

# Cow Creek Implementation Plan Temperature Addendum (17060108)



*Photo taken from Cow Creek temperature TMDL addendum (IDEQ, 2013)*

Prepared by the Idaho Soil and Water Conservation Commission  
In cooperation with the Latah Soil and Water Conservation District

July 2014

Original Plan: SWCC. July 2008. Cow Creek Watershed TMDL Implementation Plan for  
Agriculture. Moscow, ID.

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## Introduction

The objective of this plan is to address the temperature TMDL addendum for Cow Creek in the Palouse River subbasin. The temperature TMDL addendum provided load allocations for an increase in riparian shade to restore stream temperatures to natural background conditions. Streamside vegetation and channel morphology are factors influencing shade that are most likely to have been changed by anthropogenic activities and can be most readily corrected and addressed by a Total Maximum Daily Load (TMDL) (IDEQ, 2013). Temperature was a listed pollutant in the Cow Creek Subbasin Assessment (SBA) and Nutrient TMDL (IDEQ, 2005), but no TMDL was developed for temperature at that time. The Idaho Soil and Water Conservation Commission is the designated agency responsible for preparing an implementation plan for agriculture and grazing. The original implementation plan entitled “Cow Creek Watershed Total Maximum Daily Load Implementation Plan for Agriculture” dated July 2008 outlines best management practices (BMPs) for the riparian treatment unit that when installed will work toward increasing shade (ISCC, 2008).

## Project Setting

Cow Creek extends from the top of Paradise Ridge, several miles south of Moscow, Idaho, to its confluence with Union Flat Creek, about one mile east of the Washington Stateline (Figure 1). The total acreage of the watershed is 35,760 acres. Elevations range from 3,700 feet at Paradise Ridge to 2,570 feet at the Idaho-Washington border. The Idaho portion of the watershed is located in Latah and Nez Perce County (ISCC, 2008).

There are three distinct subwatersheds: Calf Creek, upper Cow Creek, and lower Cow Creek. Upper Cow Creek is approximately 37 square miles, entirely dryland cropland with an intermittent stream. Calf Creek is approximately 8 square miles and parallels Highway 95 for most of its length. Lower Cow Creek is approximately 11 square miles, dominated by annual crop production with the majority of the grazing that occurs in the watershed. Lower Cow Creek has year round flow as it approaches the state line (ISCC, 2008).

Climate is dominated by average daily high temperature of 83°F in the summer to 35°F in the winter. Average precipitation is 25 inches, with most of the precipitation during the months of November, December and January. July, August and September are characterized as the driest months with an average of less than 1.4 inches per month. In the spring months rainfall on frozen soils coincide with snowmelt driving peak flows in the watershed (Barker, 1981).

The majority of the soils in Cow Creek are loess soils. Loess soils are windblown sediments characterized by their silt sized particles, and fertility. Soils are comprised of the Palouse-Naff complex in the uplands with typical average slopes of 5%, and the Latahco-Lovell complex in the

