

**Lakes and Streams Located on or Draining
to the Rathdrum Prairie (17010305)
Agricultural TMDL Implementation Plan
(Draft)**



**Prepared by
Idaho Soil Conservation Commission**

**In Cooperation with
Kootenai-Shoshone Soil and Water Conservation District
Idaho Association of Soil Conservation Districts
Natural Resources Conservation Service**

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Introduction

The agricultural component of the Lakes and Streams Located on or Draining to the Rathdrum Prairie 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 TMDL, as written and approved in 2001. Implementation activities will be phased in on a sub-watershed basis due to the size and complexity of the watershed that drains to the Rathdrum Prairie. Agricultural sub-watersheds include Hauser Lake, Hayden Lake, Twin Lakes, and their tributaries.

The goal of this plan is to assist and/or complement other watershed stakeholders in restoring and protecting beneficial uses for 303(d) listed stream segments. Since the TMDL was written using the 1998 303 (d) list, it has been included in the following table along with the current 2002 Integrated 303 (d)/ 305 (b) list. The impaired lake and stream segments, within HUC 17010305, have been summarized in Table 1 (IDEQ, 1998 and 2005).

Table 1: Impaired Lake and Stream Segments (HUC 17010305)

Water Body	Water Quality Limited Segment Number	IDEQ 1998 303 (d) List (Pollutants)	IDEQ 2002 Integrated 303 (d)/305 (b) Report (Pollutants)	Boundaries
Rathdrum Creek	3560	Nutrients, Sediment	Not Listed	Twin Lakes Outlet to E. Greenacres Diversion
Fish Creek	3561	Nutrients, Sediment	Sediment, Temperature, Unknown	ID.WA. Border to Twin Lakes
Hauser Lake	3562	Nutrients, Dissolved Oxygen	Not Listed	
Hayden Lake	7555	Nutrients, Sediment	Not Listed	
Twin Lakes	7561	Nutrients, Sediment, Bacteria	Not Listed	
Spokane River	3552, 3553	Metals, Temperature	Temperature	Coeur d'Alene Lake to Post Falls Dam
Spokane River	3554	Metals, Temperature	Nutrients, Metals, Temperature	Post Falls Dam to ID/WA Border

The major objective of this plan will be to reduce the amount of sediment and nutrients entering these water bodies from agricultural sources and lower water temperatures 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 operators.

Another 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 lake and 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

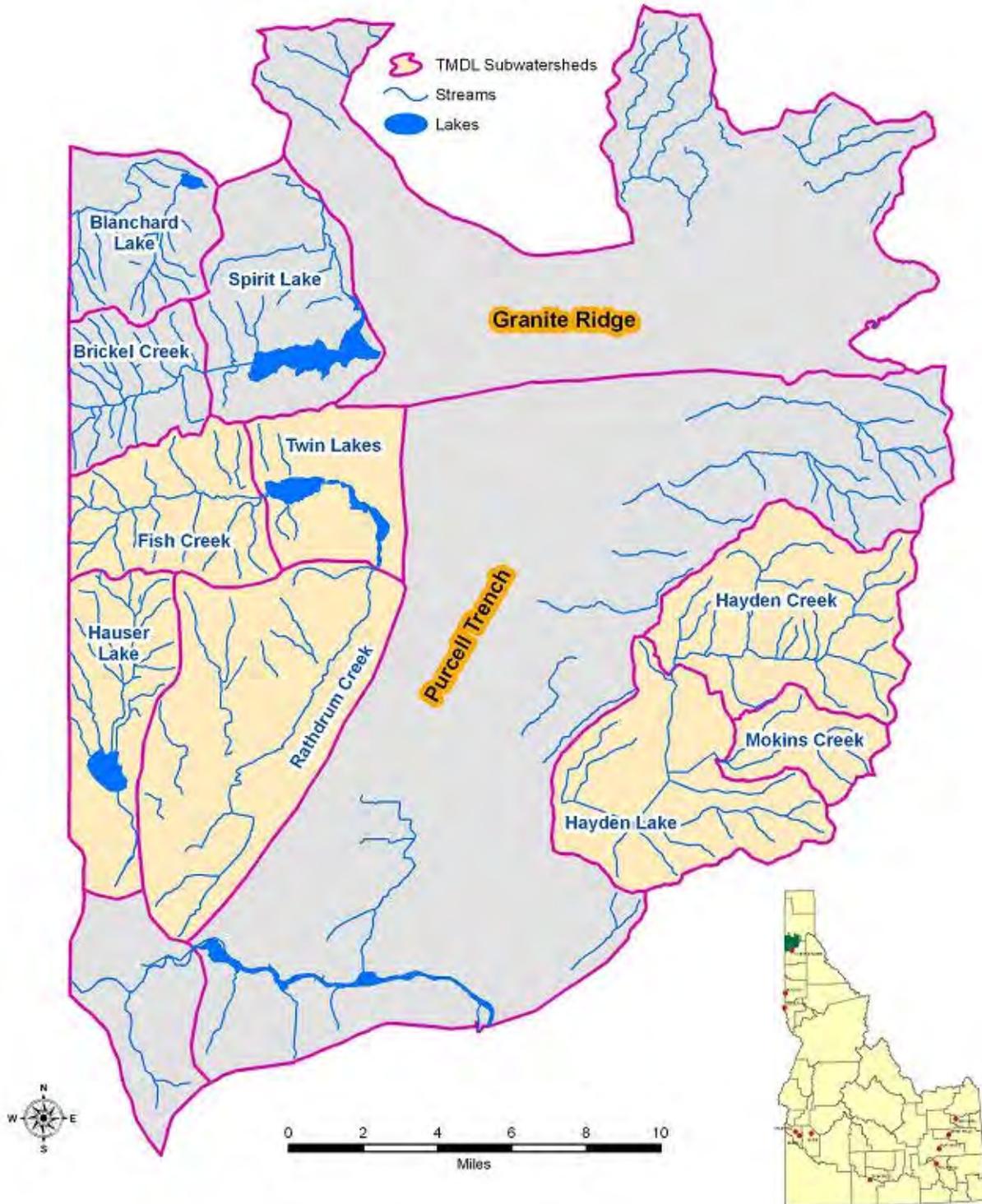
The Rathdrum Prairie Aquifer Area is located within two counties, Kootenai and Bonner, although the vast majority of the watershed lies within Kootenai County. The Rathdrum Prairie is a 209 square mile area located west of the Coeur d'Alene Mountains, north of Coeur d'Alene Lake, and south of Lake Pend Oreille. The Spokane River traces the southern boundary of the watershed on its route from Coeur d'Alene Lake to the Washington border.

In 2000, DEQ developed nutrient (total phosphorus) TMDL's for Hauser Lake, Hayden Lake, and Upper and Lower Twin Lakes sub-watersheds. Fish Creek and Rathdrum Creek were addressed in the total phosphorus TMDL for Twin Lakes. In 2001, EPA approved total phosphorus TMDL's for Hauser Lake, Hayden Lake, and Twin lakes. The Spokane River is listed for temperature, but according to DEQ's assessment, the temperature impairment is caused by natural conditions and they recommend the river be re-designated as limited cold water biota (IDEQ, 2000 and 2007). In December, 2007, DEQ released for approval a "new draft" Fish Creek Watershed Assessment and TMDL (IDEQ, 2007). When approved by EPA, this document places allocations and reductions for sediment, bacteria, and temperature within appropriate Fish Creek assessment units. See Figure 1, Rathdrum Prairie Aquifer Area/TMDL Sub-watershed Map for general locations of this area and TMDL water bodies.

Land ownership or management within the Rathdrum Prairie Aquifer Area consists of federal, state, and private land. A large majority of the private land consists of commercial forestry. See Figures 2-4, Hauser Lake, Hayden Lake, and Twin Lakes Watershed Land Management Maps.

The Kootenai-Shoshone Soil and Water Conservation District (KSSWCD) have remained active in soil and water conservation and water quality issues since the 1940's. The District and the Natural Resource Conservation Service (NRCS), have proactively developed individual conservation plans and pursued the application of several farm bill funding programs such as the Wetland Reserve Program, Environmental Quality Incentive Program, Soil and Water Conservation Assistance Program, and Emergency Watershed Protection. See Table 2, for NRCS Field Office Accomplishments within the Rathdrum Prairie Aquifer Area.

