Priest River Subbasin Temperature Addendum Implementation Plan for Agriculture

(17010215)

Photo taken from Priest River Subbasin Assessment and TMDL Addendum (IDEQ, 2003)

Prepared by the Idaho Soil and Water Conservation Commission
in cooperation with the Bonner Soil and Water Conservation District

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Introduction

The objective of this plan is to address the temperature Total Maximum Daily Load (TMDL) addendums for the Priest River subbasin (DEQ, 2015). The temperature TMDL addendum provided load allocations for an increase in riparian shade to restore stream temperatures to natural background conditions. Of the factors influencing shade, streamside vegetation and channel morphology are the most likely to be modified by anthropogenic activities and can be most readily addressed and corrected by a TMDL implementation plan (IDEQ, 2015).

The Idaho Soil and Water Conservation Commission is the designated agency responsible for preparing TMDL implementation plans for agriculture and grazing. Implementation activities recommended in this plan will include an array of agricultural best management practices (BMPs) for riparian treatment units which, when implemented, will increase shade and help to restore stream temperatures to natural background conditions.

In accordance with Idaho statute nothing in the plan shall be interpreted as requiring BMP implementation for agricultural operations which are not adopted on a voluntary basis (IC §39-3611(10)).

Project Setting

The Priest River subbasin (hydrologic unit code 17010215) is 981 square miles in area, and located in the northwest corner of the Idaho Panhandle adjacent to the state of Washington and Canadian border (Figure 1). Landownership within the subbasin is mixed with majority of land owned and managed by the Idaho department of lands (IDL) and the US Forest Service (USFS). The majority of the lower portion of the watershed is privately owned land. Other tracts of privately owned land occur near Nordman, Coolin, and the lower reaches of Lamb Creek (DEQ, 2015).

For more information about the Priest River subbasin, see the *Priest River Subbasin Assessment and Total Maximum Daily Load* (DEQ 2001).

