

Big Wood River Temperature Addendum Implementation Plan for Agriculture (17040219)



Prepared by the Idaho Soil and Water Conservation Commission
in Cooperation with Blaine Conservation District

Original Plan: Big Wood River Agricultural TMDL Imp Plan October 2006

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Introduction

The objective of this plan is to address the Total Maximum Daily Load (TMDL) addendum for temperature on the Big Wood River for privately owned agricultural and grazing land.

The temperature TMDL addendum prepared by the Idaho Department of Environmental Quality, (DEQ), provides load allocations for an increase in riparian shade to restore stream temperatures to natural background conditions. Temperature was a listed pollutant in the Big Wood Water Body Assessment and Total Maximum Daily Load (DEQ, March 2002), but at that time no TMDL was developed for temperature.

The Idaho Soil and Water Conservation Commission (SWCC), is the designated agency responsible for preparing an implementation plan for agriculture and grazing activities. The original implementation plan entitled “Big Wood River Watershed Total Maximum Daily Load (TMDL) Implementation plan for Agriculture”, dated October 2006, outlines best management practices (BMPs) for agricultural activities in upstream and riparian treatment units that when installed, provides sediment, and nutrient reductions and in many cases improves temperature.

Scientific data of allocations are used to help land managers compare and prioritize areas for implementation of BMPs that can bring the best results. The overall goal of the TMDL process is to achieve the objective of maintaining or returning streams to their approved designated beneficial uses. The SWCC has a BMP effectiveness and feedback loop process and continues to confirm results from installation of agricultural related practices.

Project Setting

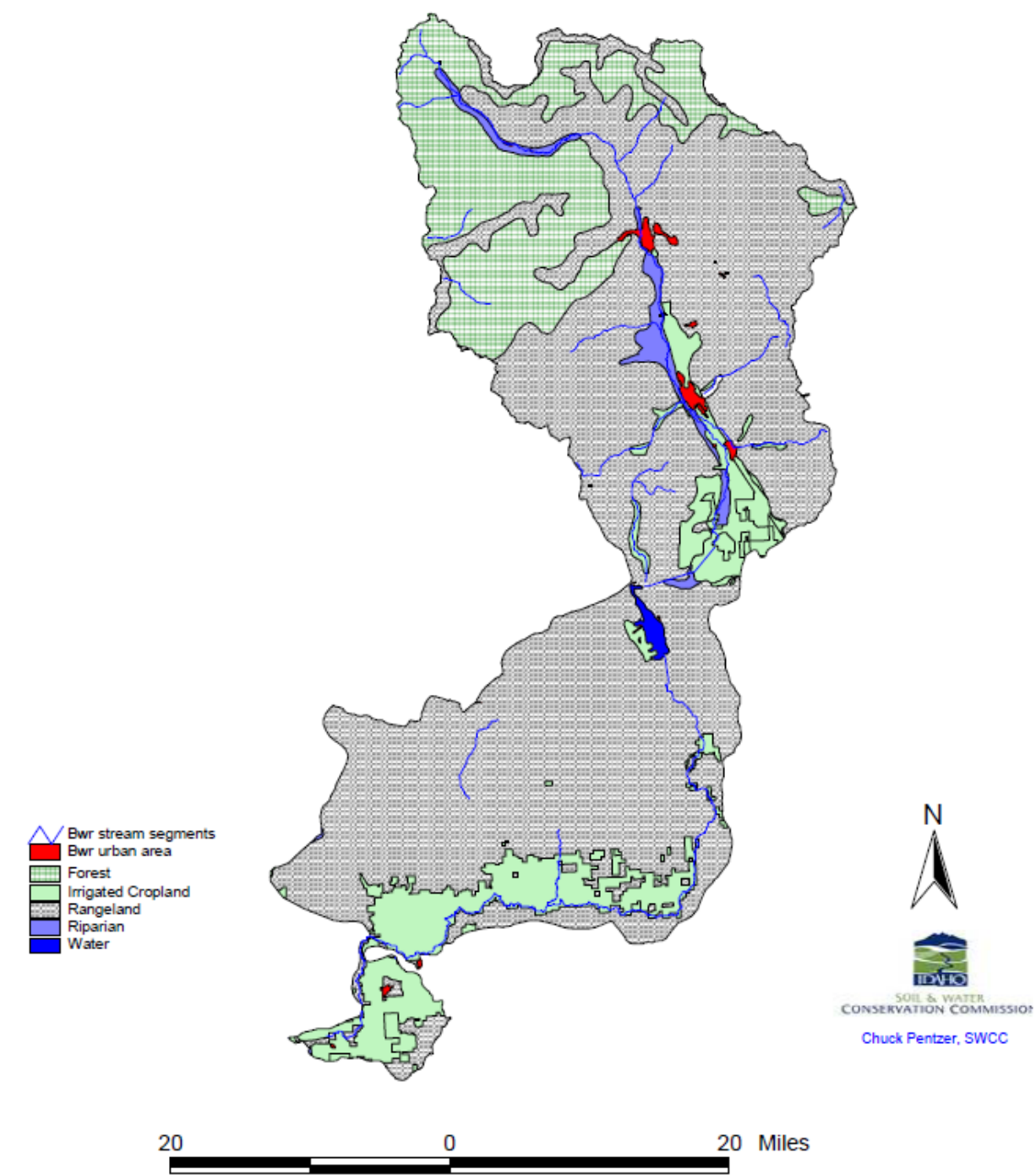
The Big Wood River sub-basin (hydrologic unit code 17040219) is in south-central Idaho and begins from its origins above Sun Valley, Idaho, and continues south to the Snake River Plain near Gooding, totaling approximately 957,495 acres. Elevations in the Big Wood Watershed range from 11,112 feet at Silver Peak, and receives as much as 40” of annual rainfall in the Boulder Mountain Range of the Sawtooth National Forest, to 2,760 feet at the confluence at the Snake River with an average rainfall of 10”. The watershed borders Custer County in the north, and includes Blaine, Camas, Lincoln, and Gooding Counties and corresponding soil conservation districts (CDs) of Blaine, Camas, Wood River, and Gooding CDs.