**Figure 1 Rathdrum Prairie Aquifer Area
Showing Contributing Drainage Areas
and TMDL Subwatersheds**



Hauser Lake Watershed Land Management Government and Commercial

Figure 2

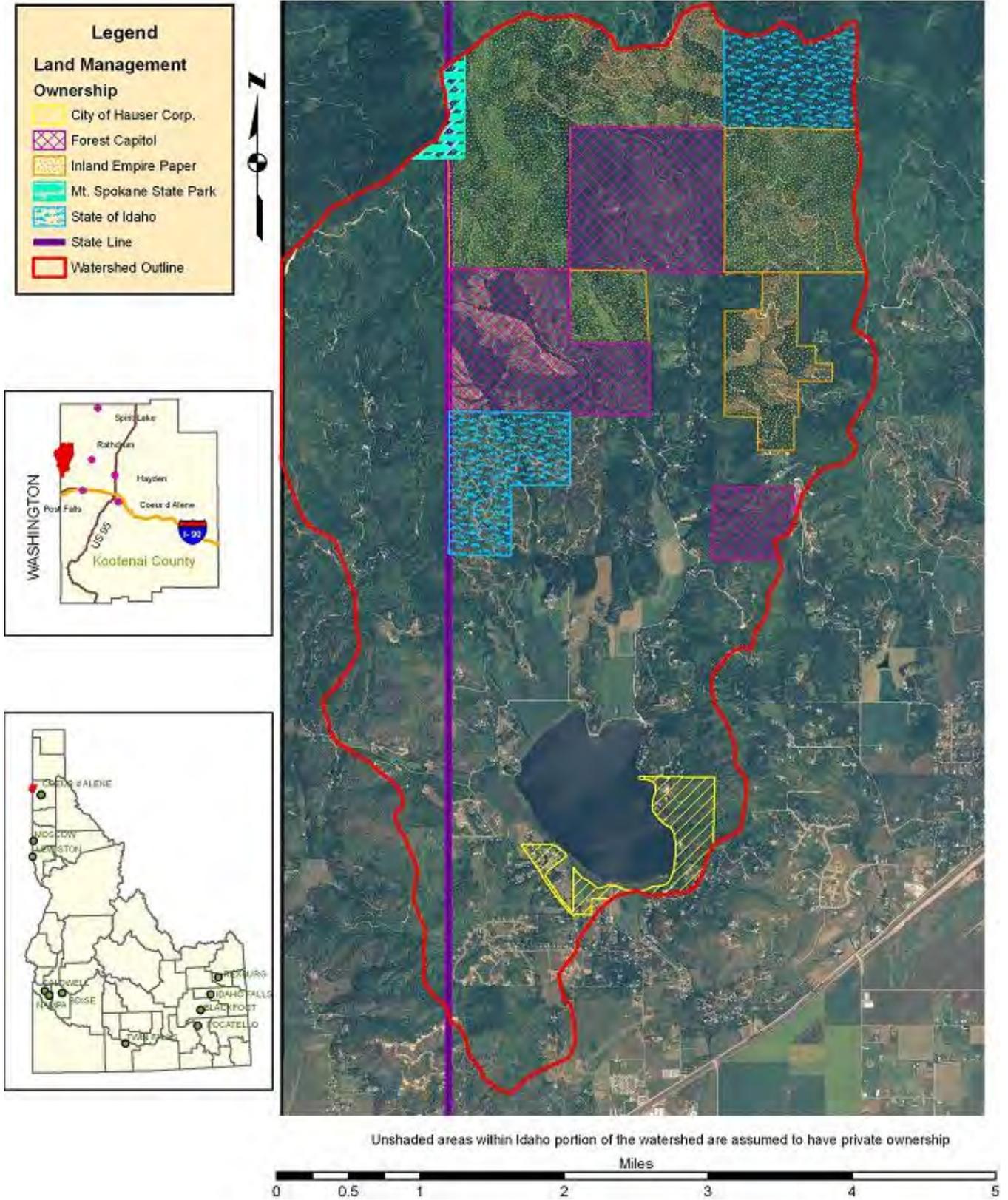


Figure 3

Hayden Lake Watershed Land Management

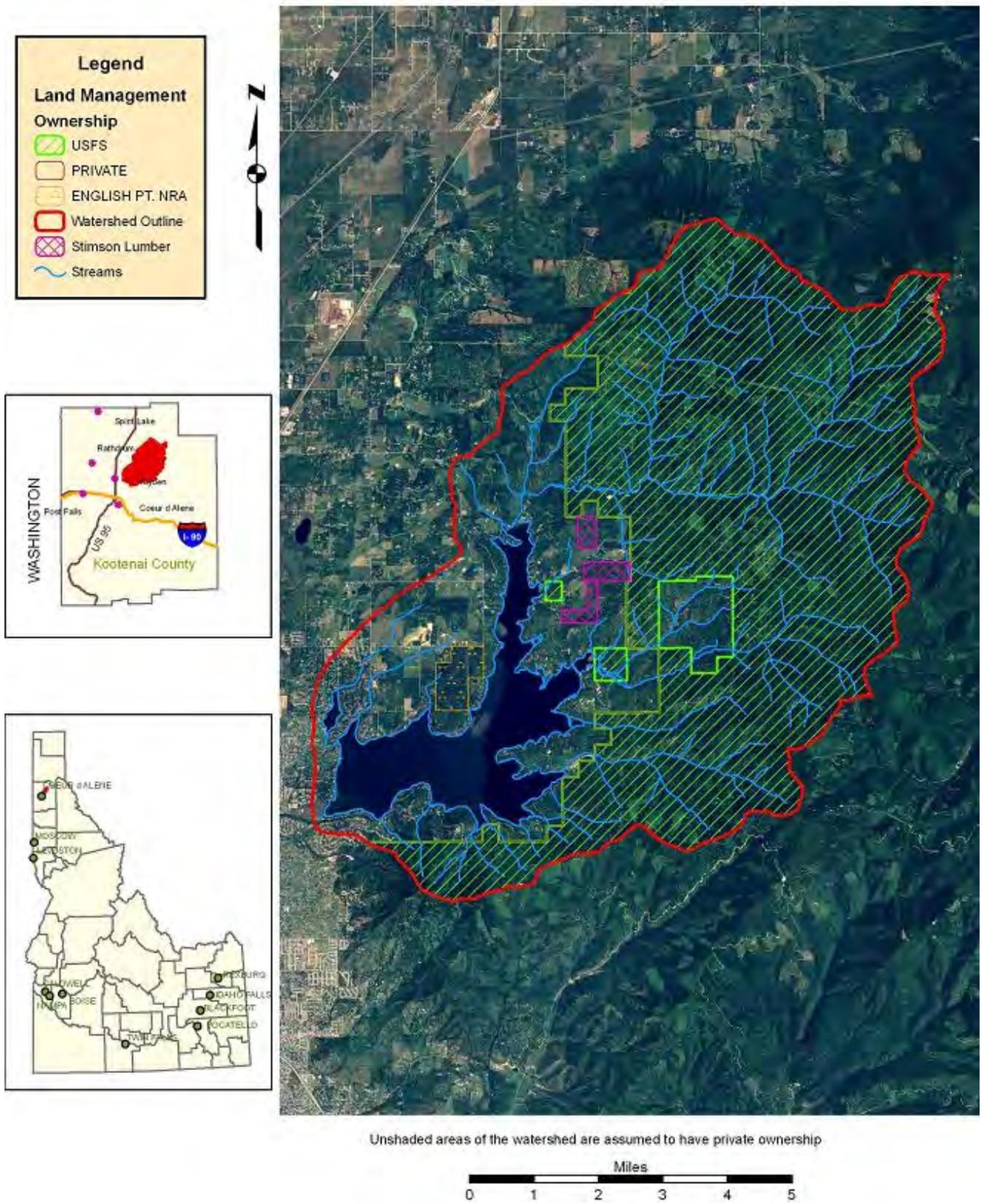


Figure 4

Twin Lakes Watershed Land Management Government and Commercial

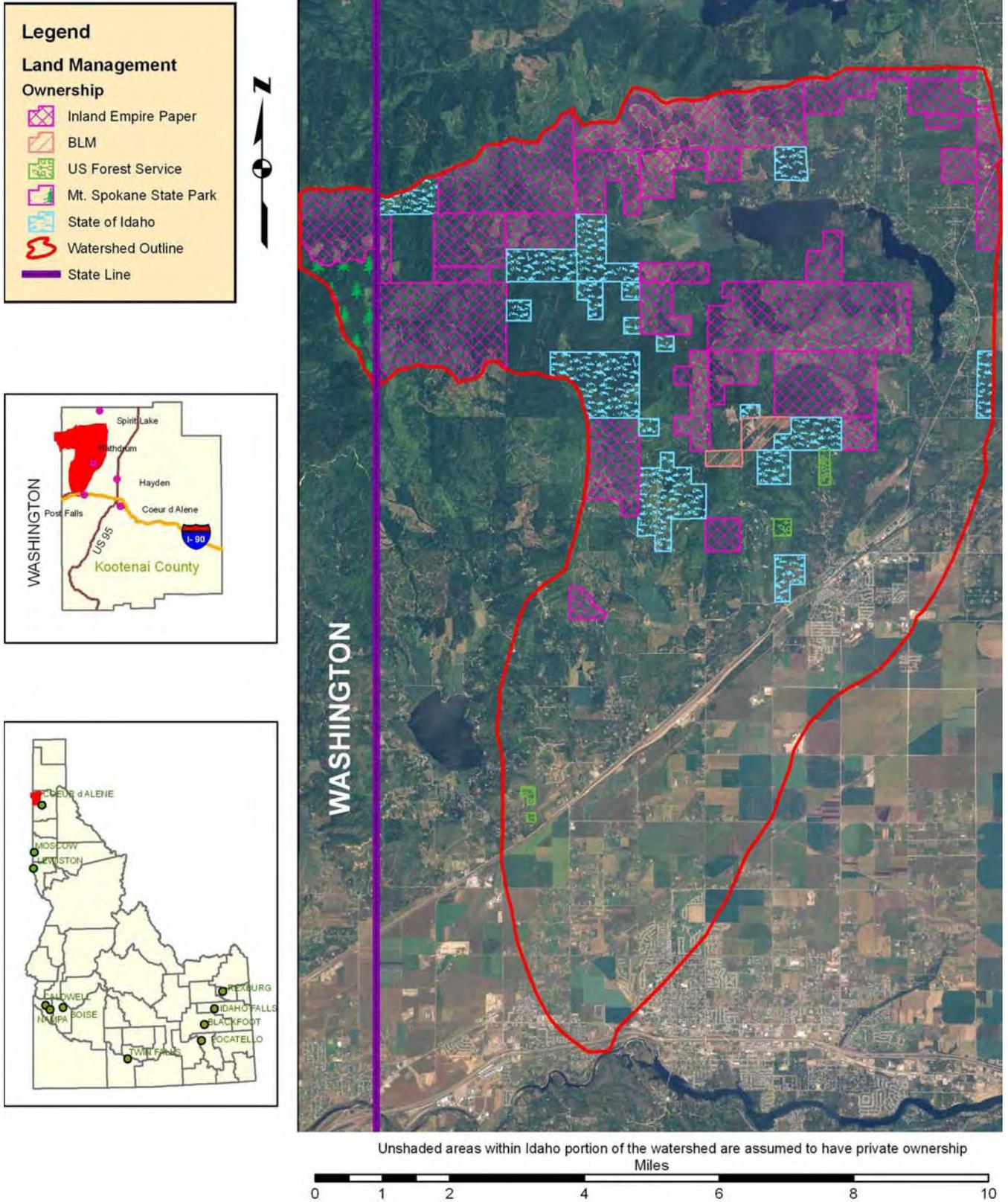


Table 2: NRCS Field Office Accomplishments

FIELD OFFICE & DATES	STREAM	PROJECT/ PROGRAM	BENEFITS
Coeur d'Alene 2004 – Perpetuity	Hauser Creek	Wetland Reserve Program (WRP)	Shallow water wetland restoration on 28 acres, located near the mouth of Hauser Creek. Idaho Fish and Game is assisting NRCS in wildlife and wetland habitat enhancement efforts. With the planned re-introduction of large woody species to this wetland buffer, nutrient uptake capacity should increase over time. This private landowner- federal government easement runs to perpetuity.
Coeur d'Alene 2005	Nilsen Creek	Stream Visual Assessment Protocol (SVAP) Field Inventory and Follow-up Landowner Recommendations	Two landowners responded to SVAP recommendations to secure their perimeter fencing, so ranging cattle could no longer access the creek through their property. In addition, a small dam and culvert obstruction was voluntarily removed, to facilitate fish movement within the creek.
Coeur d'Alene 2001-2006	Sage Creek	Soil and Water Conservation Assistance Program (SWCA)	This program was implemented to help private forest landowners install BMP's on their property. Idaho Department of Lands assisted in the development of forestry conservation plans. Accomplishments included forest site preparation, forest stand improvement, tree and shrub establishment, and pasture and hayland management.
Coeur d'Alene 1995	Fish Creek	Technical Assistance	A conservation plan and record of decision was developed to reduce livestock impacts to Fish Creek and Upper Twin Lake. Accomplishments included some exclusion fencing, but the plan has not been fully implemented to date.
Coeur d'Alene 1994	Hauser and Hayden Lakes	Technical Assistance	Assisted with the development of agricultural sections of the Hauser Lake Management Plan and the Hayden Lake Watershed Management Plan.
Coeur d'Alene 1990	Mokins Bay	Annual Conservation Program (ACP)	One and one-half mile of fence was built to re-route open range livestock from accessing Hayden Lake at Mokins Bay.

Over the years the Kootenai-Shoshone Soil and Water Conservation District has been very pro-active in community conservation efforts, and specifically, continues to pioneer work in stream bank stabilization projects. For three summers (2000-2002), the KSSWCD received grants to administer and supervise field crews, which successfully completed bank erosion surveys on Panhandle TMDL streams for the Idaho Department of Environmental Quality (KSSWCD, 2000-2002).

During 2004 and 2005, the KSSWCD played a critical role in assisting the Idaho Soil Conservation Commission in assessing six agricultural tributaries to Hauser and Hayden Lakes. KSSWCD contacted 26 landowners within these watersheds to obtain the needed permission to walk and inventory these creeks. The inventory method used was NRCS's Stream Visual Assessment Protocol (SVAP) (NRCS, 1998). KSSWCD participated fully in the field inventories and also helped with landowner follow-up of the results. Their assistance was instrumental in the development of this TMDL agricultural implementation plan.

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 Rathdrum Prairie Aquifer Area are listed below in Table 3 (IDEQ 2000). According to the new draft Fish Creek Watershed Assessment and TMDL, Fish Creek has the following beneficial uses: existing- salmonid spawning; presumed- cold water aquatic life, primary recreational contact, agricultural water supply, and domestic water supply (IDEQ, 2007).

Table 3: Beneficial uses for 303(d) listed stream segments in the Rathdrum Prairie Aquifer Area.