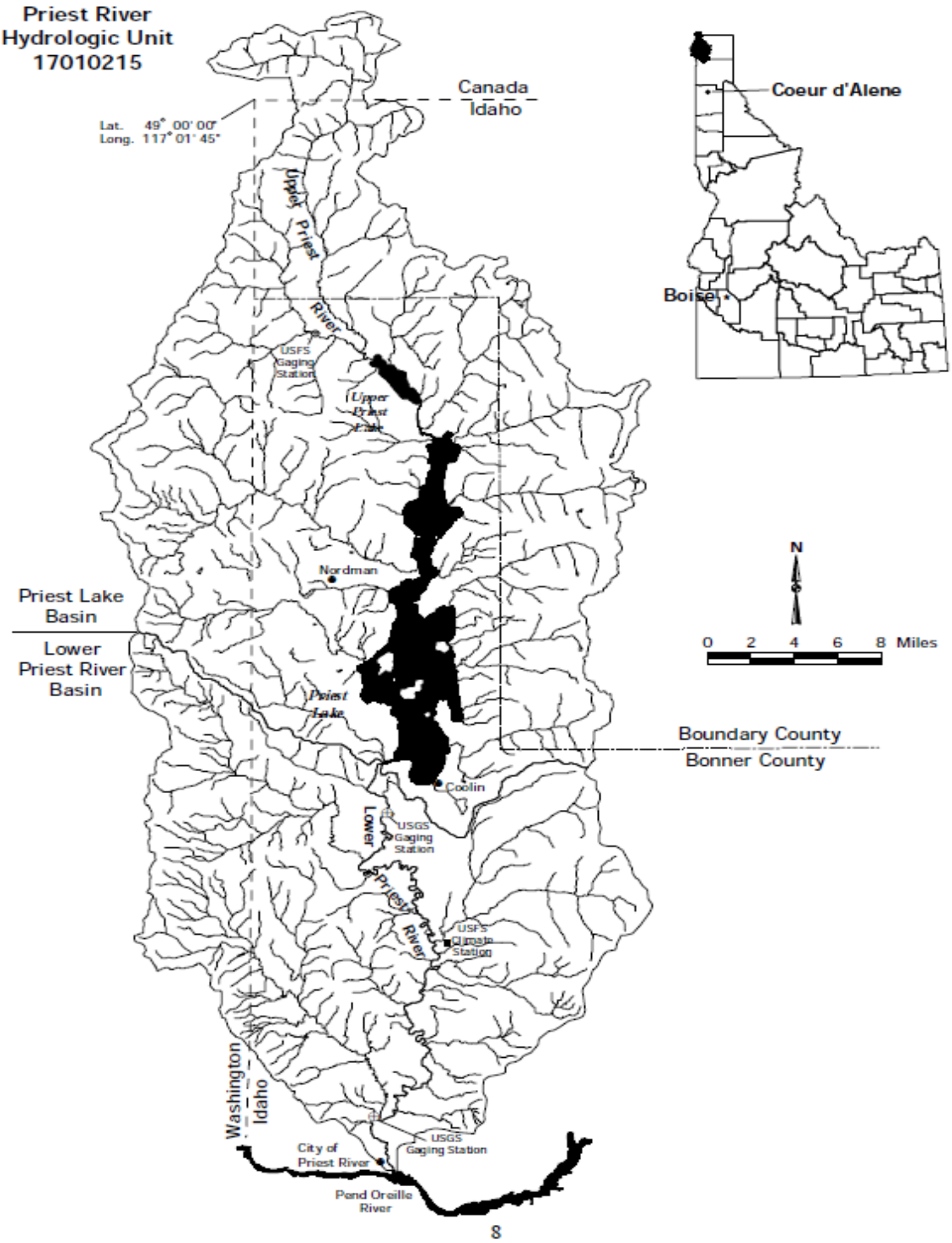

Figure 1. Priest River Subbasin Location Map (IDEQ 2001)

Land Use and Land Ownership

Land use in the Priest River Subbasin is primarily owned and managed by the USFS and IDL (Figure 2). In the lower Priest River and East River watersheds, land use 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 Priest River itself. For a detailed description of land use, please refer to the original Priest River subbasin TDML.