Private Land Use in the Big Wood

▪	Irrigated Cropland	73,205 acres
▪	Rangeland	92,481 acres
▪	Pasture and Riparian	23,002 acres
▪	Small Acreage	2,899 acres
▪	Urban	28,443 acres

Figure 1

Big Wood Land Use Map



Temperature TMDL

Two of the twelve main water bodies in the Big Wood River were identified as needing an addendum TMDL for temperature by DEQ.

Black Canyon Creek AUs (ID17040219SK030_02 and ID17040219SK030_03) were proposed for delisting.

As a result, this implementation addendum addresses specifically for addressing improving temperature in reaches of Rock Creek and Quigley Creek.

- Rock Creek (ID17040219SK028_02), which drains south from Rocky Butte, southwest of Hailey to the backwater of Magic Reservoir near the Highway 20 and Highway 75 junction.
 - Beneficial Uses: Cold water aquatic life, Salmonid spawning, Secondary contact recreation
- Quigley Creek (ID17040219SK008_02), which drains from the Pioneer Mountains to the east side of Hailey.
 - Beneficial Uses: Quigley Creek: Cold water aquatic life, Salmonid spawning, Secondary contact recreation

The primary land use in both water bodies is grazing on rangeland and pastureland on all state, federal and private ownerships. There is a relatively small amount of irrigated land use of hay/pasture/crop (approximately 250 acres), in the lower Quigley drainage.