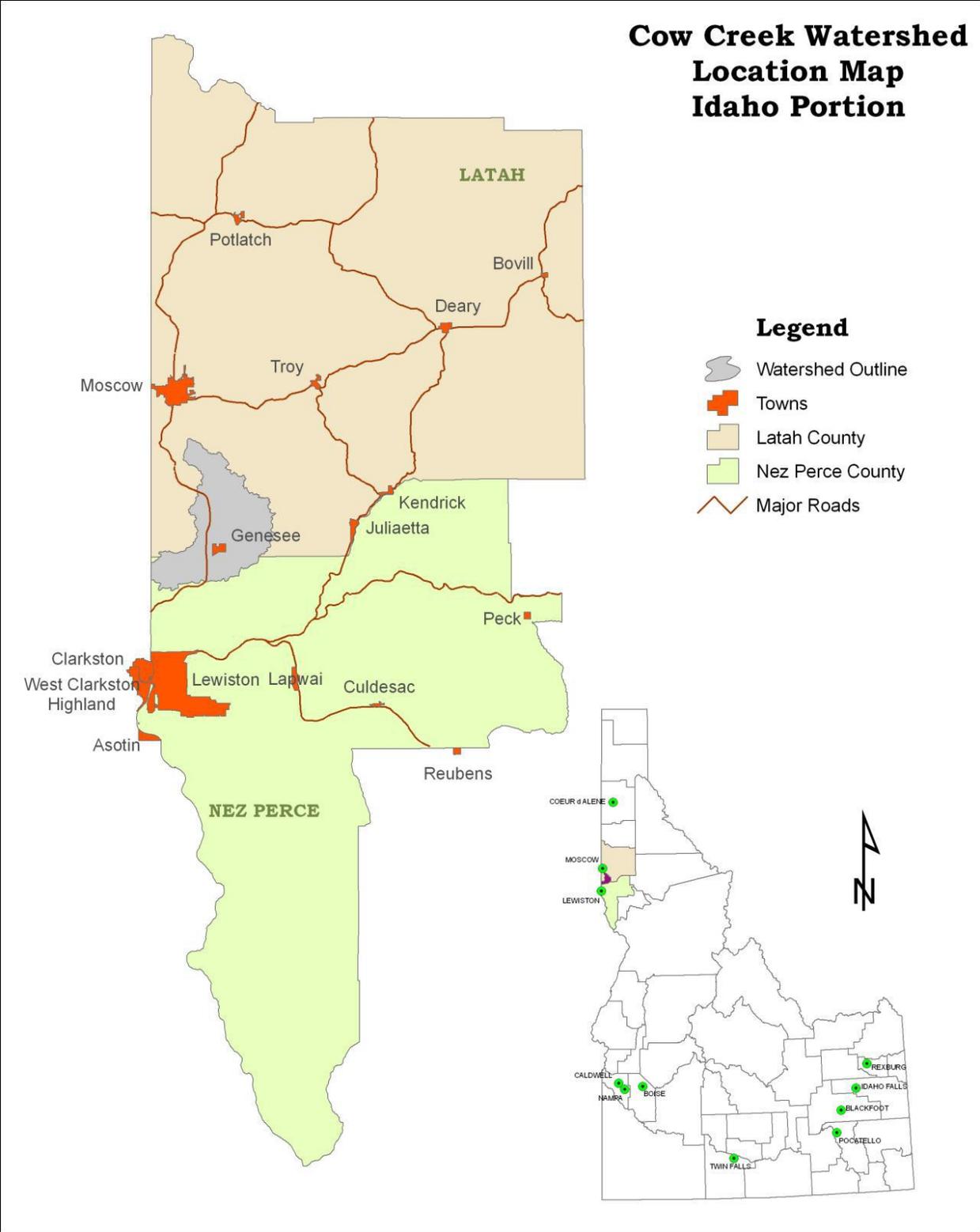


Figure 1. Cow Creek Watershed Location Map (ISCC, 2008)

lowlands with typical slopes of 1 to 4%. Palouse and Naff are very deep, well drained soils that occur on gentle to moderately sloping landscapes. Latahco and Lovell are primarily very deep soils. They are poorly drained, alluvial soils generally occurring in flat areas. They are the most commonly occurring soil complex immediately adjacent to the streams (Barker, 1981).

## Land Use and Land Ownership

Land use in the Cow Creek watershed is primarily dryland agriculture with small areas of pastures. The town of Genesee is the only urban area in the watershed. Highway 95 splits the watershed from north to south. Aside from the municipal area and the 121 miles of road network, the watershed is privately owned in its entirety. For a detailed description of land use, please refer to the original Cow Creek implementation plan.

## Accomplishments

The 2008 Implementation plan (ISCC, 2008) summarizes the implementation work that was done in the Cow Creek watershed before the Implementation plan was written in 2008. Table 1 summarizes the practices installed using NRCS federal funds between 2008 and 2013. No other accomplishments were available.

**Table 1: BMP Practices installed with NRCS funds FY 2008 thru FY 2013 in Cow Creek**

<u>Practice</u>	<u>Amount Applied</u>	<u>Unit</u>
Access Control	5,521.2	ac
Access Road	123.0	ft
Comprehensive Nutrient Management Plan	1.0	no
Conservation Cover	8,812.0	ac
Conservation Crop Rotation	7,131.9	ac
Contour Farming	5,287.2	ac
Critical Area Planting	3.0	ac
Fence	23,995.0	ft
Field Border	6,123.0	ft
Filter Strip	42.6	ac
Firebreak	318,356.0	ft
Forage and Biomass Planting	12.0	ac
Forage Harvest Management	168.7	ac
Forest Stand Improvement	8.2	ac
Grade Stabilization Structure	2.0	no