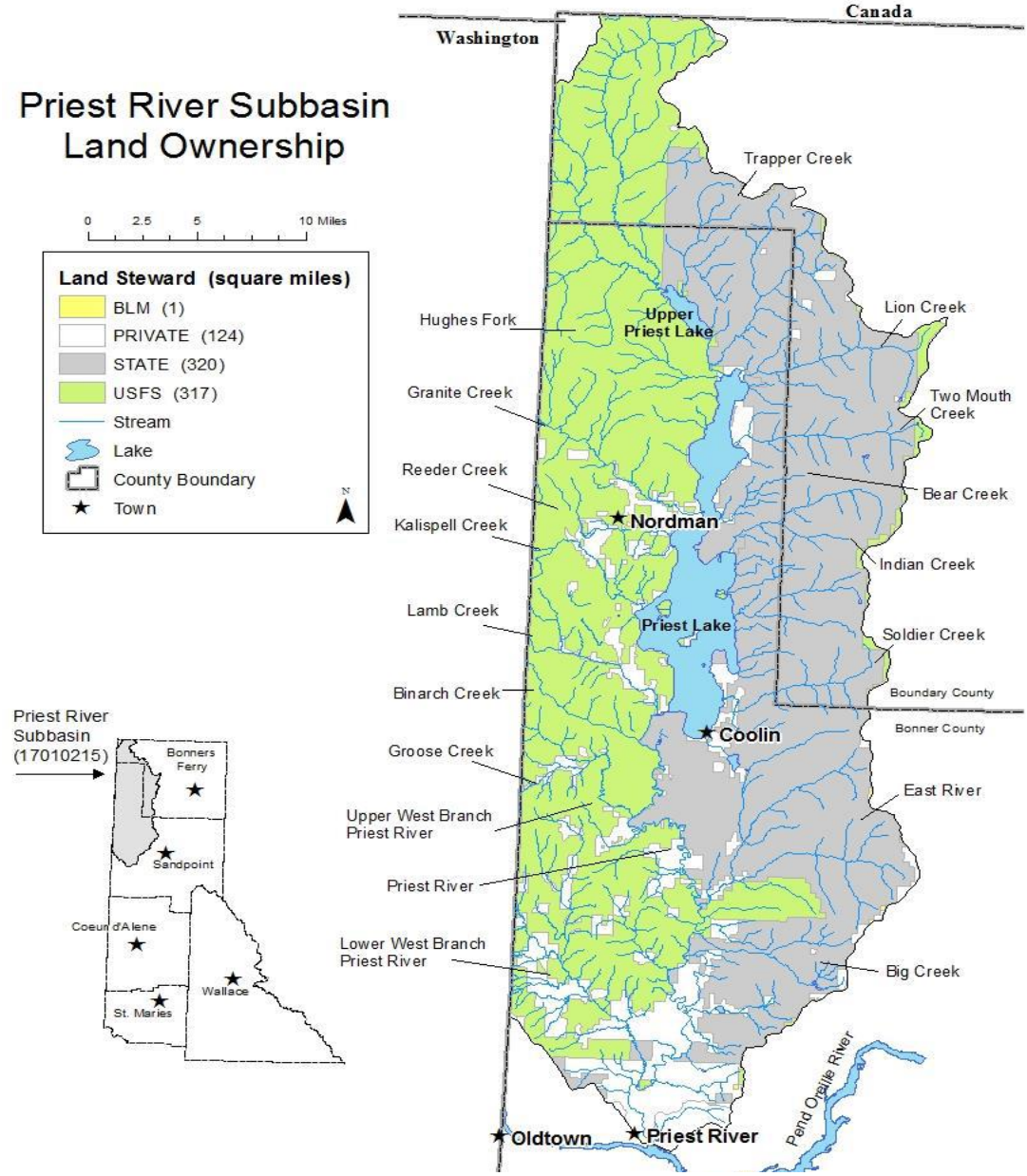

Figure 2. Land ownership in Priest River subbasin (IDEQ 2015)

Accomplishments

The "*Priest River Subbasin TMDL: 2015 Temperature Addendum*" explains implementation work that has been done. Historically, agricultural BMPs have been implemented to a minor degree within the basin, mainly consisting of fencing to deny cattle access to streams. Table 1 summarizes the practices installed using NRCS federal funds between 2008 and 2017 that were not reported in the addendum.

Table 1. BMP Practices installed with NRCS funds 2008 thru 2017

Practice Name	Amount Installed	Unit
Streambank and Shoreline Protection	100	Feet
Fence	3754.7	Feet
Tree/Shrub Site Preparation	35.9	Acres
Tree/shrub Establishment	327.2	Acres
Forage and Biomass Planting	10.9	Acres
Forest Stand improvement	80	Acres
Woody Residue Treatment	80	Acres
Access Road	750	Feet
Pollinator Habitat	2	Acres

Resource Concerns

Twenty-six AUs are included in Category 5 of Idaho's 2012 Integrated Report with the majority of exceedances to Idaho's water quality temperature criteria (IDEQ 2015). Since the original impaired listing in 2001, the Priest River Subbasin was identified as needing an addendum TDML for temperature. Analyses of temperature data collected from streams within the Priest River subbasin indicate that 22 streams and their tributaries exceeded Idaho water quality standards for temperature.

Temperature is a water quality factor integral to the life cycle of fish and other aquatic species. Different temperature regimes also result in different aquatic community compositions. Water temperature dictates whether a warm, cool, or coldwater aquatic community is present. Many factors, natural and anthropogenic, affect stream temperatures. Natural factors include altitude, aspect, climate, weather, riparian vegetation (shade), and channel morphology (width and depth). Human-influenced

factors include heated discharges (such as those from point sources), riparian alteration, channel alteration, and flow alteration (IDEQ 2015).

Temperature

The ““*Priest River Subbasin TMDL: 2015 Temperature Addendum*” used potentail natural vegetat Potential Natural Vegetation (PNV) for the temperature TMDL. The PNV was modeled for plant community structures using aerial photography. The PNV shade was converted to solar loads. The accuracy of the aerial photo interpretations were field verified with a Solar Pathfinder at eleven sites throughout the subbasin (IDEQ 2015). In the upper section of the subbasin, Lamb creek (17010215PN025_02) was in the best condition with the respect to shade with an average of 6% reduction needed in solar load over all sections. The Middle Fork East River (17010215PN003_02) in the lower section is adversely affected by agricultural and timber activities, resulting in a 58% reduction needed. Figures 3 and 4 display the shade deficits in the major agricultural areas. Table 2 displays the data for the major agricultural areas.