Water Body	Boundaries	Assessment Unit ID#	Beneficial Uses	Support Status
Spokane River	CdA Lake to WA. Border	P-3,P-4	Designated-CWB, SS, PCR	CWB Temp. Standard Exceeded
Fish Creek	ID/WA. Border to Twin Lakes	Not Listed	Presumed-CWB,SCR	Supported
Rathdrum Creek	Twin Lakes Outlet to E. Greenacres Diversion	Not Listed	Presumed-CWB,SCR	Supported
Hauser Lake	N.A.	P-16	Designated-CWB,PCR, DWS	CWB Impaired by Nutrients and D.O. Deficit
Hayden Lake	N.A	P-5	Designated-CWB, SS, PCR, DWS, SRW	CWB Threatened by Nutrients
Twin Lakes	N.A.	P-13	Designated-CWB, SS, PCR, DWS, SRW	CWB Impaired by Nutrients
Spirit Lake	N.A.	P-9	Designated-CWB, SS, PCR, DWS, SRW	Supported
Beneficial Uses Key: CWB = cold water biota; SS = salmonid spawning; PCR = primary contact recreation; SCR = secondary contact recreation; DWS = Domestic Water Supply SRW = special resource water;				

POLLUTANTS

Phosphorus TMDL allocations and reductions were developed by DEQ in 2000 for Hauser Lake, Hayden Lake, and Twin Lakes. Fish Creek and Rathdrum Creek were addressed as a part of the Twin Lakes phosphorus TMDL. The only referenced agricultural allocation and reduction, was for grazing impacts to Upper Twin Lakes. This would include grazing on the lower end of Fish Creek. DEQ assessed a phosphorus load from grazing to be 39 kg/yr. A 50% allocation for grazing brings the needed reduction to 19.5 kg/yr (IDEQ, 2000).

Agricultural concerns do exist in the tributaries of Hauser Lake and Hayden Lake. TMDL referenced reductions for agriculture are not specifically listed in the TMDL, but are understood by this researcher to be a part of the tributaries load. The main agricultural concerns are from grazing, both cattle and horses. Table 4 summarizes the actual phosphorus TMDL allocations and reductions for Hauser Lake, Hayden Lake, and Twin Lakes (IDEQ, 2000).

Table 4: 1998 303(d) listed stream segments: identified pollutants and TMDL allocations and reductions.

Water Body	303(d) Listed Pollutants	Load Allocation	Required Reduction to meet TMDL	Agricultural Concerns
Hauser Lake	Nutrients, Dissolved Oxygen	Phosphorus Allocation = 608 kg/yr	Phosphorus Reduction = 402 kg/yr	Grazing impacts on Hauser Creek and JM Creek
Hayden Lake	Nutrients, Sediment	Phosphorus Allocation = 2,901 kg/yr	Phosphorus Reduction = 709 kg/yr	Grazing impacts on Nilsen, Lancaster, Stump, Bervin Bay Creeks; and North Arm of Hayden Lake
Twin Lakes (Includes Fish and Rathdrum Creeks)	Nutrients, Sediment, Bacteria	Phosphorus Allocation = 432 kg/yr (Agriculture = 19.5 kg/yr)	Phosphorus Reduction = 306 kg/yr (Agriculture = 19.5 kg/yr)	Grazing impacts on Lower Fish Creek and Upper Twin Lake
Spokane River	Metals, Temperature	Temperature Deferred	Temperature Deferred	No agricultural activities/influences

Water Quality Monitoring

In order to summarize water quality monitoring that has occurred in the Rathdrum Prairie Aquifer Area after publication of the TMDL in 2000, personal communication with DEQ Coeur d'Alene Regional Office was required. Three DEQ specialists provided the following recent monitoring information (Harvey, G., Clyne, T. and Pettit, G. 2007):

Hauser Lake:

- DEQ BURP sites have been set up on un-assessed tributaries to the lake and data collected.
- The Citizens Volunteer Monitoring Program (CVMP) continues to monitor the lake during the summer months.
- In 2006, DEQ detected a pathogen exceedence on one of the lake tributaries.

Hayden Lake:

- In 2004-2005, DEQ and the U.S. Forest Service conducted joint monitoring on Hayden Creek.
- DEQ BURP sites have been set up on un-assessed tributaries to the lake and data collected.
- The Citizens Volunteer Monitoring Program (CVMP) continues to monitor the lake during the summer months. For Hayden Lake Water Quality Reports for 2005-2006, go to www.haydenlakewatershedassociation.com.

Twin Lakes/ Fish Creek:

- DEQ BURP data continues to be collected on lake tributaries.
- In 2007, DEQ detected a pathogen exceedence on one of the lake tributaries.