Figure 2

Rock Creek Shade Analysis

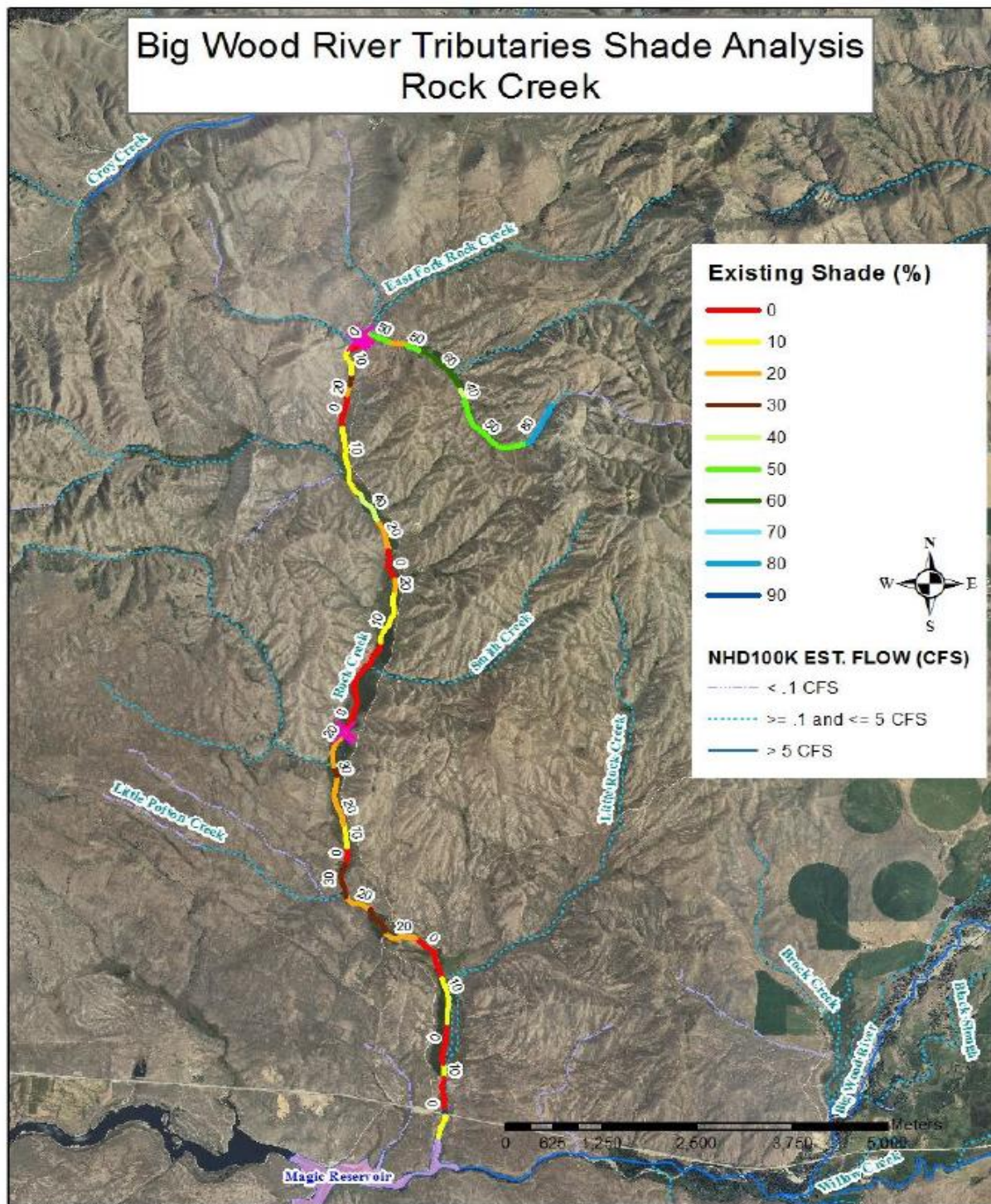


Figure 13. Existing shade estimated for Rock Creek by aerial photo interpretation.
(From DEQ's TMDL Addendum)