Table 2. Total solar loads and average lack of shade for the major agricultural areas

Water Body	Assessment Unit Number	Total Existing Load in kWh/day	Total Target Load in kWh/day	Excess Load in kWh/day	Necessary Percent Reduction
Reeder Creek: source to mouth	17010215PN023_02	200,000	150,000	50,000	33%
Reeder Creek: source to mouth	17010215PN023_03	18,000	16,000	2,000	11%
Lamb Creek: ID/WA border to mouth	17010215PN025_02	410,000	390,000	23,000	6%
Middle Fork East River	17010215PN003_02	130,000	60,000	75,000	58%
Middle Fork East River	17010215PN003_03	250,000	240,000	13,000	5%
East River	17010215PN003_04	250,000	180,000	73,000	29%
Lower West Branch Priest River: ID/WA border to mouth	17010215PN030_03	340,000	300,000	41,000	12%
Lower West Branch Priest	17010215PN030_04	1,100,000	900,000	230,000	21%

River: ID/WA border to mouth					
Priest River	17010215PN001_05	13,000,000	11,000,000	1,900,000	15%

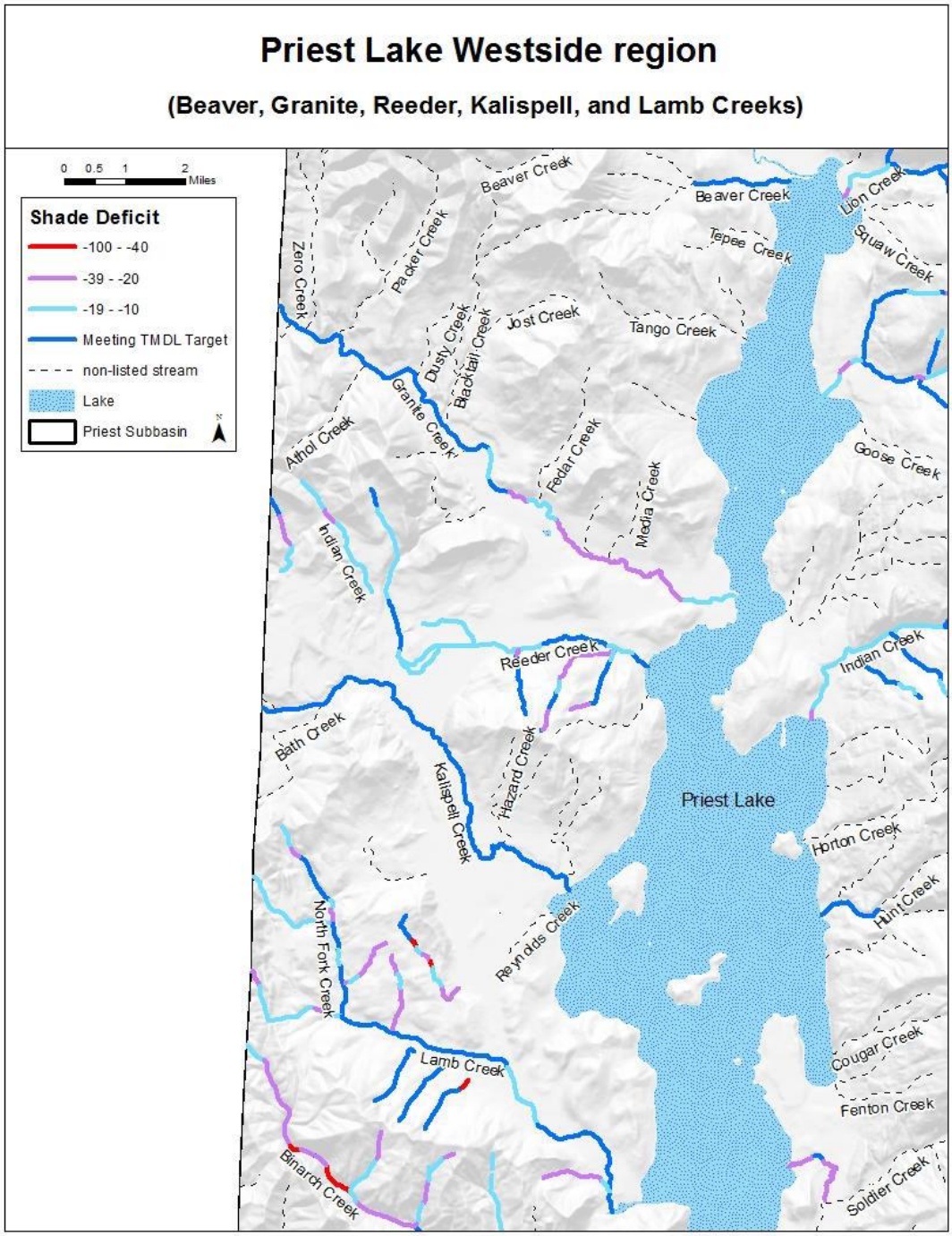

Figure 3. Shade deficit for Priest lake westside region (IDEQ 2015)