<b>Practice</b>	<b>Amount Applied</b>	<b>Unit</b>
Heavy Use Area Protection	2.2	ac
Integrated Pest Management	11,377.5	ac
Nutrient Management	6,624.8	ac
Pipeline	4,336.0	ft
Prescribed Burning	52.4	ac
Prescribed Grazing	295.5	ac
Range Planting	22.5	ac
Residue/Tillage Mgt - Mulch Till	5,718.0	ac
Residue/Tillage Mgt - No Till, Strip Till, Direct Seed	5,205.4	ac
Restoration of Rare/Declining Habitats	25.6	ac
Riparian Forest Buffer	2.5	ac
Riparian Herbaceous Cover	37.1	ac
Stream Crossing	1.0	no
Stream Habitat Improvement and Mgt	148.2	ac
Streambank and Shoreline Protection	11,800.0	ft
Structure for Water Control	1.0	no
Tree/Shrub Establishment	90.7	ac
Tree/Shrub Site Preparation	51.2	ac
Upland Wildlife Habitat Mgt	8,907.6	ac
Water and Sediment Control Basin	1.0	no
Watering Facility	9.0	no
Wetland Enhancement	11.7	ac
Wetland Restoration	29.4	ac
Wetland Wildlife Habitat Mgt	169.1	ac
Wildlife Watering Facility	3.0	no
Woody Residue Treatment	2.5	ac

## Resource Concerns

Since the original impaired listing in 1998, Cow Creek was identified as needing a TMDL for temperature. In nonpoint source areas the temperature violations are due to the lack of riparian canopy cover. The dominant vegetation found along the creek is reed canarygrass which is an invasive species. Traditional farming practices were used in the past which promoted removal of native vegetation. Farming practices have improved since then to include minimal till practices. However farming still occurs adjacent to the creek without a riparian buffer. Direct solar radiation is the source of heat that is most controllable. Riparian vegetation can provide a substantial amount of shade that limits direct solar radiation to the creek (IDEQ, 2013). Figure 2 shows the lack of shade percentages for Cow Creek.

