

Lower West Branch of the Priest River Agricultural TMDL Implementation Plan



Prepared by
Idaho Soil Conservation Commission
In Cooperation with
Bonner Soil and Water Conservation District
Idaho Association of Soil Conservation Districts
Natural Resources Conservation Service
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I. Introduction

The Idaho Soil Conservation Commission (ISCC) is the designated management agency in Idaho for managing agricultural non-point 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 (CIG) 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 conservation partnership to reach common goals and successfully deliver conservation programs in Bonner County.

A. Conservation Partnership

Local soil and water conservation districts, the ISCC, and NRCS have joined together. Each agency has its own responsibilities and recognizes the need to coordinate efforts to successfully implement conservation programs. This working relationship is referred to as the *conservation partnership*. In Bonner County, the SWCD/NRCS Field Office consists of the Bonner SWCD, NRCS, and IASCD/ISCC staff.

- **Bonner Soil and Water Conservation District** – Conservation districts are units of local government led by an elected board of supervisors. Utilizing input from other agencies and the public, conservation districts set the priorities that focus conservation efforts locally. They promote clean water and productive soil by assisting agricultural landowners and operators with effective management of natural resources.
- **Idaho Association of Soil Conservation Districts** – IASCD is a nonprofit association of Idaho's 51 soil and water conservation districts cooperating in the management of Idaho's natural resources. The IASCD was organized to provide a unified voice for conservation at the state level. Its members work closely with the ISCC on problems of policy and resource concerns. IASCD participates in the conservation partnership in this capacity and provides staff support to conservation districts throughout the state under ISCC supervision.
- **USDA – Natural Resource Conservation Service** – NRCS is a non-regulatory federal agency that works with private landowners on a request basis. NRCS assists the ISCC, conservation districts, landowners and operators, and others in conserving natural resources. Guided by local district priorities, NRCS delivers technical and financial assistance to landowners and operators through voluntary programs to achieve conservation goals. NRCS offers leadership and technical assistance to the ISCC, IASCD, conservation district staff, and other agencies, as requested. NRCS administers a number of Farm Bill programs that provide cost share to eligible participants to facilitate the implementation of Best Management Practices.

The effects of agricultural practices on water quality vary depending on the management practices and location of particular operations in relation to surface and ground water. The conservation partnership assists landowners in implementing Best Management Practices (BMPs) that minimize negative impacts to water quality. The partnership is committed to targeting watersheds listed as water quality limited and prioritizing projects occurring in degraded watersheds. The BSWCD's Five Year Plan lists water quality as one of its top priorities, including TMDL Implementation.

B. Purpose

The purpose of this agricultural implementation plan is to assess agricultural activities occurring in the Idaho portion of the watershed, identify critical areas contributing to excess sediment loads in the Idaho portion of the Lower West Branch of the Priest River (Lower West Branch), and present treatment alternatives for these areas. The agricultural portion of the Lower West Branch TMDL Implementation Plan outlines an adaptive management approach for implementation of Resource Management Systems (RMS) and BMPs to meet the requirements of Priest River Subbasin Assessment and TMDL (IDEQ 2001). Kalispell Creek has been purposely excluded from this agricultural plan. Justification for this action stems from the fact that in 2003, most of the Kalispell Creek agricultural land lying within Bismark Meadows was enrolled into the Wetlands Reserve Program (WRP). This federal program focuses on restoring wildlife habitat, hydrology, and riparian plant communities to predevelopment wetland conditions. This outstanding NRCS locally-led effort provides sound justification for excluding Kalispell Creek from this agricultural implementation plan.

The goal of this plan is to complement other efforts in restoring and protecting beneficial uses in the Lower West Branch watershed by reducing the amount of agricultural non-point source pollution entering the watershed. The major objective of this plan will be to reduce the amount of sediment entering the watershed from agricultural sources and increase riparian shading where feasible. Agricultural pollutant reductions will be achieved through the application of BMPs developed and implemented onsite with individual landowners on a voluntary basis. In addition to on-the-ground improvement projects, efforts will be made to educate land users in the Lower West Branch on the effects of agricultural activities on water quality. This will encourage participation in implementation efforts, ensure long-term maintenance of BMPs, and increase awareness of water quality issues. Installed BMPs will be monitored for effectiveness and evaluated in terms of pollutant reduction.

II. Background

The Lower West Branch watershed lies south-southwest of Priest Lake, and drains southeast into the Lower Priest River, a few miles north of the community of Priest River, Idaho. The Lower West Branch (Waterbody Identification Number 17010215-030) is a 4th order tributary flowing 25 miles in length, and is located in both Bonner County, Idaho and Pend Oreille County, Washington (Figure 1). The Lower West Branch was listed for unidentified pollutants in the 1994/1996 303(d) list. The entire watershed is roughly 57,000 acres. Average precipitation ranges from 40 inches in the higher elevations to 32 inches at the mouth. Nearly one half of the annual precipitation comes as snow with a snowmelt dominated runoff pattern.