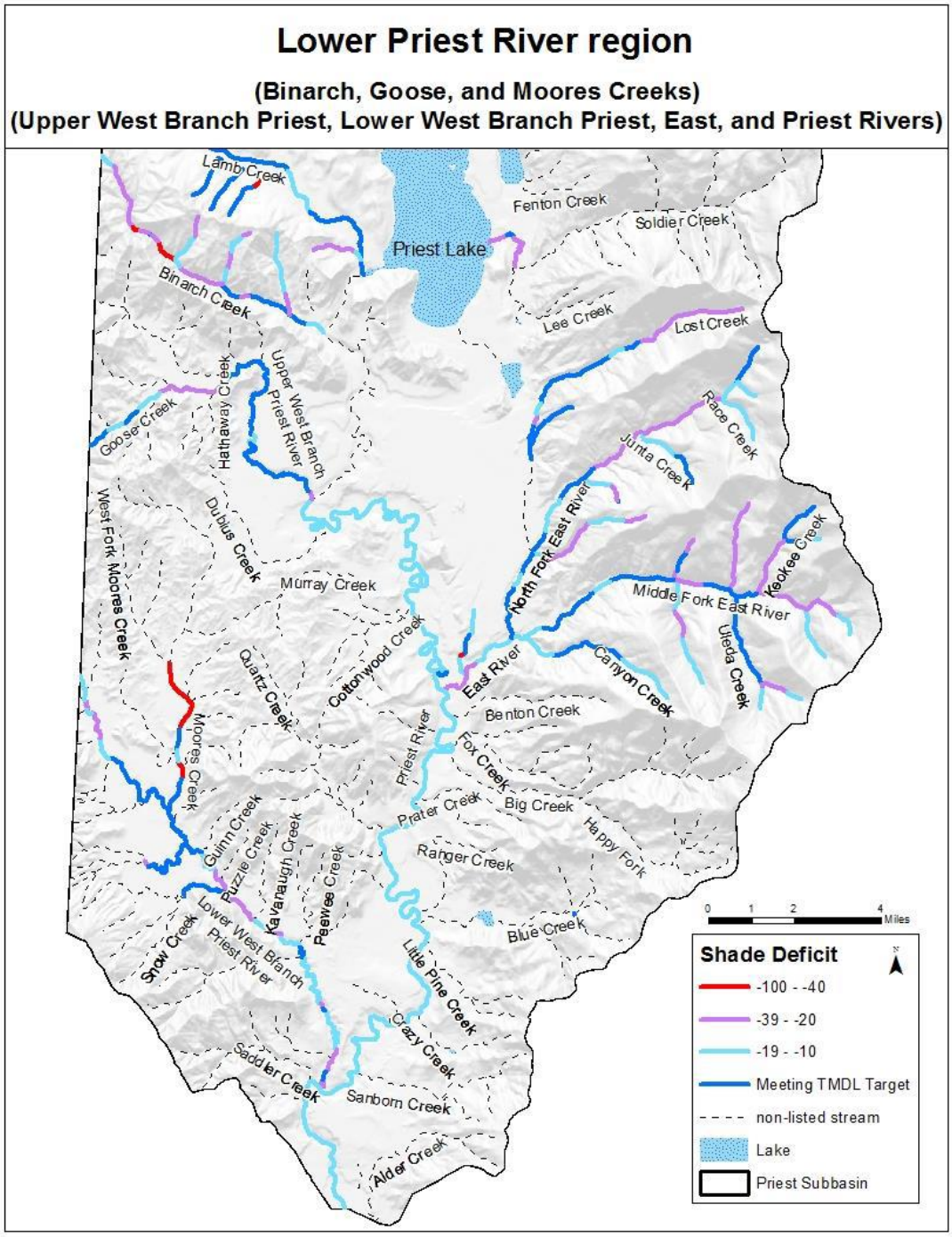

Figure 4. Lower Priest River region shade deficit (IDEQ 2015)

Agricultural Inventory and Evaluation

The main agricultural areas within the Priest River subbasin include the subwatersheds of Reeder Creek, Lamb Creek, East River, and Lower Priest River. Major agricultural practices in these areas include haying, grazing, and timber harvesting.

As projects are implemented the existing shade levels should be documented before implementation of practices to verify the PNV aerial photo interpretation of the site. These pre-implementation values should be compared to shade levels after implementation to determine actual shade increases of each project. This process will also help to evaluate the PNV approach used in developing the temperature TMDL.