Figure 3

Quigley Creek Shade Analysis

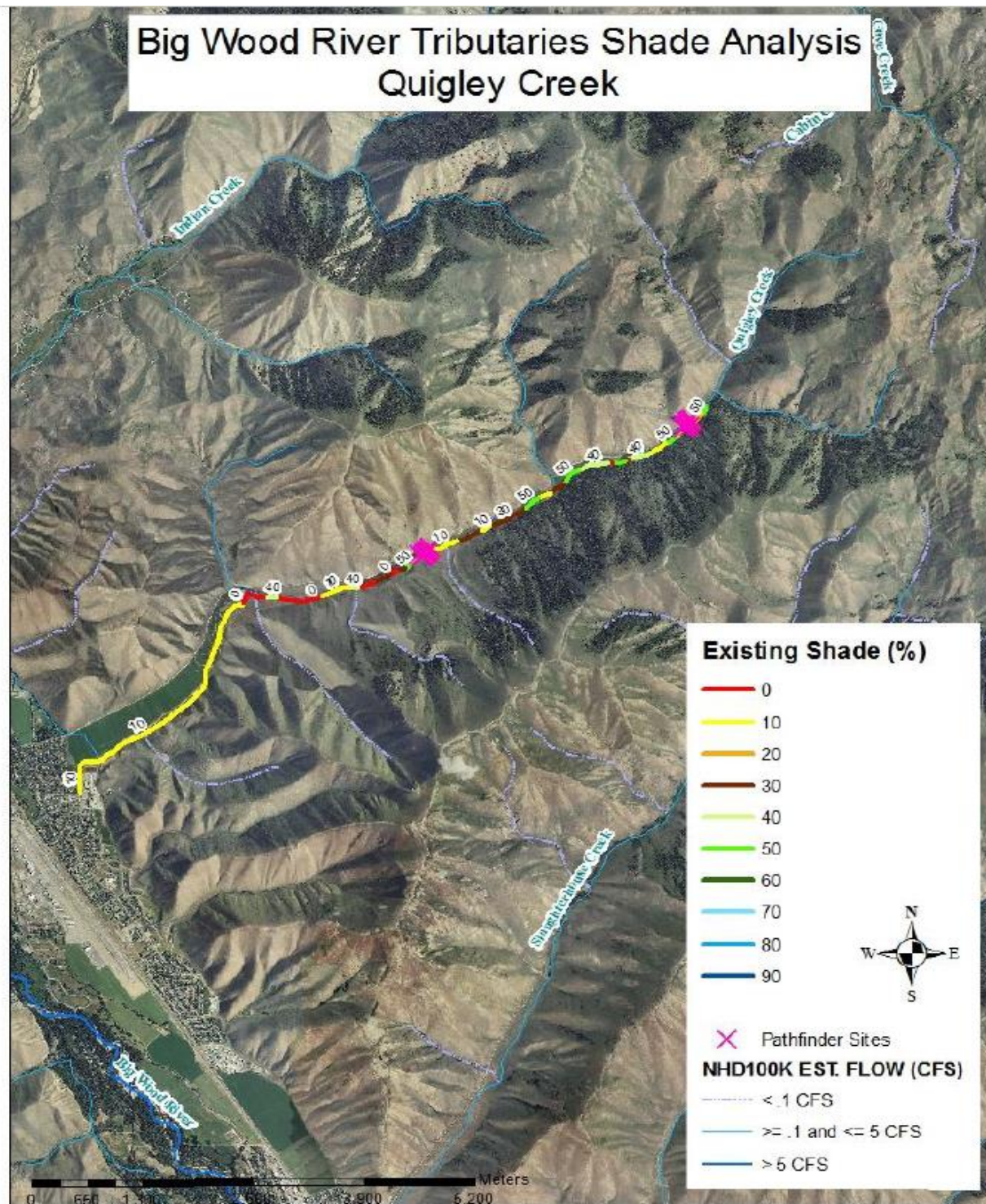


Figure 10. Existing shade estimated for Quigley Creek by aerial photo interpretation.
(From DEQ's TMDL Addendum)