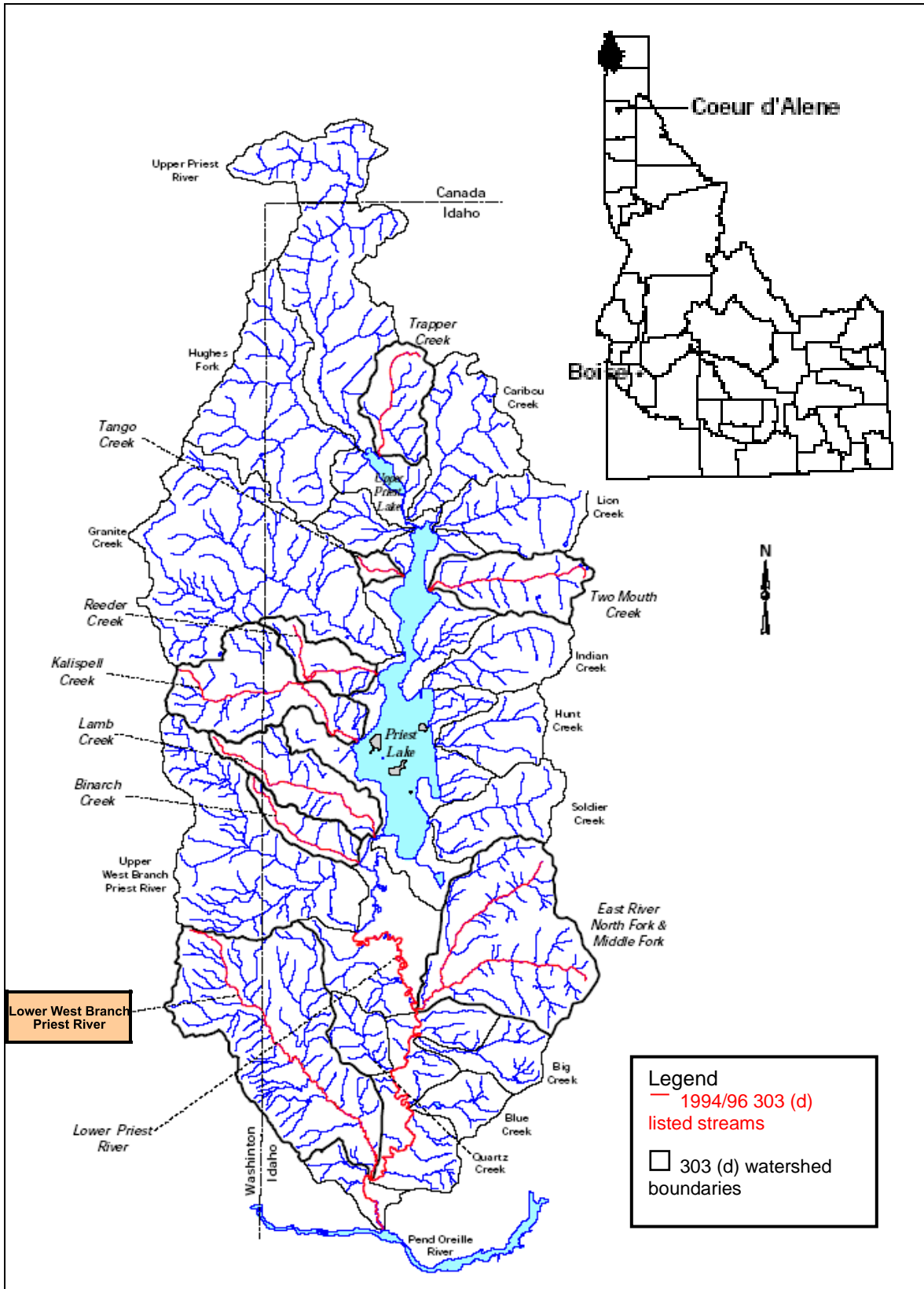


Figure 1. Lower West Branch watershed location (adapted from IDEQ 2001).

Elevation ranges from 5,600 feet atop South Baldy Mountain, to an elevation of 2,100 feet at the mouth. The forested areas contain conifers dominated by Douglas fir, grand fir, and western red cedar. Riparian vegetation is a mix of alder and willow with some conifer overstory. Wetlands are common along stream courses. Flatland areas surrounding Lower West Branch and its tributaries have historically been converted for agricultural use.

A. Land Ownership and Use

The Lower West Branch watershed is 56,835 acres in size, and approximately two-thirds of the watershed is in Idaho. Land ownership in the Lower West Branch watershed includes federal, state, and private land. According to the *Priest River Subbasin Assessment and Total Maximum Daily Load* (IDEQ 2001), land ownership is as follows (includes both WA. and ID.):

- Federal land – 42,745 acres
- State land – 725 acres
- Private land – 13,365 acres

For the Idaho portion of Lower West Branch watershed, private land totals approximately 9,860 acres. The United States Forest Service (USFS) is the largest land manager in the Lower West Branch watershed with approximately 24,000 acres. Railroad and lumber companies own approximately 1,000 acres or less and the state manages approximately 500 acres. Land ownership in the Idaho portion of the watershed is shown in the Lower West Branch watershed land management map, Figure 2.

Land use in the Lower West Branch watershed is dominated by private (non-commercial) forest land. Hayland and grazing are typical agricultural uses of the land, totaling approximately 1,200 acres (Figure 3).

