicinity.

Monitoring and Evaluation

FIELD LEVEL

At the field level, annual status reviews will be conducted to insure that the contracts are on schedule and that BMPs are being installed according to standards and specifications. BMP effectiveness monitoring will be conducted on installed projects to determine installation adequacy, operation consistency and maintenance, and the relative effectiveness of implemented BMPs in reducing water quality impacts. This monitoring will also measure the effectiveness of BMPs in controlling agricultural nonpoint-source pollution. These BMP effectiveness evaluations will be conducted according to the protocols outlined in the Agriculture Pollution Abatement Plan and the ISCC Field Guide for Evaluating BMP Effectiveness.

The Revised Universal Soil Loss Equation (RUSLE) and Surface Irrigation Soil Loss (SISL) Equation are used to predict sheet and rill erosion on non-irrigated and irrigated lands. The Alutin Method, Imhoff Cones, and direct-volume measurements are used to determine sheet and rill irrigation-induced and gully erosion. Stream Visual Assessment Protocol (SVAP) and Streambank Erosion Condition Inventory (SECI) are used to assess aquatic habitat, stream bank erosion, and lateral recession rates. The Idaho OnePlan's CAFO/AFO Assessment Worksheet is used to evaluate livestock waste, feeding, storage, and application areas. The Water Quality Indicators Guide is utilized to assess nitrogen, phosphorus, sediment, and bacterial contamination from agricultural land.

WATERSHED LEVEL

At the watershed level, there are many governmental and private groups involved with water quality monitoring. The Idaho Department of Environmental Quality uses the Beneficial Use Reconnaissance Protocol (BURP) to collect and measure key water quality variables that aid in determining the beneficial use support status of Idaho's water bodies. The determination will tell if a water body is in compliance with water quality standards and criteria. In addition, IDEQ will be conducting five-year TMDL reviews.

Annual reviews for funded projects will be conducted to insure the project is kept on schedule. With many projects being implemented across the state, ISCC developed a software program to track the costs and other details of each BMP installed. This program can show what has been installed by project, by watershed level, by sub-basin level, and by state level. These project and program reviews will insure that TMDL implementation remains on schedule and on target. Monitoring BMPs and projects will be the key to a successful application of the adaptive watershed planning and implementation process.

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