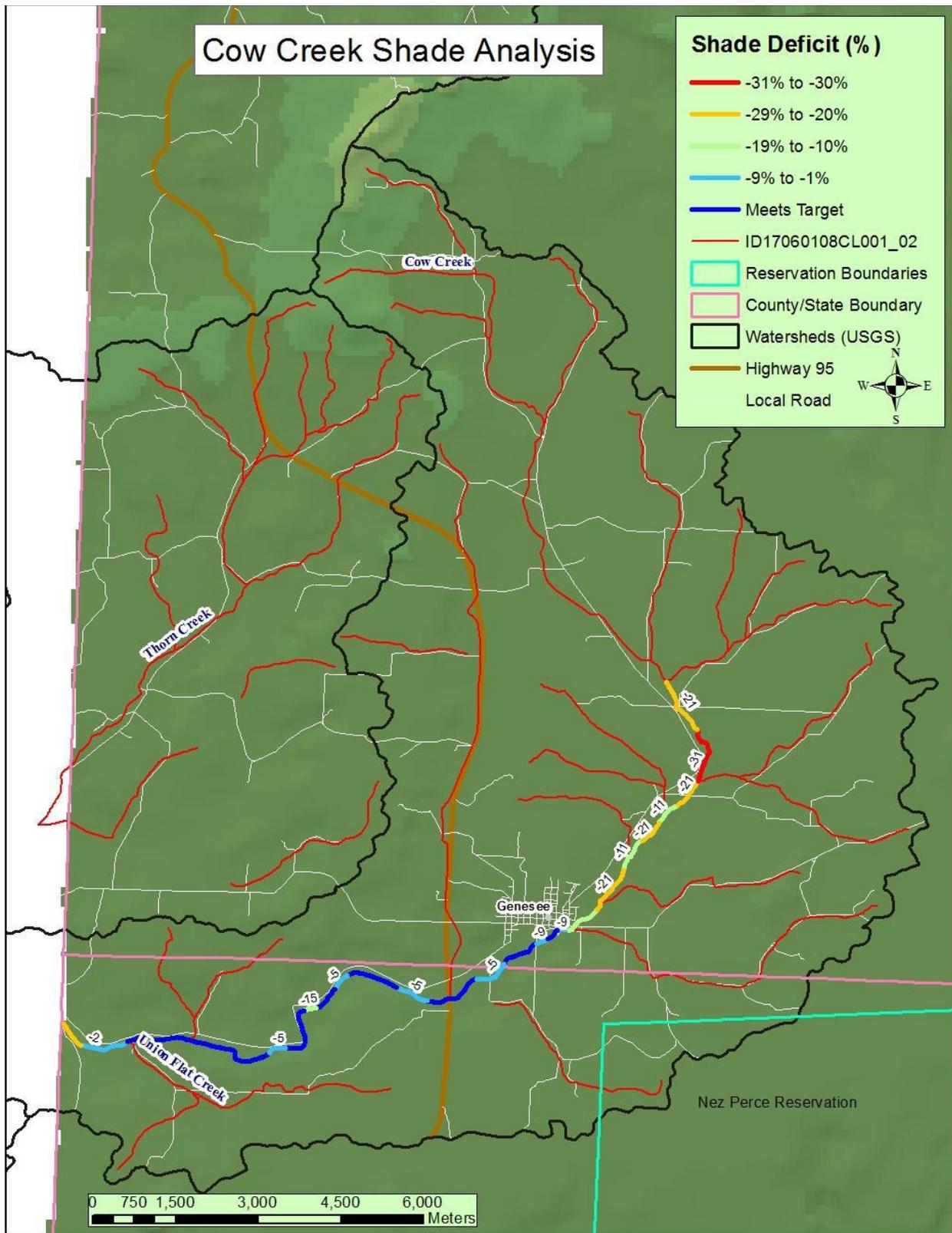


Figure 2: Lack of Shade (difference between existing and target) for Lower Cow Creek (IDEQ, 2013)

The TMDL addendum used 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 (IDEQ, 2013). The Lower Cow Creek assessment unit (ID1706108CL001\_03) (Genesee to Union Flats) has an average “Lack of Shade” of 10%. The Upper Cow Creek assessment unit (ID17060108CL001\_02) (Cow creek north of Jenkins Road and Hwy 95 and including tributaries) doesn’t contain water during the critical flow season from June through September and does not support a riparian plant community. It was recommended to delist this AU for temperature impairment (IDEQ, 2013). Figure 2 and Table 2 depict the lack of shade identified during the TMDL addendum process for each section of the Lower Cow Creek AU.

**Table 2: Average Lack of Shade for Lower Cow Creek AU**

<b>Lower Cow Creek (ID1706108CL001_03)</b>	<b>Lack of Shade (%)</b>
Above Genesee (along Genesee-Julietta Road)	11 to 31
Section in Genesee	9
Union flats to Genesee	0 to 15
Below Union Flats	2 to 22

## **Agricultural Inventory and Evaluation**

Idaho Soil Conservation Commission staff inventoried the watershed in 2013 and 2014. DEQ shade readings were verified with a solar pathfinder from Highway 95 through Genesee in July 2014 (Figure 3). The lack shade readings were on average similar to the TMDL Addendum data when comparing Figures 2 and 3.

## **Treatment**

Critical areas were defined as those areas with more than 20% lack of shade. The high priority area was the section above Genesee where lack of shade values exceeded 20% for a majority of the segments. Below Genesee there was a 490 meter section with 22% lack of shade. This section is the next highest priority area. A 220 meter section with 15% lack of shade was also included in the section below Genesee. BMP’s were broke into these two priority areas. BMP’s in other areas lacking shade are encouraged as well as additional BMP’s in priority areas.

Treatments will include BMP’s that will focus on increasing shade along Cow Creek. Current farming practices will need to be adjusted to allow for a riparian buffer to be planted. This will increase shade along the creek. Establishment of vegetation may be challenging due to periods of low flows and drought conditions.