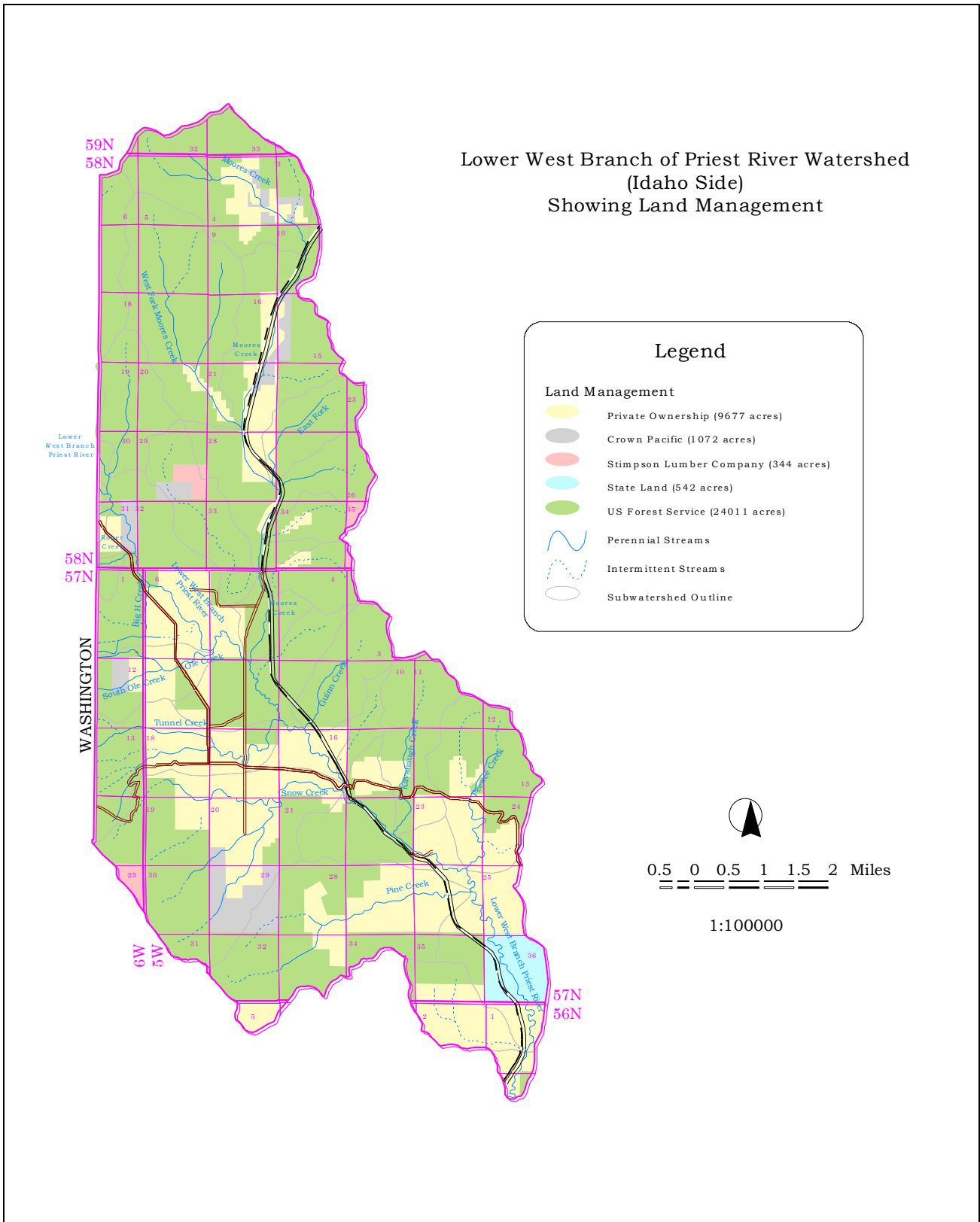


Figure 2. Land management in the Lower West Branch watershed.

B. Agricultural Land 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 Lower West Branch watershed occurring in the last five years (2002 – 2007) are summarized in Table 1.

Table 1. NRCS Field Office Accomplishments in the Lower West Branch.

Project	Dates	Status	Comments
5,900 feet riparian fencing – Moore's Creek	2002	Complete – part of larger plan in progress	2,800 feet of stream treated
Cattle exclusion, 50-foot buffer on each side of stream for 2,800 feet of stream length – Moore's Creek	2002	Complete – part of larger plan in progress	Bank stabilization already observable
Reduce cattle impacts to riparian zone – Tunnel Creek	2005, 2007	On-going – part of larger plan in progress	Watering facility and stream crossings

C. Water Quality Monitoring

Table 2 below summarizes monitoring data collection efforts in the Lower West Branch of the Priest River Subbasin since 1986 (IDEQ, 2001). In 2000, the Kootenai-Shoshone Soil and Water Conservation District conducted a bank erosion survey for DEQ on one and one half miles of the main stem of the Lower West Branch. A one mile reach on the lower main stem produced an erosion rate of 51 tons/stream mile/year. The other half mile was assessed on the middle main stem and yielded an erosion rate of 33 tons/stream mile/year. DEQ used these assessed reaches to extrapolate an overall in-stream bank erosion sediment load of 851 tons/year within the Lower West Branch.

Table 2. Monitoring data sources for Lower West Branch Subbasin

Period of Record	Lower West Branch Sampling and Monitoring Programs
1994-2000	DEQ BURP: habitat and macro-invertebrates (4 sites)
1994-2000	DEQ BURP: electro-fishing
1986-1999	IDFG, USFS, IDL, USGS: snorkel or electro-fishing
1997-2000	DEQ, IDL: temperature monitoring
1990-1999	DEQ, USGS: fecal coliform sampling
1990-1999	USFS Priest Lake Ranger District: field surveys, notes and measurements
1992	DEQ Use Attainability assessments: habitat
1995-2000	IDL Cumulative Watershed Effects assessment: habitat
2000	Stream bank erosion survey: KSSWCD

III. Problem

Land use in the Lower West Branch watershed has increased sediment input into the system and decreased riparian function and shading. Agricultural activities contribute sediment to water bodies through runoff and erosion. Runoff from pasture and hayland contribute to the sediment load in water bodies. Agricultural activities that encroach upon the riparian zone as well as direct livestock impact to stream banks and riparian vegetation additionally reduce the filtering and shading capacity of the riparian zone and increase stream bank erosion. Where tributaries have been historically straightened, flow velocities have increased in-stream erosion and channel down cutting.

Table 3 outlines the beneficial uses impacted by these land use practices in the Lower West Branch watershed. Because of suppressed salmonid populations and high sediment input into the Lower West Branch, cold water biota and salmonid spawning are not fully supported. The TMDL analysis also cites poor quality in-stream habitat as an additional concern in the watershed. Lack of in-stream cover, poor quality pools, and lack of riparian cover are of primary concern (IDEQ 2001). These factors will be included in conservation planning efforts on agricultural lands.

Table 3. Beneficial uses for 303(d) listed stream segments in the Lower West Branch watershed.