Figure 4

Rock Creek Private Land Reaches

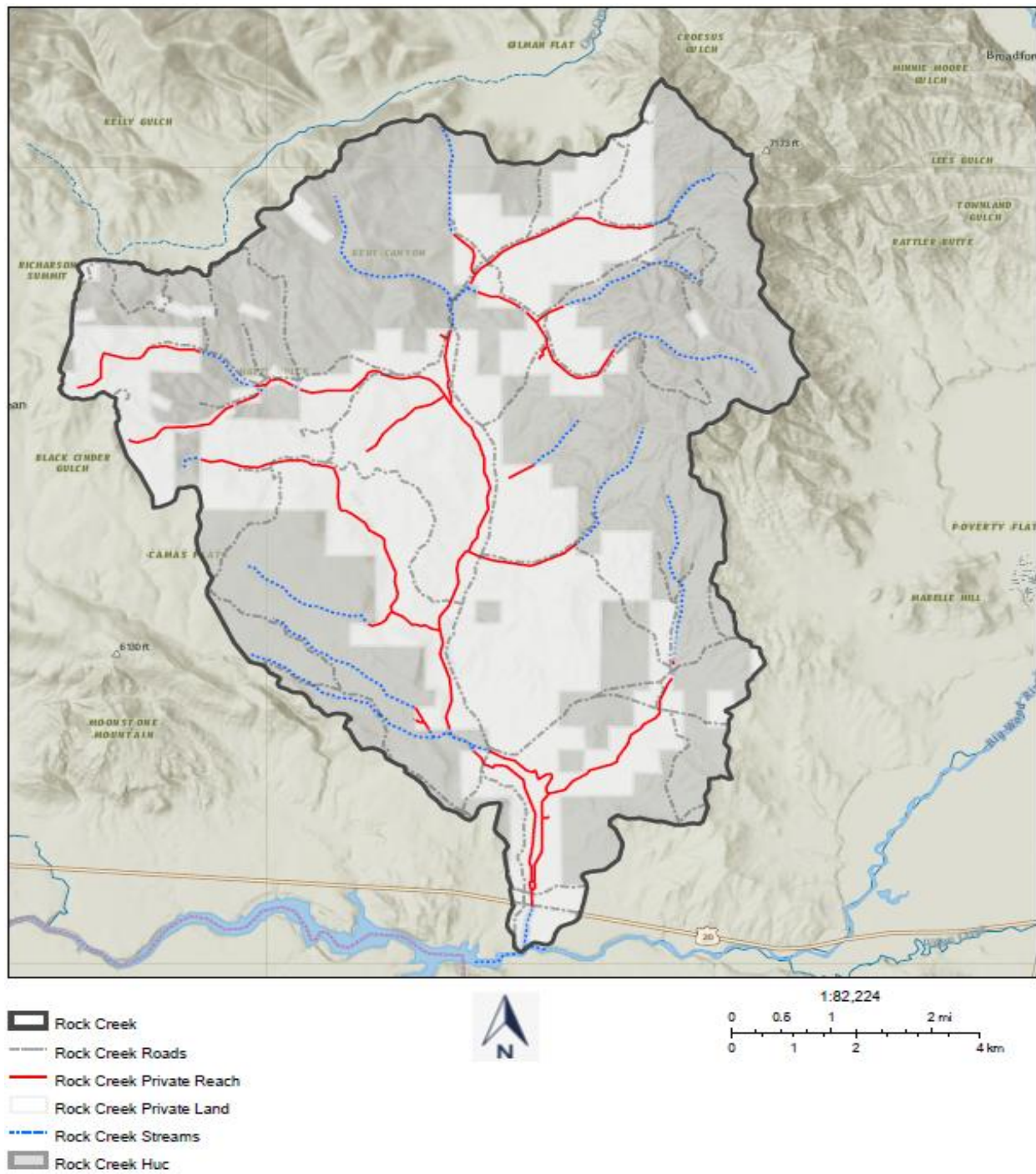
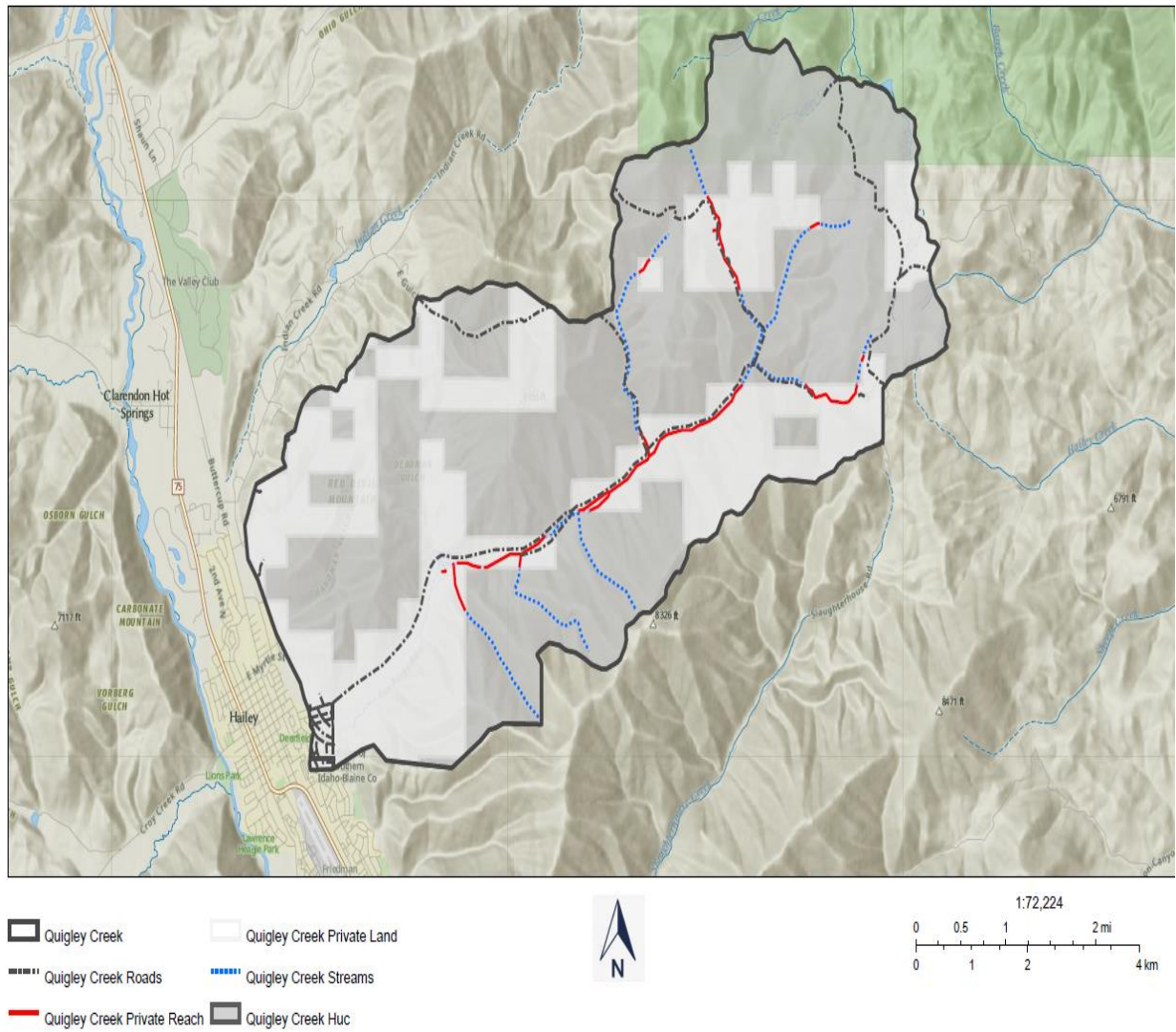