Without DNA analysis, the actual cause of the pathogen exceedences detected by DEQ, within the Hauser Lake and Twin Lakes watersheds, 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 lakes draining to the Rathdrum Prairie, the first step was to inventory private agricultural land use that exists within the area the concern. As urban sprawl continues to take over historic agricultural areas within Kootenai County, and certainly around the lakes, this becomes even more critical. For this plan, agricultural land use was inventoried, visually in the field, starting in 2004 and updating through 2007. The main two remaining agricultural uses found for Hauser, Hayden, Twin Lakes and their tributaries, were pasture and hayland. Observed livestock grazing, included cattle and horses, with horse numbers equaling or exceeding cattle numbers in both Hauser Lake and Hayden Lake watersheds. If this pattern continues into the future, impacts from small acreage horse grazing, will most likely out-weigh cattle impacts to the lakes and tributaries. Small confined horse feeding operations were observed around Hauser Lake, and to a lesser extent on Hayden Lake. An in-depth inventory was conducted on horse pastures and numbers within the Hauser Lake Watershed. See Figure 5, Hauser Lake Watershed Horse Localities Map for details on this inventory. Depending on their proximity to surface water, these feeding areas can contribute nutrient and pathogen loading that eventually reaches the lakes. Cropland still exists on the Rathdrum Prairie, but these lands are not critical to nutrient reductions as outlined in the TMDL, and will not be addressed here. Hayland within the TMDL lakes watersheds, are typically in good to excellent condition and are on relatively flat slopes. Most the highly productive hay fields are fertilized, but at rates well below recommended. The agricultural land use inventories conducted for Hauser Lake, Hayden Lake, and Twin Lakes Watersheds have been summarized on Figures 6-8 (Hogen, M. 2004-2007).