Water-Body	Aesthetic	Cold Water Aquatic Life		Recreation		Water Supply			Wildlife Habitat
		CWB	SS	Primary	Secondary	Domestic	Agricultural	Industrial	
Lower West Branch	D	D	E	D	D	E	D	D	D
		Not Fully Supported	Not Fully Supported						

Beneficial Uses Key: CWAL = cold water aquatic life; CWB= cold water biota; SS = salmonid spawning; PCR = primary contact recreation; SCR = secondary contact recreation; SRW = special resource water
 D=designated; E=existing

The *Priest River Subbasin Assessment and Total Maximum Daily Load* analysis calculated an annual sediment load above natural levels for private lands in the Idaho portion of the watershed. The load was calculated for various sources of sediment and is summarized in Table 4.

Table 4. Estimated sediment loads originating from private lands in the Idaho portion of the Lower West Branch watershed (IDEQ 2001).

Sediment Source	Sediment Load (tons/year)
Hay and Grazing Lands	155
Forested Areas	196
Stream Bank Erosion	150
Unpaved Roads	275
Failures at Roads	355
Total	1,131

The existing sediment load is 1,131 tons/year and the sediment load allocation for private agriculture and forested lands in the Idaho portion of the watershed is 521 tons per year. An annual sediment load reduction of 610 tons per year is required (IDEQ 2001). Estimated sediment load from hay and grazing land comprises approximately 14% of the total of the load from private lands in Idaho, and stream bank erosion comprises another 13% of the total load. Given these percentages, the sediment reduction goal for private agricultural lands in the Idaho portion of the Lower West Branch watershed is 165 tons per year (27% of 610 tons per year).

A. Agriculture in the Lower West Branch Watershed

Agriculture in the Lower West Branch watershed directly impacts riparian areas because of grazing near streams, encroachment from haying, and historical channelization. Wetland areas and floodplains in these valleys were historically ditched and drained and tributary channels were straightened in order to facilitate hay production. These factors, combined with direct livestock access to stream channels, have resulted in streambank erosion, erosion of the stream channel itself, and overall degradation of the riparian zone. Moores Creek, Tunnel Creek, and Snow Creek have been identified in the TMDL analysis as impacted by haying and grazing activities for the Idaho portion of the watershed (IDEQ 2001). These target areas, as well as smaller portions of Ole Creek, were identified by the conservation partnership in 2004 based on field observations and stream inventory evaluations (Davis, J.L., Hogen, M., Stewart, J. 2004).

Agricultural activities in the Lower West Branch watershed occur primarily in somewhat flat valleys in tributary watersheds, with smaller areas of agricultural land occurring along the main stem of the river, see agricultural land uses map, Figure 3. Activities include hay production, livestock grazing in pastures and forested areas, and livestock feeding operations. Pasture and hayland condition was not assessed for each agricultural field for this implementation plan. In general, haylands are in good to excellent condition, and if

fertilized, at a rate well below recommended. Pasture condition can vary depending stocking rates and type of livestock. The condition of horse pastures tends to rate fair to poor, due to fewer acres for the number of horses. On the other hand, cattle pastures tend to be in better condition with fewer animals on more acres.

Little information exists on soils in the Lower West Branch watershed, but field observations from surveys conducted in 2004 by the conservation partnership note lacustrine deposit soils in these areas, consisting of fine clay, silt, and sand materials.

Soil mapping activities performed by NRCS soil scientists in a portion of the Tunnel Creek watershed documented Hoodoo silt loam, Mission silt loam, Odenson silt loam, and Pywell-Hoodoo complex, ranging from 0-12 percent slopes, in the valley area (NRCS Sandpoint Field Office unpublished notes). These soils are characterized by very slow to moderate permeability, very poorly to somewhat poorly drained, and a seasonal high water table late winter to early spring. This presents limitations to hay and grazing activities, as these soils are susceptible to compaction until drained sufficiently (SCS 1982).

The impermeable layers that form perched water tables increase the amount of precipitation that enters water bodies as runoff instead of groundwater. Surface runoff can carry pollutants into water bodies. In cases where manure or other nutrients are applied to a field in winter or spring or where manure is deposited in large amounts in the fall; spring runoff can carry much of the material into water bodies. Manure contains bacteria and nutrients both. In cases where overgrazing occurs, soil compaction can further increase runoff versus infiltration. In addition, overgrazing can leave inadequate vegetative cover on the land surface, reducing the ability of the land to hold soil in place. These issues are especially significant where pastures are adjacent to riparian areas.

Livestock operations in the Lower West Branch consist of livestock grazing and small seasonal feeding operations. No known CAFOs are present in the watershed. Grazing cattle in the Lower West Branch watershed is primarily seasonal, beginning in the spring and ending in the fall. Cow/calf and feeder cattle predominate.

Grazed private forests are not delineated in this plan due to difficulty in assessing this land use. The Idaho Department of Lands (IDL) develops management plans for forested lands in their jurisdiction. IDL is the designated management agency for private forestland. In the event that these agencies desire support in developing grazing plans in grazed forest areas, the conservation partnership is available to provide assistance. Grazing in privately-owned forested areas where jurisdiction is unclear or overlapping will be addressed cooperatively between the conservation partnership and IDL.

Definitions

- According to the Environmental Protection Agency, an **Animal Feeding Operation (AFO)** is a facility that does not sustain vegetation or plant residue in the normal growing season (i.e. pasture) over any part of the facility and maintains animals for at least 45 days total within a 12-month period.
- An AFO that is determined by the Environmental Protection Agency (EPA) to be a significant pollutant contributor (to ground or surface water) is designated as a **Concentrated Animal Feeding Operation (CAFO)**. These facilities must apply for National Pollutant Discharge Elimination System (NPDES) Permit coverage. In Idaho, NPDES permits are administered by EPA.
- **Winter Feeding Area** is the term used by NRCS to refer to operations where livestock are confined and fed in a defined area but some vegetation is maintained on the site. Either the concentrations of animals and/or the duration of confinement is not great enough to kill vegetation or annually-seeded cover is grown on the site.