Figure 5

Quigley Creek Private Land Reaches



Implementation by Shade Analysis

Effective target shade levels were established by DEQ for Rock Creek and Quigley Creek based on the concept of maximum shading under potential natural vegetation resulting in natural background temperature levels. Shade targets were derived from effective shade curves developed for similar vegetation types in Idaho. Existing shade was determined from aerial photo interpretation that was partially field verified with Solar Pathfinder data. Target and existing shade levels were compared to determine the amount of shade needed to bring water bodies into compliance with temperature criteria in Idaho “Water Quality Standards” (IDAPA 58.01.02).

Both streams examined lack shade to some degree. Rock Creek and Quigley Creek have about one-quarter of their existing solar load as excess load from a lack of shade.

Although the temperature TMDL completed by DEQ analysis focuses on total solar loads, differences between existing and target shade, as depicted in the lack of shade figures (Figure 2 and Figure 3), are the key to successfully restoring these waters to achieving water quality standards. Each load analysis table contains a column that lists the lack of shade on the stream segment. This value is derived from subtracting target shade from existing shade for each segment. As a result, stream segments with the largest lack of shade are the areas that need the most efforts for improving temperature.

Resource Treatments for this Temperature Addendum

In the original ag implementation plan, a list of bmps were listed as suggestions that landowners and managers could consider addressing sediment and nutrient reductions. A detailed breakdown of bmp recommendations for all cropland uses are in the original Big Wood River TMDL Implementation plan under the Appendices, Appendix A. “Big Wood River Watershed Total Maximum Daily Load: Implementation plan for Agriculture”. The Riparian portion of that list is shown below on the left table. The table on the right are additional BMPs recognized that landowners and managers can consider for working towards improving in stream temperature. Individual, on site planning will determine which BMPS to consider that will be beneficial and economical to implement:

Table 1

**From Ag TMDL implementation plan
Riparian Land Treatment Unit**

Watering Facility (614)
Fence (382)
Structure for Water Control (587)
Tree/Shrub Establishment (612)
Heavy Use Area Protection (561)
Pipeline (516)
Wildlife Habitat Management (645)
Prescribed Grazing (528)