Figure 5

Hauser Lake Watershed Horse Localities

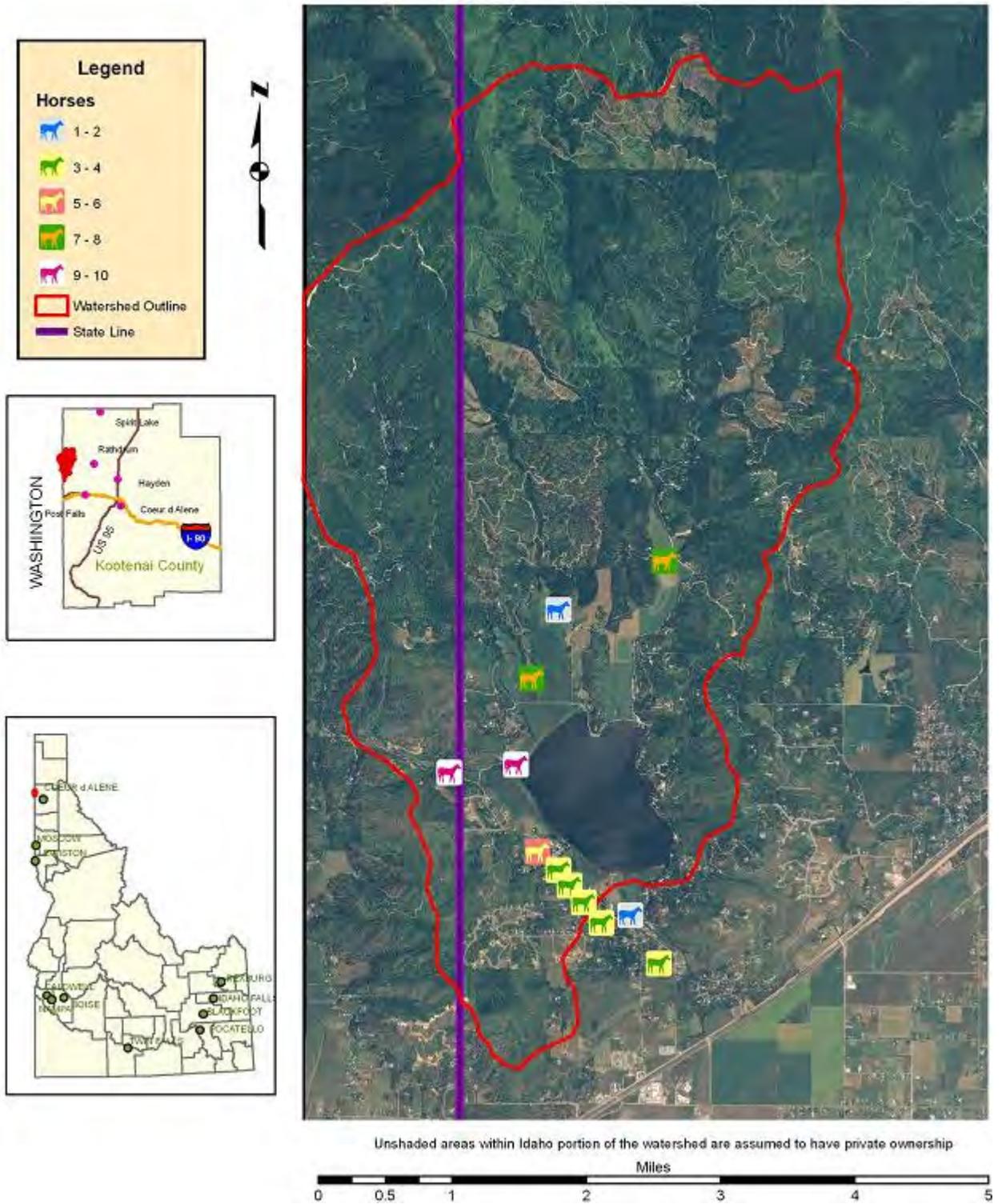


Figure 6

Hauser Lake Watershed Agricultural Land Uses

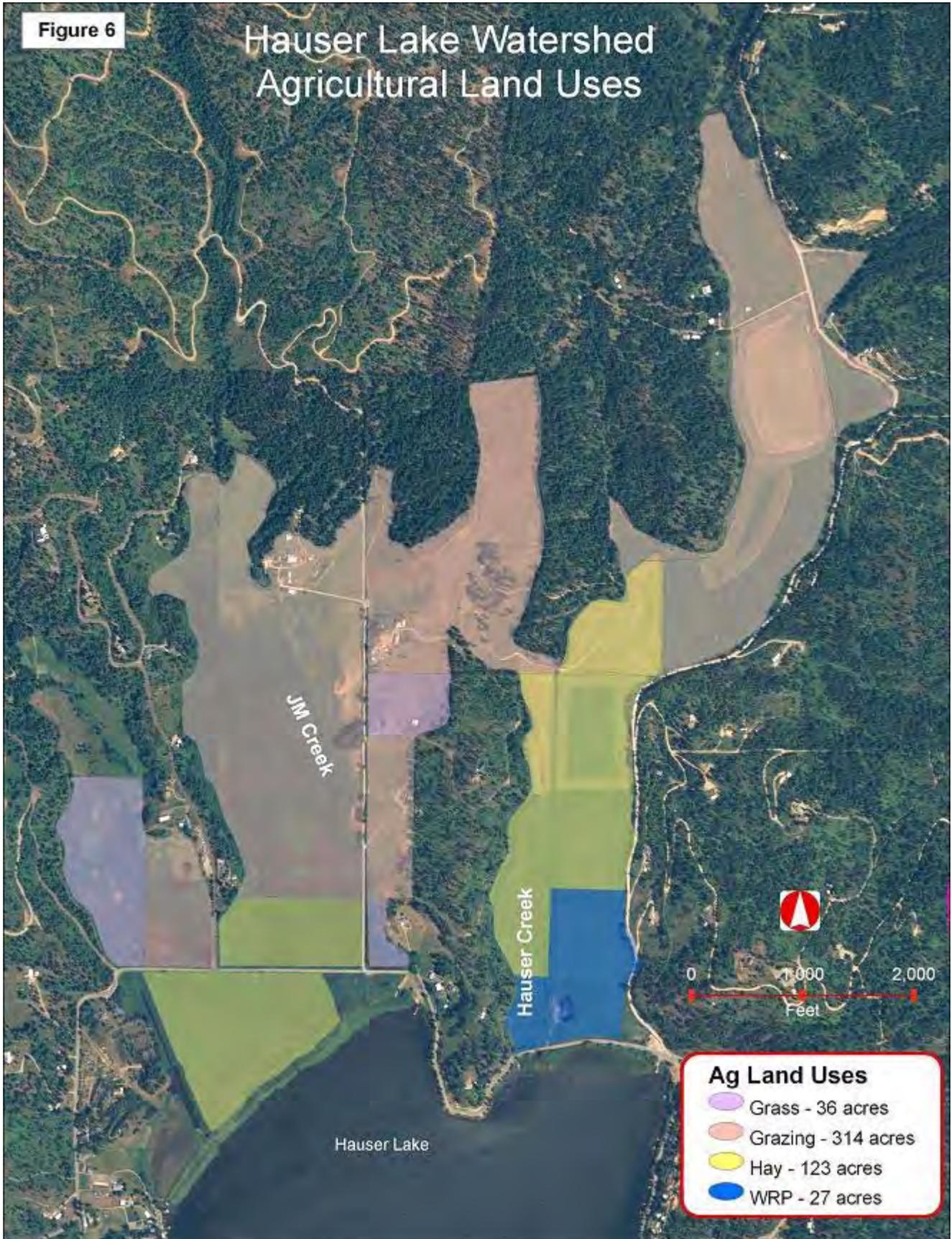


Figure 7

Hayden Lake Watershed Agricultural Land Uses Map

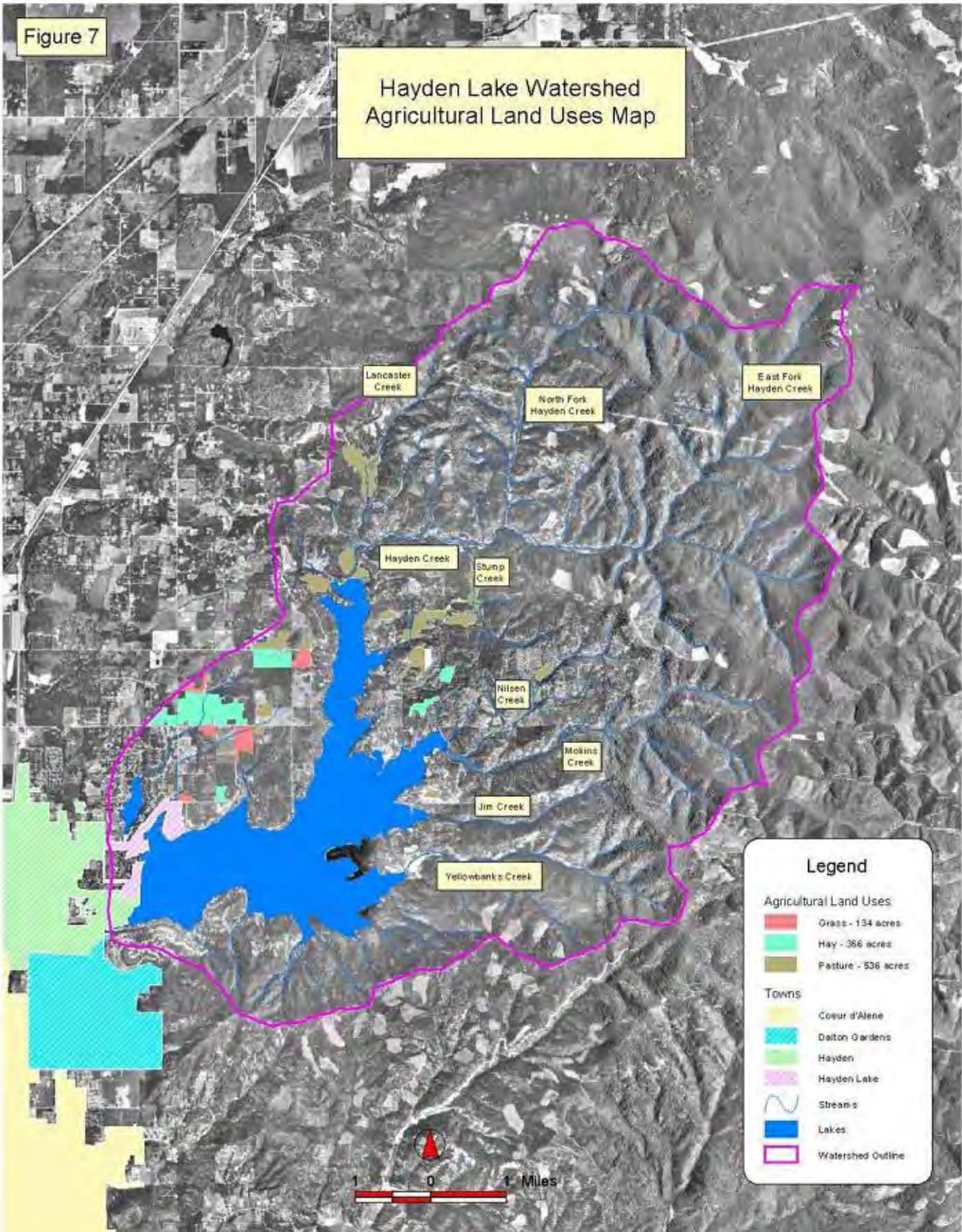
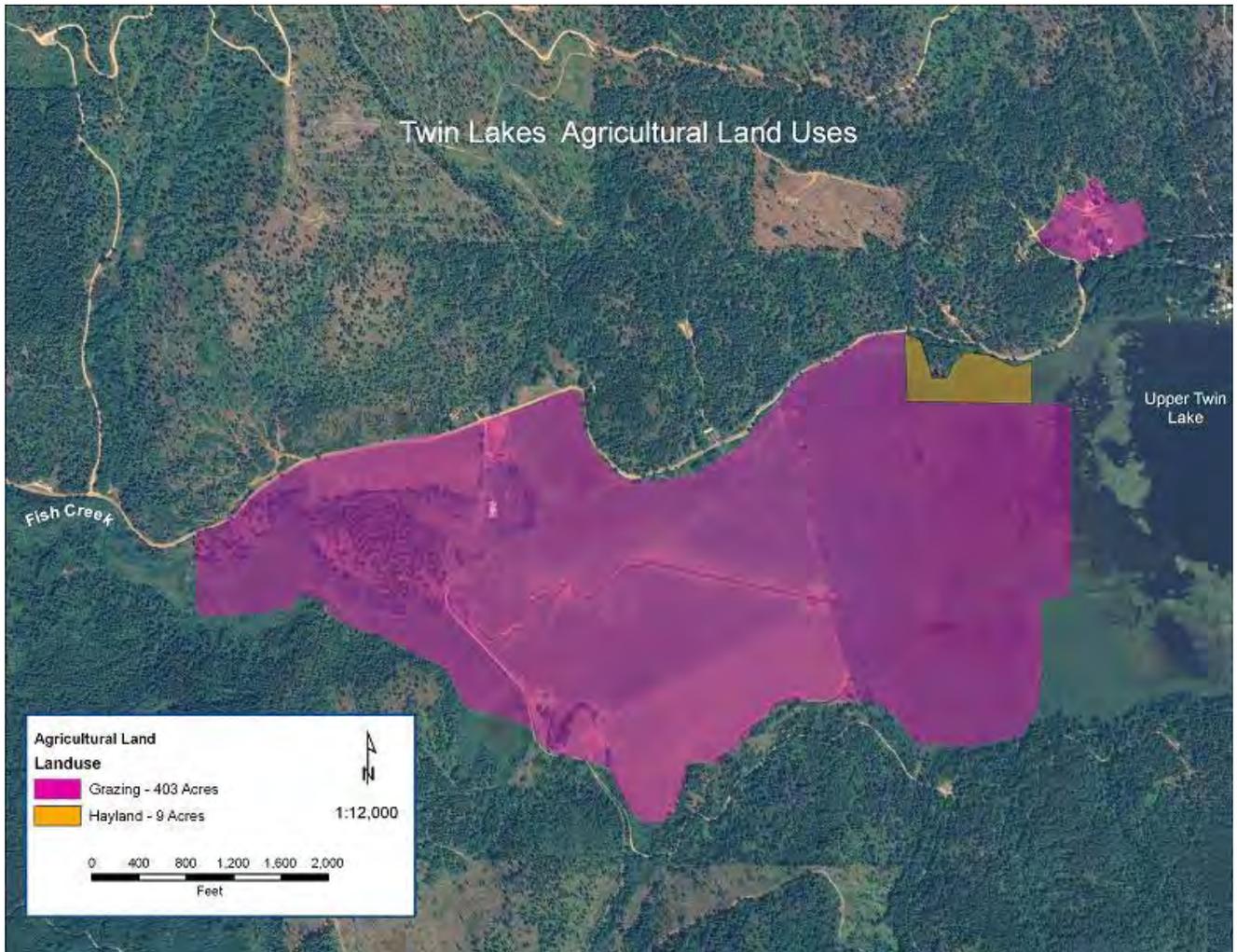


Figure 8.



Riparian Inventory and Evaluation

It was determined from the agricultural land use inventory that the next step to assessing agricultural impacts would be to walk the tributaries to the lakes where livestock grazing was observed. These tributaries with grazing included: Hauser Creek, JM Creek, Lancaster Creek, Hayden Creek, Nilsen Creek, Stump Creek, Bervin Bay Creek, and Fish Creek. The agricultural partnership works with private landowners on a voluntary basis, thus permission to access these private agricultural lands was required. KSSWCD contacted 26 landowners within the grazed watersheds to obtain permission to walk and inventory these creeks. Overall landowner cooperation was quite good, but of course there is always a few that are not comfortable with government assistance. The inventory method used to assess the riparian areas 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 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 results were shared with all participating landowners, and recommendations for improving water quality were discussed. One concerned landowner removed a small check dam and culvert obstruction on Nilsen Creek, and raised their score immediately by restoring fish passage. In addition, perimeter fencing was updated on Nilsen Creek, to exclude open range livestock grazing from the creek. These are great examples of how private landowners can make a real difference in water quality, through cooperation with their local conservation district. Figures 9-11, show SVAP reach locations and rating summaries for Hauser Creek, JM Creek, Nilsen Creek, Lancaster Creek, Stump Creek, and Hayden Creek. Reaches that scored 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.

Animal Feeding Operations and Dairies

There are several small-scale commercial livestock operations within the lakes and streams located on or draining to the Rathdrum Prairie. No confined areas were observed with direct runoff to surface water. Concerns associated with these small-scale operations are related to pastures with direct cattle access to the riparian zones. 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, as amended, "mandates all Federal agencies to determine how to use their existing authorities to further the purpose of the Act to aid in recovering listed species and address existing and potential conservation issues". Section 7 (a)(2) states that "agencies shall consult with either the U. S. Fish and Wildlife Service (USFWS) or NOAA Fisheries, to insure that any action they authorize, fund or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat." The Natural Resources Conservation Service (NRCS) is required to follow the above mandate for all project implementation, and TMDL implementation within this plan will also follow this process.