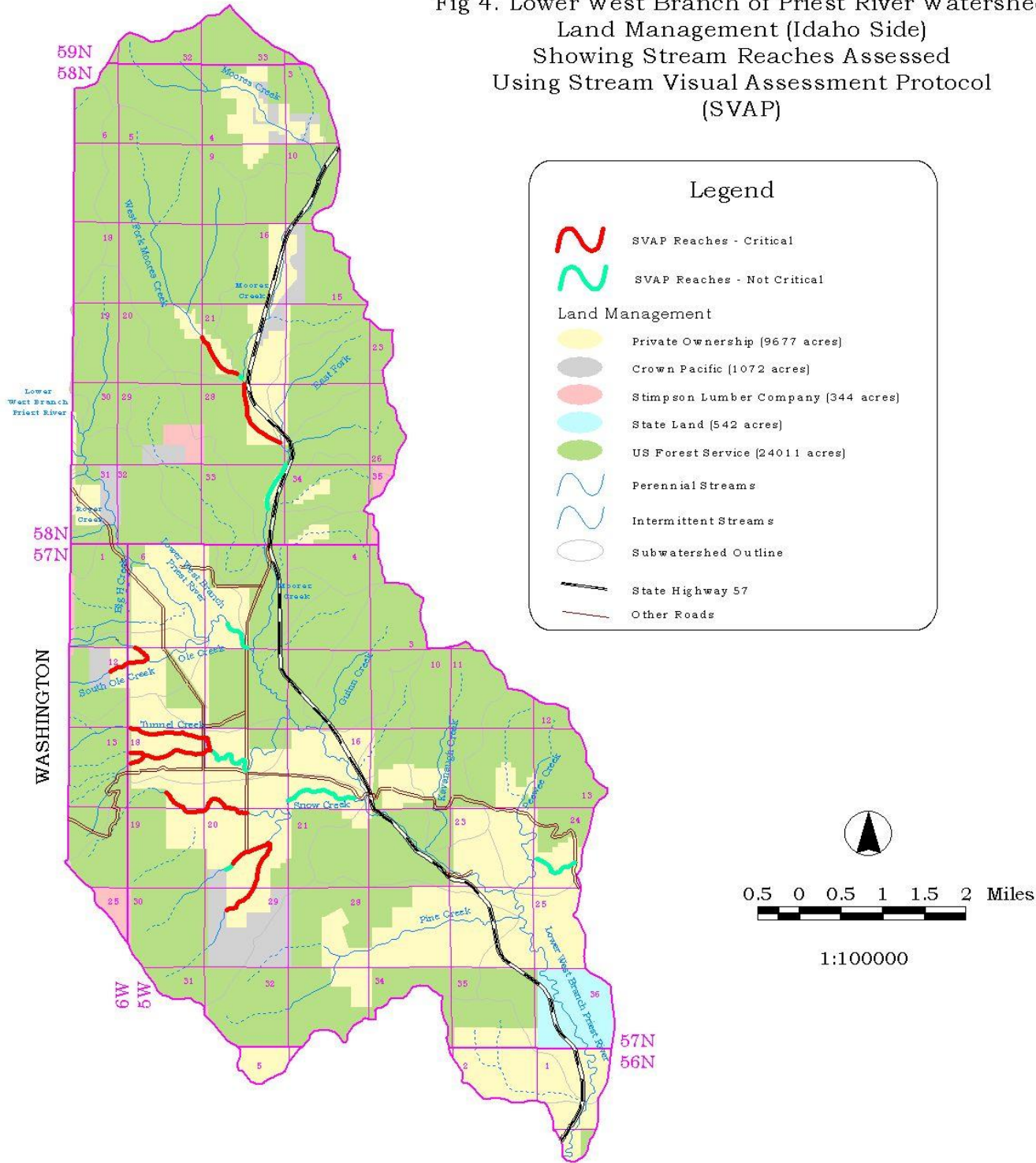
Preliminary observations from field visits performed during the summer of 2004 identified six potential winter feeding areas, including horse and cattle operations. Some of these were confined along tributaries to the Lower West Branch.

B. Riparian Inventory and Evaluation

Stream Visual Assessment Protocol (SVAP), an NRCS protocol for assessing the condition of a stream segment, was performed on private lands along the priority stream segments during the summer of 2004. The stream reaches assessed are shown in Figure 4. The assessment areas were selected based on land ownership, land use, and landowner permission. Assessments were completed by interdisciplinary teams consisting of representatives from NRCS, ISCC, and IASCD (SVAP Team Members, 2004).

Assessments included observations of channel conditions, hydrologic alterations, riparian zones/canopy cover, stream bank stability, water clarity, nutrient enrichment, barriers to fish movement, in-stream fish and invertebrate habitat, pools, and manure presence. Overall stream condition ratings were obtained by combining scores from these categories. Stream segments were assigned a rating of excellent, good, fair, or poor, based on the overall score. Channel measurements, photo points, eroding banks, and riparian species are also recorded. The teams noted any observed problems and developed recommendations to address these; where technically, economically, and socially feasible.

Fig 4. Lower West Branch of Priest River Watershed
 Land Management (Idaho Side)
 Showing Stream Reaches Assessed
 Using Stream Visual Assessment Protocol
 (SVAP)



Recommendations for agricultural reaches from these assessments were utilized to develop this plan. Summaries of the all reaches, including recommendations, were delivered to land managers by the Bonner conservation partnership. Land managers with fair to poor stream segment ratings were contacted personally to discuss potential development of conservation plans to address observed problems. Discussions with these land managers refined the focus of this implementation plan. The practices listed in this plan are typically 100% implemented in a 5-year time frame, although practices may be added or changed based on site specific plans as they are developed.