BMP List

Additional Ag BMPs for Temperature

Access Control (472)
Access Road (560)
Critical Area Planting (342)
Filter Strip (393)
Channel Bed Stabilization (584)
Riparian Forest Buffer (391)
Riparian Herbaceous Cover (390)
Stream Habitat Improvement (395)
Streambank/Shoreline Protection (580)

Rock Creek Ag Implementation

SWCC performed on site stream and property assessments in 2003 and followed up with an additional assessment in 2014. Many beaver dams were identified along the main stem and the 2014 assessment documented continual beaver activity. The areas located near the mainstream showed an improving trend over the years as vegetative cover and bank stability had shown improvements within the main stem of Rock Creek. In 2014, the Wood River Land Trust and Nature Conservancy acquired the private land of Rock Creek Ranch and coordinated the management of the adjacent state and federal grazing land within the drainage. The University of Idaho has since joined in with the two entities and acquired the ranch in 2019 for the main purpose for research, education, and public outreach. This unique ranch operation is now managed by the University of Idaho College of Natural Resources, College of Agricultural and Life Sciences and reports to advisory committees to ensure the collaborative approach to landscape-scale conservation sustainable ranching practices. In addition to grazing management strategies initiated since the original acquisition date, over 20 Beaver Dam Analogs (BDA)s and woody debris structures were installed on tributaries of Rock Creek to augment flow and provide improved water holding capacity within the surrounding area which will improve vegetative cover and continue to improve the stream temperature goals of the TMDL.

Regarding considerations for improvements to temperature, the land managers can refer to DEQ's shade map and seek feasible ways of making improvements and prioritize which of those areas where cover near the mainstream is minimal. Grazing management across all ownerships can be adjusted and monitored to allow sustaining permanent cover of shrubs, sedges, and trees to establish and thrive. Locating offsite shade and watering facilities in strategic areas could alleviate pressures to some of the sensitive areas. The watering facilities and defined grazing unit strategies may be useful to facilitate additional livestock distribution helping with rotation, timing, and number of animals. Grazing durations and quicker rotations of pasture can improve plant growth near stream areas. Supplements could also be considered to help reduce the desire for protein and other micro-nutrients found in woody species and herbaceous grasses. Temperature of the stream will also benefit where beaver activities exists and this will continue to maintain an increased water table in those areas allowing for additional woody and willow growth near the streams. Upland grazing management among the tributaries can enhance water retention and eventually slow storm and winter runoff events. Also, in some areas in the mid portion of the mainstream, "ditches" were used that dispersed water across various portions of pastures and help spread availability of watering across some pasture unites. Some of those areas could benefit by installing watering facilities and keeping more water in the stream reducing the "braided" effect.

Effects of installed practices can take time to realize the positive benefits. Past improvements will continue to show an improving trend for this watershed and combined with additional bmps targeted for temperature improvements especially in high priority areas, will all help in achieving the ultimate goal of meeting the criteria for meeting the criteria for meeting the designated beneficial uses of this stream.

Quigley Creek Ag Implementation

The SWCC performed on site stream assessments in 2003 and staff did not have the opportunity to follow up with another review of the stream system in 2014. From ocular estimations, it appears that the stream sections have been showing an improving trend for stream cover.

Most of the approximately 7 miles of the immediately surrounding-stream section in Quigley Creek is privately owned, with intermittent sections of state and federal owned land. Adjacent land ownership above the riparian area is primarily private with the BLM and state land upstream and to the adjacent steep sloping hills. Willows and other species (cottonwood, shrubs, etc.) are present, but vary in densities along the stream. Some areas in the system are minimal.

Grazing impacts were evident in 2003 above the reservoir except near and within beaver complexes which provided for higher water tables and allowed for increased densities of woody and herbaceous vegetation. Channel stability and stream bank sloughing were noticed in the areas upstream of the beaver complex locations which had appeared to have weakened by grazing and reduced woody and herbaceous riparian species.

The Quigley reservoir restricts flow from the reservoir downstream to the town of Hailey, and no real channel is visible for the lower reach.

The cropland sprinkler system seems to rely on the reservoir storage, which captures most of the runoff from the drainage above. A four-mile bike path also surrounds the fields below the reservoir creating a multi-use area for ag and recreation.