If a proposed action is within close proximity to habitat used by a listed Threatened or Endangered species (T&E) or the known location of a T&E species, consultation is initiated with the appropriate regulatory agency. Consultation involves describing the project, assessing the potential project impacts, describing the mitigation effort for the project and determining the effect of the project on the species. The consultation process results in the development of reasonable alternatives for implementation and helps to minimize the impacts of conservation practices to habitat. Generally, good communication between consulting agencies ensures the development of sound decisions being made.

Table 5, lists all species and habitat which are currently listed by the USFWS (2006) as endangered, threatened, candidate, and are known to occur within Kootenai County, Idaho.

Figure 9

Hauser Lake Watershed Stream Visual Assessment Protocol (SVAP) Reaches 2005

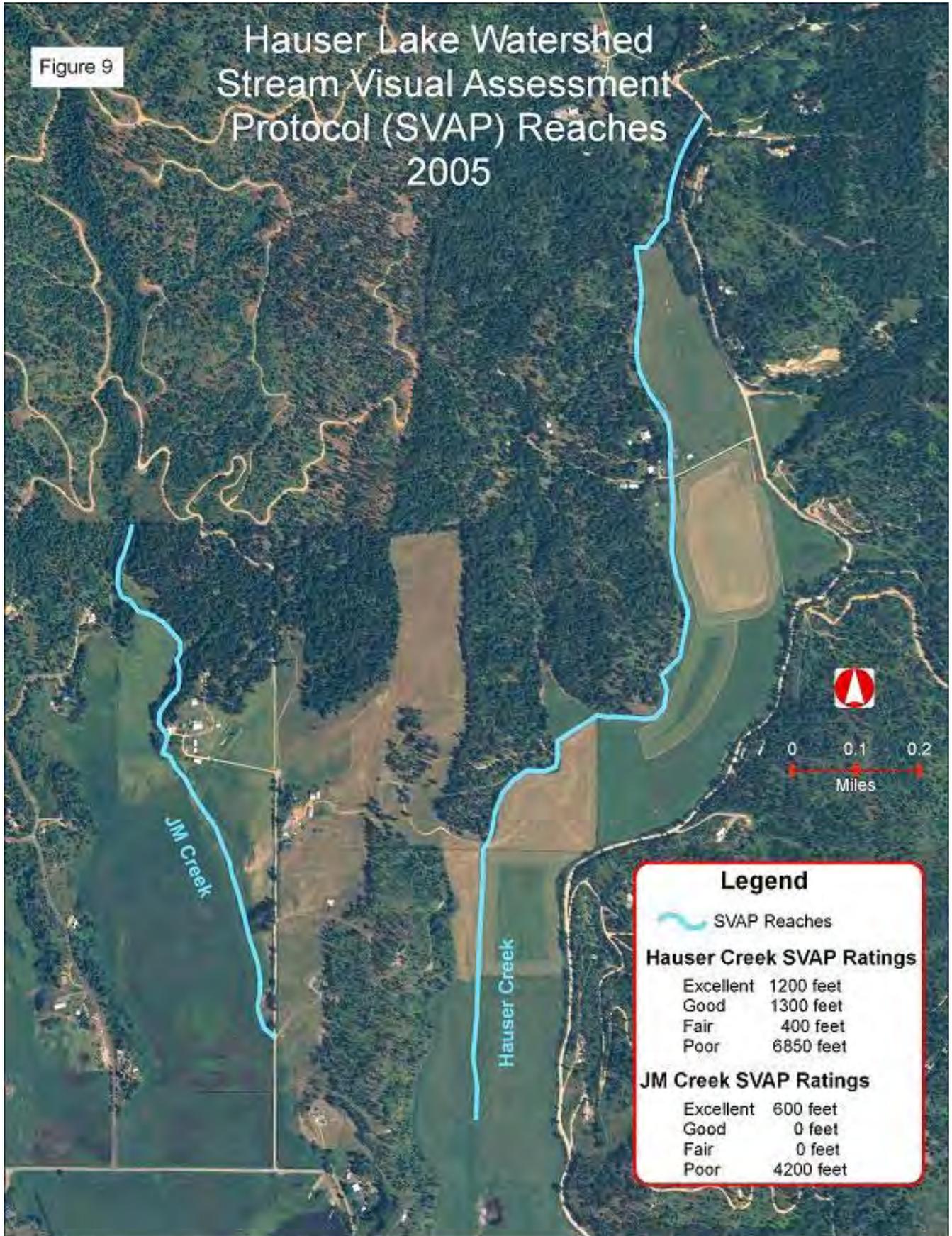


Figure 10

**Hayden Lake Watershed
Stream Visual Assessment
Protocol (SVAP) Reaches
2004**

Nilsen Creek SVAP Reach Ratings
Excellent 1300 feet
Good 3520 feet
Poor 800 feet

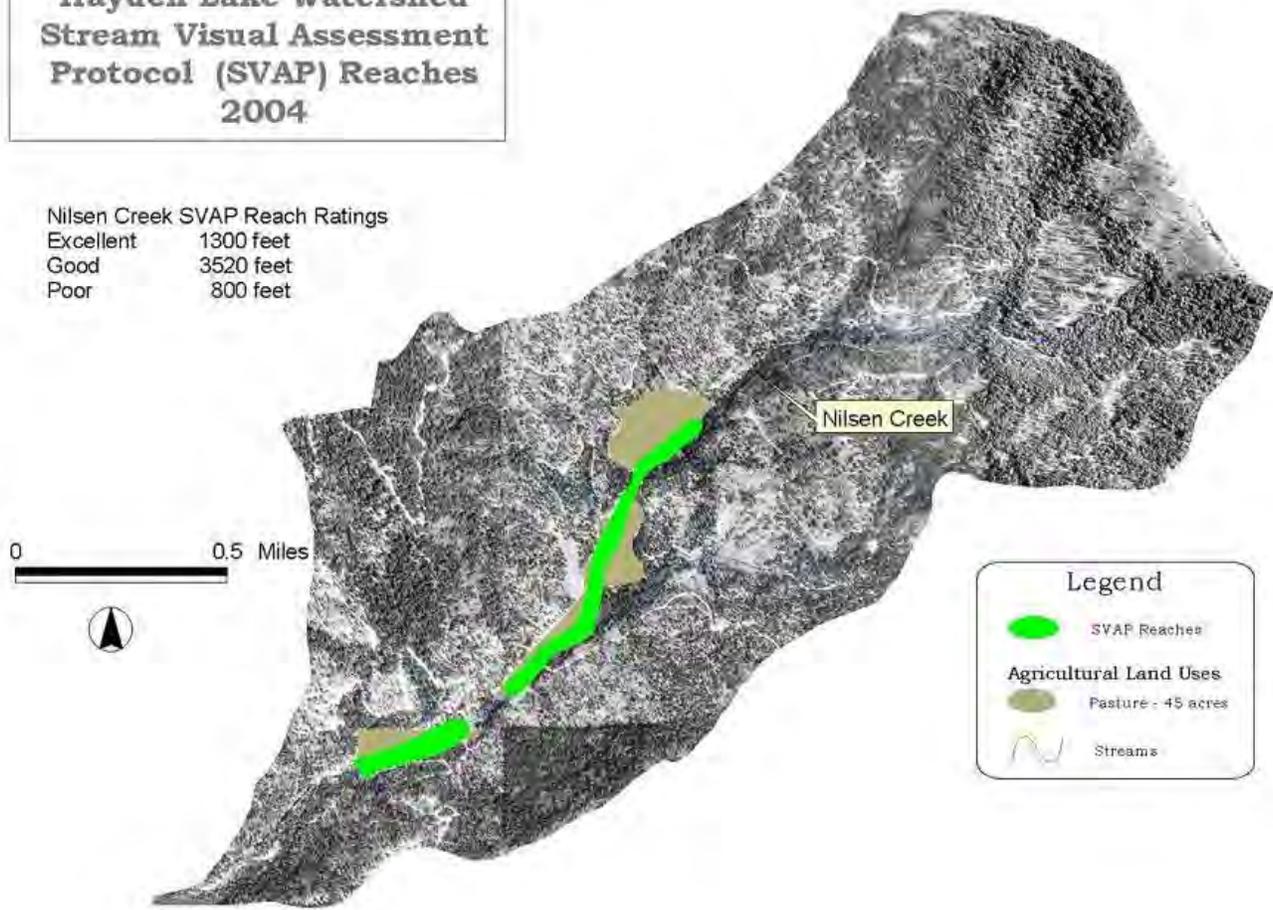


Figure 11

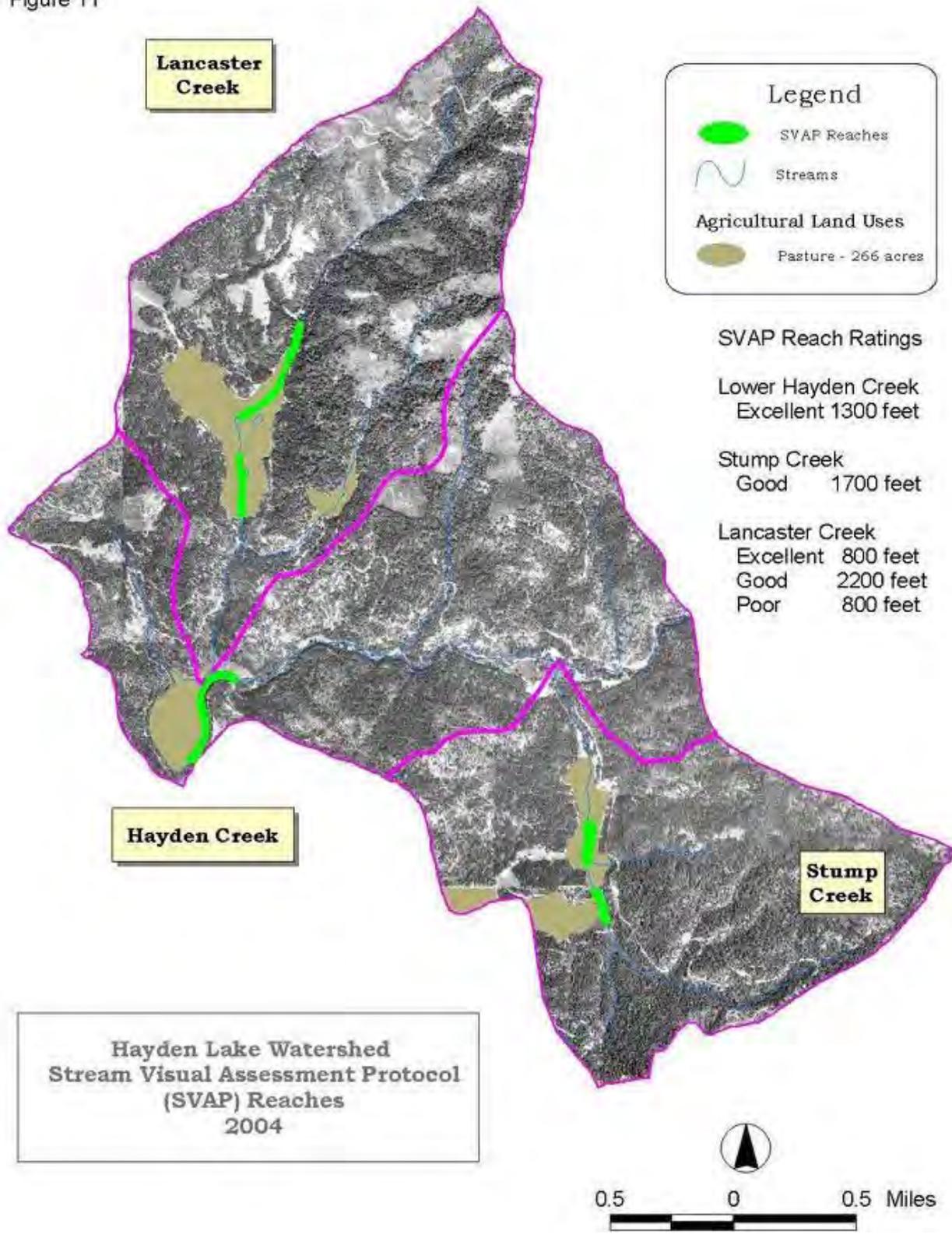


Table 5: Threatened or endangered species in Kootenai County, Idaho

Common Name	Scientific Name	Status (3/1/2006)	Critical Habitat
Fish			
Bull trout	<i>Salvelinus confluentus</i>	Threatened	Yes
Birds			
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened	No
Yellow-billed cuckoo	<i>Coccyz americanus</i>	Candidate	No
Mammals			
		Endangered (N. of Interstate 90)	No
Gray wolf	<i>Canis lupus</i>	Experimental/ Non-essential (S. of Interstate 90)	No
Canada lynx	<i>Lynx canadensis</i>	Threatened	No
Plants			
Water howellia	<i>Howellia aquatilis</i>	Threatened	No
Spalding's catchfly	<i>Silene spaldingii</i>	Threatened	No
Slender moonwort	<i>Botrychium lineare</i>	Candidate	No

Species of Concern are too numerous to list in this document. A detailed list for Species of Concern in northern Idaho Counties can be found under the USFWS County Species list at <http://www.fws.gov/easternwashington/>.

Another tool available in the planning process is the Idaho Department of Fish and Game Conservation Data Center, 2002 Threatened and Endangered Species GIS database. The database contains documented locations for aquatic and terrestrial species. This can help identify known locations of T&E species and identify critical habitat types that may harbor threatened or endangered species. Planners can reference habitat requirements to help landowners determine the potential benefits of their project implementation. The lakes and streams located on or draining to the Rathdrum Prairie contains T&E species. Impacts to these species will be taken into account in any TMDL project implementation.

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 Lakes and Streams Located on or Draining to the Rathdrum Prairie TMDL. Data from water quality monitoring and field inventory evaluations, were used to identify critical agricultural areas affecting water quality, and to set priorities for treatment. The following sub-watersheds contain riparian areas impacted by agriculture, as determined visually or by actual SVAP assessment:

- Fish Creek (Visual Rating of Fair-Poor = 8000 feet)
- Hauser Creek (SVAP Rating of Fair-Poor = 7250 feet)
- JM Creek (SVAP Rating of Fair-Poor = 4200 feet)
- Lancaster Creek (SVAP Rating of Fair-Poor = 800 feet)
- Nilsen Creek (SVAP Rating of Fair-Poor = 800 feet)
- Bervin Bay Creek (Visual Rating of Fair-Poor = 400 feet)