A total of 31 reaches were assessed, totaling 45,305 feet or 8.6 miles of stream length. The ratings for all reaches are summarized in Table 5.

Table 5. 2004 Stream Assessment Summary.

Rating	Length of Stream (ft)
Excellent	2,640
Good	11,480
Fair	15,880
Poor	15,305
Total =	45,305

Many observed problems were associated with disturbance or removal of riparian vegetation, insufficient riparian buffer width, lack of woody vegetation in the riparian area, lack of pools, and lack of other aquatic habitat. Stream channel alterations, unrestricted livestock access to the riparian area, and direct riparian vegetation removal was commonly observed during stream assessments.

C. 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 West Branch 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 6.

Table 6. Federally-listed Threatened and Endangered Species occurring in Bonner County, Idaho (NRCS Field Office Technical Guide)

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

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

IV. Implementation Priority

Critical areas will be prioritized for BMP implementation based on a tiered approach to target treatment units as follows:

Tier 1 – Riparian corridor and adjacent fields, having a direct and substantial influence on the tributary of concern. Treatment units in this tier will receive high priority.

Tier 2 – Fields in the sub-watershed with an indirect, yet substantial influence on the tributary of concern. Treatment units in this tier will receive secondary priority.

Tier 1 designates highest priority for implementation, and areas falling within this tier will be selected for treatment of TMDL pollutants. Areas falling under Tier 2 will not be addressed for treatment in this plan.

The agricultural portion of this implementation plan encompasses watersheds identified as high priority in the TMDL analysis, by the Lower West Branch Watershed Advisory Group (WAG), and the conservation partnership. The areas identified for treatment include Moores Creek, Snow Creek, Tunnel Creek, and Ole Creek. This does not preclude land users in the entire Lower West Branch area from receiving assistance. Rather, it just puts priority on areas in most need of help in the event that resources are limited.

A. Critical Areas

Agricultural areas that have the potential to contribute excess pollutants to waterways are defined as “critical areas.” Critical areas prioritized for this plan were identified during field observations in July/August 2004. The following is a list of critical areas inventoried within the watershed:

- Unstable and eroding stream banks primarily caused by grazing.
- Pastures adjacent to stream corridors, where grazing has not been excluded from the riparian area.
- Hayland adjacent to stream corridors that lacks adequate buffering from harvest and fertilizer application.

Based on the field observations, approximately 28,435 feet of agricultural riparian area (adjacent to hay and/or pasture land), was identified as critical on Moores Creek, Snow Creek, Tunnel Creek, and Ole Creek. In addition, 1,430 acres of pasture and hayland, and six livestock winter feeding areas (cattle and horses) were inventoried. At least three of the feeding areas have direct access to waterways within the Lower West Branch watershed. Table 7 summarizes agricultural critical areas for pasture acres, hayland acres, and length of riparian area impacted.

Table 7. Agricultural Critical Areas

Priority Waterbody	Pasture (Acres)	Hayland (Acres)	Length of Riparian Area Impacted (ft)
Moores Creek	62	31	8,240
Snow Creek	116	170	8,470
Tunnel Creek	39	303	8,455
Ole Creek	34	79	3,270
Totals	251	583	28,435

Agricultural critical areas are prioritized for treatment based on their location relative to tributaries entering the Lower West Branch and the potential for pollutant transport and delivery to its water. Primary operations of concern are livestock operations with either unrestricted access to riparian areas and/or contributing direct runoff from feedlots,

overgrazed pastures, and pasture or hayland that encroaches upon riparian areas. Agricultural critical areas for this implementation plan are shown in Figure 5.

B. Treatment and Costs

Agricultural critical areas of the Lower West Branch watershed have been divided into two Treatment Units (TUs). The TUs describe critical areas with similar land use areas, soils, productivity, resource concerns, and treatment needs. The TUs are based on observations from the SVAP assessment mentioned previously and are used to formulate alternatives for solving identified problems. Treatment Units for the Lower West Branch watershed include Riparian Areas and Pasture/Hayland. These TUs are described below. Three livestock feeding operations (operations that involve providing livestock with supplemental feed in addition to grazed vegetation) were identified during stream assessment activities. Recommended BMPs included in Treatment Units 1 and 2 apply to concerns in these areas.

Agricultural BMPs are voluntary in nature and, therefore, rely on operator participation. Implementation in the form of education, outreach, inventory, planning, and BMP installation is ongoing. Resources will continue to be directed at the Lower West Branch watershed with added emphasis.

Treatment Unit #1 - Riparian Areas

The riparian resources of the Lower West Branch watershed vary from pasture and hayland vegetation to mixed woody and herbaceous riparian zones extending from adjacent agricultural, residential, and forested areas. There are approximately 65 acres within this treatment unit, which consists of riparian zones impacted by agricultural areas (this acreage estimate includes approximately four acres of riparian area that was not inventoried, as access to the property was denied). The acreage was calculated from the estimated impacted stream length with a 100-foot wide buffer (measured from the center of the channel extending out 50 feet each side).

Riparian areas in the prioritized areas of the Lower West Branch watershed lack woody vegetation and perennial grasses in many of the surveyed reaches. Riparian area degradation has occurred as a result of livestock grazing, direct vegetative removal for facilitation of farming and ranching operations, and in some cases the manipulation of the stream channel itself. 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 additionally result in degraded habitat and increased water temperatures.

Treatment recommendations for riparian areas vary based on the level of impact observed during stream assessments. Combinations of riparian exclusion fence, riparian vegetation plantings, livestock water gaps, hardened crossings, or offsite watering facilities will help restore the functioning condition of riparian areas. Table 8 below summarizes BMPs and associated costs for improvement projects in the Lower West Branch watershed. The

practice amount needed was estimated based on stream survey measurements and initial discussions with landowners. Final planned amounts may vary based on measured amounts needed during development of individual conservation plans. Cost per unit is based on an approved cost share list associated with the Lower West Branch Tributaries Water Quality Improvement Project, sponsored by the Bonner SWCD and funded through the ISCC's Water Quality Program for Agriculture (WQPA).