Treatment

Temperature critical areas were defined as those areas with more than 20% lack of shade. Increases in shade provided to the stream from riparian vegetation may only take a few year to establish, but many years will be required for vegetation to achieve its full potential to reduce solar inputs. (IDEQ 2015). Treatments should include BMP's that focus on achieving load allocation. Examples of streamside shade improvement projects may include tree planting, site-specific riparian management plans, riparian fencing, riparian forest buffers, streambank stabilization, and stream morphology improvement.

Funding

Financial and technical assistance for installation of BMPs may be needed to ensure success of this implementation plan. The Bonner Soil and Water Conservation District can assist interested landowners in actively pursuing potential funding sources to implement water quality improvements on private agricultural and grazing lands. The SWC and NRCS can provide technical assistance when needed. Many of these programs can be used in combination with each other to implement BMPs. These sources include (but not limited to):

CWA 319 –These are Environmental Protection Agency fundsk allocated to Tribal entities 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 Tribal Reservations. Funds focus on projects to improve water quality and are usually related to the TMDL process.
http://www.deq.idaho.gov/water/prog_issues/surface_water/nonpoint.cfm#management

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

Environmental Quality Incentives Program (EQIP): EQIP provides financial and technical assistance to agricultural producers in order to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat. http://www.nrcs.usda.gov/programs/eqip/

Regional Conservation Partnership Program (RCPP) - RCPP promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. NRCS provides assistance to producers through partnership agreements and through program contracts or easement agreements.
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/farmbill/rcpp/

The Agricultural Conservation Easement Program (ACEP) – ACEP provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits.. Under the Agricultural Land Easements component, NRCS helps Indian tribes, state and local governments and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements component, NRCS helps to restore, protect and enhance enrolled wetlands.
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/easements/acep/

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.
http://www.nrcs.usda.gov/programs/cta/

National Grazing Lands Coalition (NatGLC) –The National Grazing Lands Coalition' promotes ecologically and economically sound management of grazing lands. Grants are available that facilitate the following: (1) demonstration of how improved soil health affects grazing lands sustainability (2) establishment of conservation partnerships, leadership and outreach, (3) education of grazing land managers, professionals, youth

and the public (4) enhancement of technical capabilities, and (5) improvement in the understanding of the values and multiple services that grazing lands provide. http://www.glci.org/

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 http://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index

Conservation Innovation Grants (CIG) –CIG is a voluntary program to stimulate the development and adoption of innovative conservation approaches and technologies for agricultural production.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/

State Revolving Loan Funds (**SRF) –**These funds are administered through the IDEQ. https://www.deq.idaho.gov/water-quality/grants-loans/water-system-construction-loans.aspx

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.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/alphabetical/csp/

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. 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. http://www.fws.gov/partners/pdfs/ID-needs.pdf

Maintenance, Monitoring, Evaluation

DEQ will continue to monitor the watersheds as per Idaho Code 39-3611, at least on a 5-year interval using BURP protocol. Additional monitoring of BMP's and the maintenance of BMP's installed will be performed by the designated agency or the agency that funded the BMP installations. The Bonner Soil and Water Conservation District follows the Natural Resource Conservation Service guidelines for BMP life

expectancy and monitors BMP installations for the expected life of each practice to ensure proper maintenance of the practices. Typically, when a volunteer approaches the district for BMP assistance the district evaluates the current site-specific resource concerns. Individual conservation planning with willing landowners will determine the most appropriate BMPs to install on a case by case basis.

All BMP's will be maintained by the landowner for the life of the practice. BMP's will be monitored and evaluated upon completion of the project, during annual reviews, and throughout the life of the practice. Monitoring and evaluations will enable staff to ensure practices are maintained and to evaluate BMP effectiveness for future projects.

References

Idaho Code § 39.3611. Development and implementation of total maximum daily load or equivalent processes.

IDEQ. 2015. “Priest River Subbasin Assessment and TMDL: 2015 Temperature Addendum.” Idaho Department of Environmental Quality, Coeur d’Alene Regional Office.

IDEQ. 2003. “Priest River Subbasin Assessment and TMDL Addendum”. Idaho Department of Environmental Quality, Coeur d’Alene Regional Office.

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Shumar, M.L. and J. DeVarona. 2009. The Potential Natural Vegetation (PNV) Temperature Total Maximum Daily Load (TMDL) Procedures Manual. Boise, ID:DEQ.