



*Nez Perce*

**WATER RESOURCES DIVISION**  
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**Unnamed Tributary to Lawyer Creek  
Supplemental Environmental Payment Workplan  
*Snake River Waterkeeper v. Idaho Department of Correction, et al.*, Case No. 3:20-cv-00398-CWD  
August 2021**

**Background and Previous Projects**

The overall goal of the Nez Perce Tribe Water Resource Division's (NPT WRD) Nonpoint Source Program is to reduce nonpoint source pollution to levels that support the designated beneficial uses of waters within the Nez Perce Reservation. Implementing water quality improvements is carried out on a watershed basis. The NPT WRD has conducted several assessment and restoration projects within the Lawyer Creek Watershed and welcomes funding for a water quality assessment and restoration project within the Lawyer Creek Watershed along the unnamed tributary.

The unnamed Tributary to Lawyer Creek flows through two Tribal allotments located approximately four miles SW of Ferdinand, Idaho, just off Icicle Flat Road, and located within the Nez Perce Reservation. The unnamed tributary is a first-order stream and is incised approximately three to five feet on the Tribally-owned properties, with cut banks on the outside bends (Figure 1). The creek exhibits the same morphology both above and below the Tribal allotments. This unnamed tributary is a critical source of base flow to Lawyer Creek as it is one of the few perennial headwater streams in the watershed.

Periodic fish kills have been documented in this reach of the unnamed tributary, and excessive quantities of aquatic algae are often visible throughout the summer months. The North Idaho Correctional Institution's wastewater lagoon discharges into this unnamed tributary and is likely a contributing source of nutrient enrichment. Excess nutrient loads can lead to algal blooms that can lower dissolved oxygen below levels required for fish survival and can also result in harmful algal blooms (HABs) with toxins being released in the water.

In 2011, the NPT WRD conducted restoration work and installed one-half mile of riparian exclusion fencing on a heavily grazed Tribal allotment approximately 3.5 miles downstream of the North Idaho Correctional Institution (NICI). This riparian buffer was planted with over 1,000 riparian plants, ranging from 1-5 gallons in size, along the creek bank, and within the stream channel. Approximately 1,000 wetland plugs were also planted within the stream channel to help stabilize eroding stream banks. Willow cuttings were introduced within the stream corridor to provide roughness to the stream bottom and lower water velocities and increase sediment deposition. The newly created riparian buffer enclosed a large wetland area, consisting of many native wetland plants with important cultural significance to the Tribe.

Water quality monitoring in the Lawyer Creek watershed was conducted in FY2013 by the NPT WRD. Results of that monitoring reported significant erosion evident along a number of streams, and nutrient enrichment throughout the watershed. Every stream in this watershed, including the mainstem of Lawyer Creek, was categorized as water quality limited and would benefit from the strategic installation of best management practices (BMPs). Data for the unnamed tributary itself indicated that it contributes a great deal of sediment, nutrients, and bacteria to Lawyer Creek. Implementation of targeted stream restoration efforts to reduce sediment loads, lower temperatures, lower nutrients, and lower bacteria levels is recommended to aid in restoring the watershed.

### **Anticipated Work**

Funding from the North Idaho Correctional Facility Consent Decree will allow NPT WRD to evaluate the current conditions and implement BMPs on the unnamed tributary. The new BMPs will complement past restoration work by expanding the restoration downstream to an additional allotment on the confluence of Lawyer Creek and the unnamed tributary. Proposed implementation techniques and BMPs to be employed would likely be similar to the previous work described above with variations as informed by current site conditions. A potential additional BMP that will be used is the beaver dam analog (BDA), a structure designed to mimic the form and function of a natural beaver dam to slow water velocities, increase water retention time, increase streambank storage of water, and reconnect the floodplain to entrenched sections of the stream.