Riparian zone BMP implementation on any of these sub-watersheds should result in nutrient and temperature reductions. According to the above summary, Fish Creek, Hauser Creek, and JM Creek would provide the biggest benefit to water quality. When looking just at the TMDL, Fish Creek is the only water body with a specific agricultural reduction mandated (19.5 kg/yr Phosphorus).

The recommended voluntary treatment process for private agricultural landowners within the lakes and streams located on or draining to the Rathdrum Prairie, begins with contacting the local conservation district, the Kootenai-Shoshone Soil and Water Conservation District. Contact information for the KSSWCD is:

7830 Meadowlark Way, Suite C-1
Coeur d'Alene, Idaho 83815
Phone 208-762-4939 Ext.101
www.icehouse.net/ksswcd

The KSSWCD 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 KSSWCD 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.

CRITICAL AREAS

Agricultural areas that contribute excessive pollutants to water bodies are defined as “Critical Areas” for BMP implementation. These critical areas are then prioritized for treatment based on their location to a stream segment of concern and the potential for pollutant transport and delivery to the receiving water body. Critical areas are those areas in which treatment is considered necessary to address resource concerns affecting water quality. The following is a list of types 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.
- Haylands adjacent to stream corridors that lack adequate buffering from harvest and fertilizer application.

The lower ends of Hauser Creek and JM Creek (roughly a half mile on each) are mainly impacted by lake effects and also the predominance of reed canarygrass. In addition, most of this lower area on Hauser Creek, is under a federal perpetual easement (Wetland Reserve Program) with NRCS. Due to these uncontrollable factors, the lower ends of Hauser Creek and JM Creek have been excluded from critical area treatment, within this agricultural implementation plan. Table 6, summarizes agricultural critical areas for pasture acres, hayland acres, and length of riparian impacted.

Table 6: Agricultural Critical Areas

Waterbody	Pasture (Acres)	Hayland (Acres)	Riparian Impacted (Ft.)
Fish Creek	403	9	8,000
Hauser Creek	130	70	4,750
JM Creek	184	53	1,500
Lancaster Creek	122	0	800
Nilsen Creek	45	0	800
Stump Creek	25	0	800
Bervin Bay Creek	10	0	400
Hayden Lake-North Arm	10	0	0

RECOMMENDED PRIORITIES FOR BMP IMPLEMENTATION

Critical areas along stream banks and adjacent to the streams are often considered highest priority for the treatment due to increased potential to directly impact surface water quality. The accuracy in determining exactly where particular pollutants originate is greatly compromised as distance from the affected water body increases. Therefore, the following is a general rule that applies to the prioritization of critical acres within priority sub-watersheds:

Tier 1: Stream banks and adjacent fields having a direct and substantial influence on a stream. 200 foot stream corridor width.

Tier 2: Includes fields with an indirect yet substantial influence on a stream (nearly flat fields outside Tier 1).

Tier 3: Upland fields in a sub-watershed that indirectly influences a stream.

In terms of BMP implementation, Tier 1 designates highest priority, and has been selected for treatment of TMDL pollutants.

Treatment

TREATMENT UNIT (TU)

The following Treatment Unit (TU) describes areas in the lakes and streams located on or draining to the Rathdrum Prairie 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.