Fig 5. Lower West Branch of Priest River Watershed
(Idaho Side)
Showing Agricultural Critical Areas

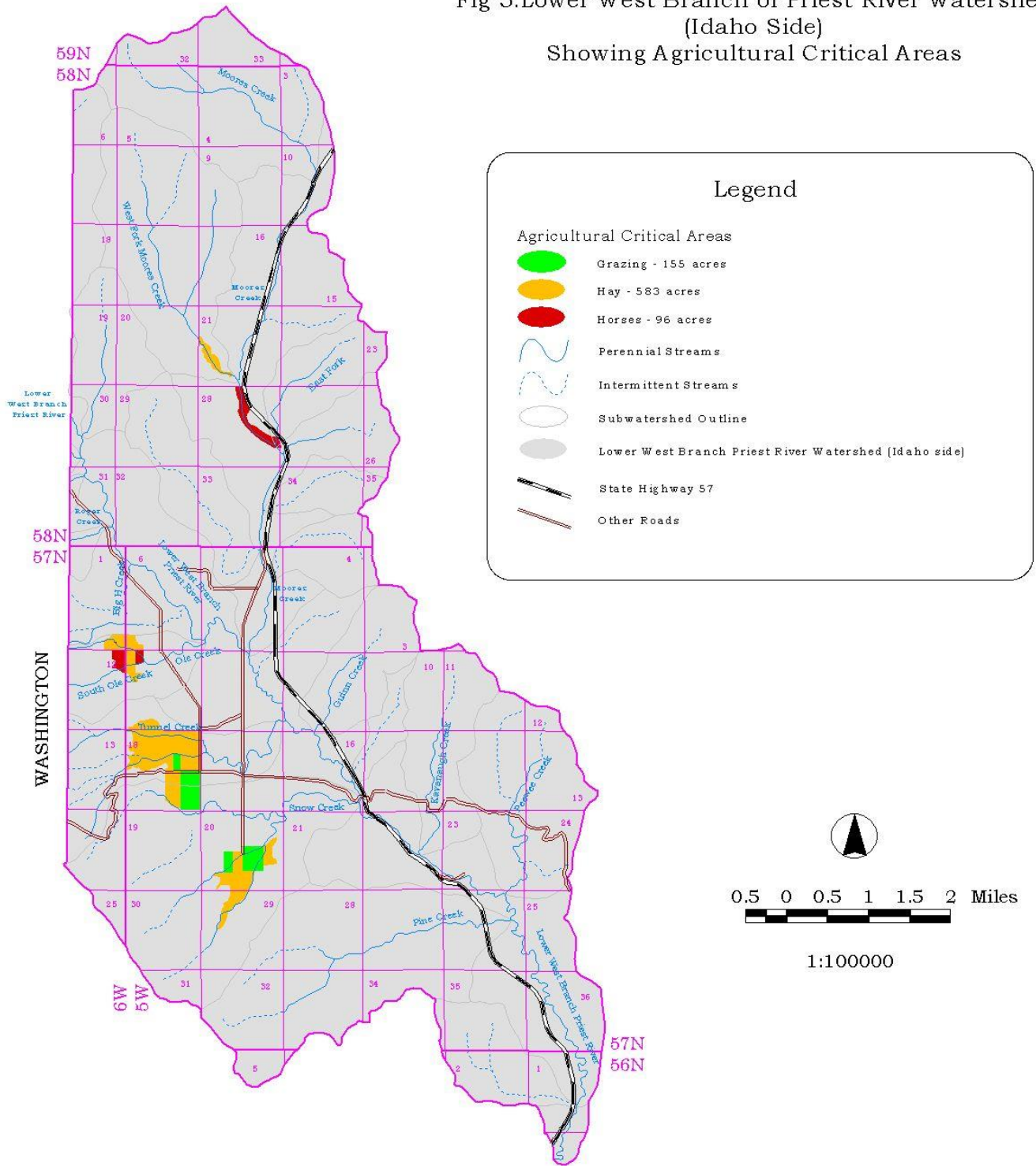


Table 8. Best Management Practices for Treatment Unit #1.

BMP	Amount Planned	Unit Cost	Estimated Cost
Riparian Exclusion Fencing	30,825 feet	\$2.50	\$77,063
Riparian Forest Buffer	25.7 acres	\$483*	\$12,413
Water Gaps	9 each	\$1,500	\$13,500
Hardened Crossings	6 each	\$2,700	\$16,200
Stream Crossings	4 each	Job estimate	\$30,800
Stream Habitat Improvement	1 each	Job estimate	\$400
Tree and Shrub Establishment	0.7 acre	\$421	\$295**
Channel Vegetation	1.0 acre	\$3000	\$3,000
Total			\$153,671

*This amount reflects an *average* cost per acre, based on rates included in an existing CCRP contract and an approved cost-share rate for future planned buffers through the Bonner SWCD's 2005 WQPA proposal.

**This amount and the associated amount planned are from an existing contract. Any future planned tree and shrub establishment cost will be determined by the appropriate cost list at the time of planning.

Treatment Unit #2 – Pasture/Hayland

There are 834 acres of pasture and hayland in this treatment unit. The majority of the hay and pasture soils in this treatment unit are silt loam and somewhat poorly to very poorly drained. Cropping systems consist primarily of 5-8 years grass hay in rotation with small grains as hay or silage for 1 to 2 years (Stewart 2005).