Regarding considerations for improvements to temperature, it is suggested that the land managers refer to DEQ's shade map and seek feasible ways of improving shade in those areas where cover near the mainstream is minimal. For comparative and prioritization, it would seem areas with shades in reaches less than 50 on the map would provide the most benefit for temperature improvement.

Grazing management across all ownerships can be adjusted and monitored to allow permanent cover of shrubs, sedges, and trees to establish and thrive. Locating offsite watering facilities in strategic areas could alleviate pressures to some of the sensitive areas. Temperature of the stream is improved where there are beaver activities by providing an increased water table allowing for additional woody and woodies and willow growth in the system. Upland grazing management including those tributaries to the main stem can also provide benefits of water retention and slowing from storm events and winter runoffs.

Maintenance, Monitoring, Evaluation

The Idaho Soil and Water Conservation Commission (SWCC) has historically worked closely with Districts, landowners, and partnering agencies to address resource concerns and helping find equitable solutions. This implementation plan area is located entirely within the Blaine Conservation District whose locally elected member board are a valuable resource and contact for helping to coordinate continuing efforts in the Big Wood. The “Idaho Agricultural Best Management Practices Field Guide for Evaluating BMP Effectiveness, revised 2013” provides evaluation guidelines of site specific bmps and cumulative effects of the installed practices within the watershed. The field guide follows NRCS guidelines and when available, monitors BMP installations for the expected life of each practice to ensure proper maintenance of the practices and expected phased approach to achieving expected results.

Individual conservation planning with willing landowners will determine the most appropriate BMPs to install on a case by case basis. Funding programs are somewhat limited but do exist, and some of those programs are listed below. Monitoring and evaluations enables staff to ensure practices are maintained and to evaluate BMP effectiveness for future projects. Installed BMP’s on private land are maintained by the landowner and are monitored and evaluated throughout the expected life of the installed BMP.

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.

Funding Sources

Financial and technical assistance for installation of BMPs may be needed to ensure success of this implementation plan. The SWCC and NRCS can provide technical assistance as requested by the Blaine Conservation District. Many programs can be used in combination with each other to implement BMPs. The funding sources listed below include (but are not limited to):

Nonpoint Source management 319 Subgrants –These are Environmental Protection Agency funds 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.

<https://www.deq.idaho.gov/water-quality/grants-loans>

Note: State funded programs previously from WQPA thru the SWCC are now implemented thru the DEQ's 319 process.

Resource Conservation and Rangeland Development Program (RCRDP) –The RCRDP is a low interest loan program administered by the SWCC primarily for implementation of agricultural and rangeland best management practices.

<https://swc.idaho.gov/conservation-programs-2>

Environmental Quality Incentives Program (EQIP): EQIP thru NRCS 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.

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial>

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.

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/rcpp>

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.

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/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 (Nat GLC) –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. <https://www.grazinglands.org>

Conservation Reserve Program (CRP) –The CRP is a land retirement program for fields or portions of fields or strips of land that protect the soil and water resources. Examples can be the general signup crp for complete fields or buffers and filter strips thru Continuous CRP Signup programs: <https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program>

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 DEQ.

<https://www.deq.idaho.gov/water-quality/grants-loans>

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>

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 share on habitat projects in partnership with private landowners, non-profit organizations, and state and federal agencies. <https://idfg.idaho.gov/conservation/habitat/hip>

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. <https://www.fws.gov/partners>

References

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

Big Wood River Tributaries Temperature Total Maximum Daily Loads, Addendum to the Big Wood River Watershed Management Plan”. DEQ Twin Falls Regional office, Twin Falls, Idaho October 2013

Big Wood River Watershed Total Maximum Daily Load (TMDL) Implementation Plan for Agriculture, October 2006

2003 SWCC Big Wood stream assessments, David Ferguson, Chuck Pentzer, SWCC

2014 SWCC Rock Creek stream assessments, Karie Pappani, Chuck Pentzer, Rob Sharpnack, SWCC, in conjunction with Sue Switzer, DEQ, Terry Gregory, Id. Fish & Game, Keri York, Wood River Land Trust

Wood River Watershed Advisory Group (WAG)

University of Idaho (U of I) Rinker Rock Creek Ranch

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Blaine Soil Conservation District