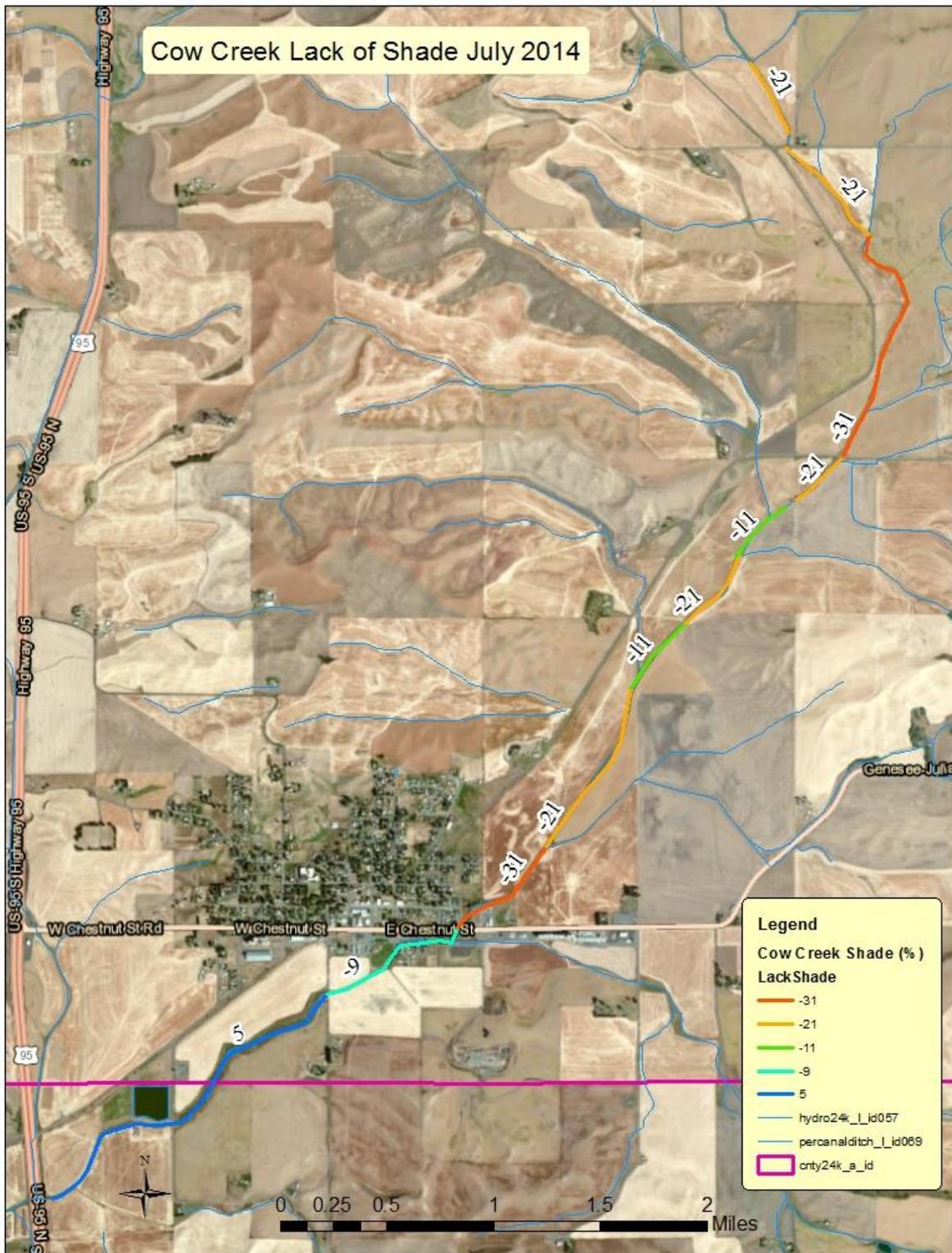


Figure 3: Solar Pathfinder Lack of Shade (ISWCC 2014)

**Above Genesee:**

<b>BMP</b>	<b>Amount</b>	<b>Units</b>
Filter Strip	5	acres
Field Border	5,000	feet
Riparian Herbaceous Cover	5,000	feet
Tree/Shrub Establishment	2,500	feet

**Below Genesee:**

<b>BMP</b>	<b>Amount</b>	<b>Units</b>
Access Control	1,100	feet
Fence	1,100	feet
Filter Strip	1	acre
Field Border	500	feet
Riparian Herbaceous Cover	500	feet
Tree/Shrub Establishment	100	feet

## **Funding**

Financial and technical assistance for installation of BMPs may be needed to ensure success of this implementation plan. The Latah 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. Many of these programs can be used in combination with each other to implement BMPs. These sources include (but are not limited to):

**CWA 319** –These are Environmental Protection Agency funds allocated to 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/>

**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.swc.idaho.gov/>

**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.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. <http://www.nrcs.usda.gov/>

**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. <http://www.nrcs.usda.gov/>

**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. <http://www.nrcs.usda.gov/>

**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. <http://www.nrcs.usda.gov/>

**State Revolving Loan Funds (SRF)** –These funds are administered through the ISWCC. <http://www.swc.idaho.gov/>

**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](http://www.nrcs.usda.gov/)

**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/>

**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/>

## **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 Latah 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

Barker, 1981. Soil Survey of Latah County Area, Idaho. U.S. Department of Agriculture, Soil Conservation Service. Washington, D.C. 168pp plus maps.

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