In cases where overgrazing occurs, soil compaction can increase surface runoff versus infiltration. In addition, overgrazing can leave inadequate vegetative cover on the land surface, reducing the ability of the land to hold soil in place. Surface runoff not only has the potential to carry sediment into stream channels, but increased runoff, as opposed to infiltration, can also increase peak flows and associated stream channel erosion. These issues are especially significant where pastures are adjacent to riparian areas and surface water. Riparian area treatment was summarized in Treatment Unit #1 above. The BMPs for Treatment Unit # 2 are in addition to BMPs for riparian areas. Table 9 summarizes potential BMPs and associated costs for Treatment Unit #2. The practice amount was estimated based on stream survey measurements and initial discussions with landowners. Final planned amounts may vary based on measured amounts needed during development of individual conservation plans. Cost per unit is based on an approved cost share list associated with the Lower West Branch Tributaries Water Quality Improvement Project, sponsored by the Bonner SWCD and funded through the ISCC's WQPA.

Table 9. Best Management Practices for Treatment Unit #2.

BMP	Amount Planned	Unit Cost	Estimated Cost
Cross Fencing (Grazing Mgmt.)	1,650 feet	\$2.50	\$4,125
Electric pump	1 each	\$1,150	\$1,150
Heavy Use Area Protection	90 feet	\$2.50	\$225
Livestock Watering Facility	5 each	\$1,800*	\$9,000
Pasture and Hay Planting	40 acre	\$125	\$5,000
Pest Management	43 acre	\$40	\$1,720
Pipeline	1,500 feet	\$2.10	\$3,150
Prescribed Grazing (3 years)	251 acres	\$5.00	\$3,765
Roof Runoff Structure	1 each	Job estimate	\$900
Waste Storage Facility	1 each	Job estimate	\$1,120
Well for Livestock Water	1 each	Job estimate	\$10,000
Total			\$40,155

*The unit cost is based on an average cost of different facility types (nose pumps, troughs, tanks, etc.).

V. 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):

Avista Utilities – Local natural resource improvement project funding is available through the Clark Fork Settlement Agreement. This was part of the Clark Fork River Project relicensing, and is intended to mitigate for impacts of continued operation of Noxon Rapids and Cabinet Gorge Dams in the watershed. Source:

www.avistautilities.com/resources/hydro/clarkfork/default.asp

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 (IDEQ)

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: IDEQ http://www.deq.idaho.gov/water/prog_issues/surface_water/nonpoint.cfm#management

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

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 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>

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/>

Habitat Improvement Program (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>

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>

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

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>

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/>

VI. Outreach

Efforts to educate land users about the effects of management practices on water quality will be emphasized in the Lower West Branch watershed. Because the Lower West Branch watershed has impaired beneficial uses, the conservation partnership will provide technical and financial assistance to landowners in the watershed through one-on-one assistance with landowners, and in conjunction with other agencies. Periodic news releases and community activities, such as the Bonner County Fair, will be utilized to disseminate information on the status of the Lower West Branch watershed as well as the Priest River Subbasin as a whole. The Bonner SWCD publishes and distributes a quarterly newsletter to Bonner County residents. This newsletter is also available on the Bonner SWCD's website. The newsletter has included information on the Lower West Branch watershed and on assistance available to landowners through the Sandpoint Field Office. This tool will continue to be utilized to deliver water quality and conservation information to landowners in the Lower West Branch watershed.

Applications for technical and financial assistance have been, and will continue to be, solicited with emphasis in the Lower West Branch watershed. 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. Treatments applicable to the needs of the Lower West Branch watershed will be the focus of discussions with landowners in the vicinity.

VII. Evaluation and Monitoring

BMP evaluation is done in conjunction with conservation plan and program contract implementation. Individual conservation plans will be evaluated to verify that BMPs are properly installed, maintained, and working as designed. An October 2003 publication by ISCC and IDEQ, *Idaho Agricultural Best Management Practices: A Field Guide for Evaluating*

BMP Effectiveness, provides the specifications and protocol for BMP evaluation to be used by field staff.

Monitoring for pollutant reductions from individual projects consists of spot checks, annual reviews, and evaluation of advancement toward reduction goals. Annual status reviews are typically done within program contracts to ensure compliance with contract rules. These reviews are significant to ensure sound decision-making and adaptation of implementation priorities and focus. The results of these evaluations are used to recommend any necessary adjustments to continue meeting resource objectives. Where riparian improvement projects are implemented in the Lower West Branch watershed, effective shade will be monitored in conjunction with annual reviews.

Where conservation plans are developed in cooperation with the Bonner SWCD, progress is tracked during the life of a program contract. Local tracking is assisted by NRCS and ISCC agency program specialists, where cost-share programs/projects are active. Where cost-share programs are not used, tracking is up to the local field office.

VIII. References

Dansart, W., 2004-2008. GIS Mapping, Figures 2-5. Idaho Soil Conservation Commission, 220 East 5th, Room 212A, Moscow, Idaho.

Davis, J.L., Hogen, M., Rothrock, G., Stewart, J. 2004. Visual field inventory of observed agricultural land use. Idaho Association of Soil Conservation Districts. NRCS Field Office, Sandpoint, Idaho.

Idaho Division of Environmental Quality (IDEQ - currently Idaho Department of Environmental Quality). December 1999. Idaho Nonpoint Source Management Plan. Boise, Idaho.

Idaho Department of Environmental Quality (IDEQ). October 2001. Priest River Subbasin Assessment and Total Maximum Daily Load. IDEQ Coeur d'Alene Regional Office.

Resource Planning Unlimited (RPU) March 2003. Idaho Agricultural Pollution Abatement Plan. Sponsored by Idaho Soil Conservation Commission and Idaho Department of Environmental Quality. Boise, Idaho.

Soil Conservation Service (SCS) November 1982. Soil Survey of the Bonner County Area, Idaho. In cooperation with the University of Idaho, College of Agriculture, and the Idaho Soil Conservation Commission.

Stewart, Jeff. Personal communication February 1, 2005. District Conservationist. USDA Natural Resources Conservation Service. Sandpoint Field Office, Idaho.

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