For each 303(d) listed stream, the TMDL pollutant of concern is either nutrients, temperature, or both. The critical TU to reduce both pollutants of concern will be TU #1- riparian areas, buffer zones, stream channels, and adjacent pastures. TU #1 will address Best Management Practices (BMPs) for Resource Management System (RMS) conservation planning. Suggested BMPs to improve water quality and their estimated costs as of 2007, have been summarized below:

RECOMMENDED BMPS AND ESTIMATED COSTS FOR TU #1

<u>Agricultural BMPs</u>	<u>Extent</u>	<u>Cost (2007)</u>
• Fish Creek		
Riparian Exclusion Fence	15,000 Feet	\$30,000
Existing Fence Maintenance	1,500 Feet	\$ 1,500
Watering Facility	7 Each	\$21,000
Heavy Use Protection Area	4 Each	\$10,000
Streambank Protection (Aerial Photo Estimate)	1,500 Feet	\$15,000
Riparian Vegetation	7,000 Feet	\$35,000
Nutrient Management	412 Acres	\$12,360 (3 Years)
Pest Management	35 Acres	\$ 2,100 (3 Years)
Prescribed Grazing	403 Acres	\$12,090 (3 Years)
Use Exclusion	35 Acres	\$ 3,675 (3 Years)
Total Estimated Cost = \$142,725		
• Hauser Creek:		
Riparian Exclusion Fence	9,500 Feet	\$19,000
Watering Facility	6 Each	\$18,000
Heavy Use Protection Area	3 Each	\$ 7,500
Streambank Protection:		
Bank Shaping	900 Feet	\$ 2,700
Toe Rock	350 Feet	\$ 7,000
Riparian Vegetation	4,000 Feet	\$20,000
Nutrient Management	200 Acres	\$ 6,000 (3 Years)
Pest Management	20 Acres	\$ 1,200 (3 Years)
Prescribed Grazing	130 Acres	\$ 3,900 (3 Years)
Use Exclusion	20 Acres	\$ 2,100 (3 Years)
Total Estimated Cost = \$87,400		
• JM Creek:		
Riparian Exclusion Fence	3,000 Feet	\$ 6,000
Watering Facility	2 Each	\$ 6,000
Bridge (Replace Culvert)	1 Each	\$12,000
Streambank Protection:		
Bank Shaping	100 Feet	\$ 300
Toe Rock	100 Feet	\$ 2,000
Riparian Vegetation	800 Feet	\$ 4,000
Nutrient Management	237 Acres	\$ 7,110 (3 Years)
Pest Management	60 Acres	\$ 3,600 (3 Years)
Prescribed Grazing	184 Acres	\$ 5,520 (3 Years)
Use Exclusion	4 Acres	\$ 420 (3 Years)
Total Estimated Cost = \$46,950		

- Lancaster Creek:

Riparian Exclusion Fence	6,000 Feet	\$12,000
Watering Facility	4 Each	\$12,000
Heavy Use Protection Area	3 Each	\$ 7,500
Riparian Vegetation	1,400 Feet	\$ 7,000
Total Estimated Cost = \$38,500		

- Nilsen Creek:

Riparian Exclusion Fence	4,600 Feet	\$ 9,200
Perimeter Exclusion Fence	7,500 Feet	\$15,000
Watering Facility	2 Each	\$ 6,000
Heavy Use Protection Area	2 Each	\$ 5,000
Riparian Vegetation	1,600 Feet	\$ 8,000
Total Estimated Cost = \$43,200		

- Stump Creek:

Riparian Exclusion Fence	1,600 Feet	\$ 3,200
Watering Facility	2 Each	\$ 6,000
Heavy Use Protection Area	1 Each	\$ 2,500
Riparian Forest Buffer	1 Acre	\$ 1,250
Total Estimated Cost = \$12,950		

- Bervin Bay Creek:

Riparian Exclusion Fence	400 Feet	\$ 800
Total Estimated Cost = \$800		

- Hayden Lake North Arm:

Nutrient Management	10 Acres	\$ 300 (3 Years)
Total Estimated Cost = \$300		

Since agricultural non-point source pollution is non-regulatory, BMP implementation relies solely on voluntary efforts of project landowners. Landowner trust and excellent working relationships need to be established in order to ensure project success. These estimated BMP costs do not include technical assistance, administration, and an aggressive information and education program.

The Lake*A*Syst Program is quickly evolving in North Idaho and appears to be well suited for Hauser Lake, Hayden Lake, and Twin Lakes. This program focuses on educating people to assess their own property for non-point sources of pollution, and then identify BMPs to reduce the impact of the pollutant sources. One of the assessments includes pasture and riparian area management. This could become instrumental in treating small acre horse operations that continue to increase around the lakes, and have the potential to impact water quality. A group of Hauser Lake stakeholders have secured funding to implement the Lake*A*Syst Program around the Hauser Lake area beginning in 2008. The KSSWCD is committed to assisting with this implementation effort on Hauser Lake.

Funding Potentials

Much of the funding that can be used to implement BMP's is available annually on a first-come first-serve basis or through a competitive review and ranking process. The Boise State University Environmental Finance Center is a valuable resource for researching funding for projects (<http://ssrc.boisestate.edu>). Chapter Four of the Idaho Non-Point Source Management Plan also contains a listing of programs that could potentially be used for implementation funding (IDEQ, 1999).

§319 (h)...Non-Point Source Grants, U.S. Environmental Protection Agency/IDEQ

http://www.deq.state.id.us/water/water1.htm#ww_nonpoint

This program provides financial assistance for the implementation of best management practices to abate non-point source pollution (NPS). The IDEQ manages the NPS program. All projects must demonstrate the applicant's ability to abate NPS pollution through the implementation of BMP's.

Conservation Improvement Grants, ISCC

http://www.scc.state.id.us/PDF/Conservation%20Improvement%20Grant%20Policy-Revised%202_.pdf

The Conservation Improvement Grant program is administered by ISCC, in cooperation with Idaho's 51 soil and water conservation districts. This program provides financial assistance to eligible applicants for the implementation of natural resource conservation projects. The program is aimed primarily at water quality and riparian area improvement projects. A 1:1 match, cash or in-kind, is required. The match cannot originate from another cost-share program or units of government.

Conservation Reserve Program (CRP), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

The CRP program provides a financial incentive to landowners for the protection of highly erodible and environmentally sensitive lands with grass, trees, and other long-term cover. This program is designed to remove those lands from agricultural tillage and return them to a more stable cover. This program holds promise for non-point source control since its aim is highly erodible lands.

Conservation Technical Assistance (CTA), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

Technical assistance for the application of BMP's is provided to cooperators of soil conservation districts by the NRCS. Preparation and application of conservation plans is the main form of technical assistance. Assistance can include the interpretation of soil, plant, water, and other physical conditions needed to determine the proper BMP's. The CTA program also provides financial assistance in implementing BMP's described in the conservation plan.

Environmental Quality Incentives Program (EQIP), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

EQIP is a program based on the 1996 Farm Bill legislation and was reauthorized in the 2002 Farm Bill. This program combines the functions of the Agricultural Conservation Program, Water Quality Incentives Programs, Great Plains Conservation Program, and the Colorado River Basin Salinity Control Program. EQIP offers technical assistance, and cost share monies to landowners for the establishment of a five to ten year conservation agreement activities such as manure management, pest management, and erosion control. This program gives special consideration to contracts in those areas where agricultural improvements will help meet water quality objectives.

Farm Services Agency Direct Loan Program, FSA

<http://www.fsa.usda.gov/pas/default.asp>

This program provides loans to farmers and ranchers who are unable to obtain financing from commercial credit sources. Loans from this program can be used to purchase or improve pollution abatement structures.

National Fish and Wildlife Foundation (NFWF) Grants in Partnership with NRCS

<http://www.nfwf.org/programs/nrcsnacd.cfm>

This program is implemented by the NFWF and is designed to support natural resource conservation projects on private land. The program is aimed primarily at farmers and ranchers. Eligible applicants include state and local governments, education institutions, and nonprofit organizations. Special consideration is given to grants in partnership with NRCS, Resource Conservation and Development Areas, and conservation districts. The program requires a 1:1 match of non-federal dollars or goods and services of equal value, although a 2:1 match is encouraged.

Partners for Wildlife (Partners), U.S. Fish and Wildlife Service

<http://partners.fws.gov>

The Partners for Wildlife program is implemented by the U.S. Fish and Wildlife Service and designed to restore and enhance fish and wildlife habitat on private lands through public/private partnerships. Emphasis is on restoration of riparian areas, wetlands, and native plant communities.

Resource Conservation and Development (RC&D), NRCS

<http://www.id.nrcs.usda.gov/programs/red.html>

Through locally sponsored areas, the RC&D program assists communities with economic opportunities through the wise use and development of natural resources by providing technical and financial assistance.

Resource Conservation and Rangeland Development Program (RCRDP), ISCC

<http://www.scc.state.id.us/loans.htm>

The RCRDP program provides grants for the improvement of rangeland and riparian areas, and loans for the development and implementation of conservation improvements.

Small Watersheds (PL-566), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

The Small Watersheds program authorizes the NRCS to cooperate in planning and implementing efforts to improve soil and water conservation. The program provides for technical and financial assistance for water quality improvement projects, upstream flood control projects, and water conservation projects.

Water Quality Program for Agriculture (WQPA), ISCC

<http://www.scc.state.id.us/docs/wqpafs.doc>

Provides financial incentives to owners and operators of agricultural lands to apply conservation practices to protect and enhance water quality, and improve fish and wildlife habitat.

Wetlands Reserve Program (WRP), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

WRP was established to help landowners work toward the goal of "no net loss" of wetlands. This program provides landowners the opportunity to establish 30-year or permanent conservation easements, and cost-share agreements for landowners willing to provide wetlands restoration.

Wildlife Habitat Incentive Program (WHIP), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

WHIP was established to help landowners improve habitat on private lands by providing cost-share monies for upland wildlife, wetland wildlife, endangered species, fisheries, and other wildlife. Additionally, cost share agreements developed under WHIP require a minimum 10-year contract.

Outreach

The conservation partnership will use their combined resources to provide information about BMPs to improve water quality to agricultural landowners and operators within this agricultural implementation plan area. A local outreach plan may be developed. Newspaper articles, district newsletters, watershed and project tours, landowner meetings and one-on-one personal contact may be used as outreach tools.

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
- Organize an informational tour bringing together all interested parties

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 reducing agricultural nonpoint-source pollution. 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.

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 bacteria 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. This 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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