### Riparian Planting

Planting diverse riparian vegetation will help increase infiltration rates, elevate the water table and saturated zone, and increase water storage. As trees and shrubs mature, they will help stabilize streambanks, reduce thermal loading to the stream by providing shade, uptake nutrients, and provide habitat for wildlife. Planting wetland plugs within the streambank will also help to stabilize eroding streambanks, lower water velocity, and increase sediment deposition.

### Beaver Dam Analogs

A BDA is an artificial structure designed to mimic the form and function of a natural beaver dam. In general, the design and installation of BDA complexes is a simple, cost-effective, non-intrusive approach to stream restoration with similar benefits to beaver dams –storing water, slowing down runoff in streams, and enhancing fish and wildlife habitat. Beaver dams are gaining popularity as a low-tech, low-cost strategy to build climate resiliency at the landscape scale. They slow and store water that can be accessed by riparian vegetation during dry periods, effectively protecting riparian ecosystems from droughts and playing a significant role in riparian vegetation fire resistance and refugia creation.

As climate change progresses, the Lawyer Creek watershed can expect warmer, milder winters and hotter, drier summers, resulting in lower summer base flows and higher water temperatures. Construction of BDAs will cause water to back up and pool behind the dam, helping to slow water, encouraging channel aggradation, especially during high flow events. In addition, decreasing velocity will increase the holding time of the water, resulting in groundwater recharge and raising the water table. A higher water table will increase summer baseflows and increase surface-groundwater interaction, thus decreasing summer water temperatures. Slowing the water and increasing retention time will also help to reduce suspended sediments and nutrients. Pools resulting from successful dams will also create complex aquatic and terrestrial habitats.

NPT WRD uses three different analogue designs. The first is a fundamental design consisting only of pounding posts vertically in the stream channel and adjacent floodplain and letting debris naturally build

up over time. The second design is similar, but with the addition of weaving suitable native vegetation (willow or cottonwood) between the vertical posts. The third and most engineered design includes braiding native vegetation between posts, adding large rocks and cobble on the upstream side of the structure to prevent scouring, and the use of smaller substrate to fill gaps. Willow plantings are placed along the edges of all three types of structures and on the downstream bank to prevent erosion. The selection and use of BDAs will depend on their suitability at various sites on the unnamed tributary and within the Lawyer Creek watershed.

Reestablish Cattle Crossing

A hardened cattle crossing was previously constructed to concentrate cattle to one particular area, to reduce overall erosion and soil compaction rates. It has been over 10 years since this successful BMP was installed and, due to heavy usage by cattle, it is no longer functioning optimally (Figure 2). NPT WRD proposes to install additional rock to this hardened cattle crossing to restore it so it can continue to reduce pollutant loading and improve the health of the stream.

**Estimated Budget**

<b>Restoration in Lawyer Creek Watershed: riparian planting and BDA construction</b>			
<i>Activity/Component</i>	<i>Amount</i>	<i>Cost</i>	<i>Total</i>
Wooden posts for BDAs	45 posts	\$25/post	\$ 1,125
Willow cuttings for BDAs	470 cuttings	\$2/cutting	\$ 940
Herbicide and related equipment	8 acres	\$100/acre	\$ 800
Native Riparian Plants	8 acres	\$800/acre	\$ 6,400
Wetland plant species plugs	196 plugs	\$2/plug	\$ 392
Rocks for cattle crossing	2 truck loads	\$320/truckload	\$ 640
Delivery of rock	2 loads	\$19/load	\$ 38
Tech I 0.10 FTE @ \$28.40/hr. (salary + fringe)	208 hrs.	\$28.40/hr.	\$ 5,907
Pro. I 0.05 FTE @ \$36.13/hr. (salary + fringe)	104 hrs.	\$36.13/hr.	\$ 3,758
<b>Project Total</b>			<b>\$20,000</b>

**Funding**

The proposed work will be funded in the amount of \$20,000 provided by the Idaho Department of Correction (IDOC) as a Supplemental Environmental Project (SEP) as part of a consent decree with Snake River Waterkeeper. In addition, a recently awarded grant will allow the NPT WRD to monitor water quality in the Lawyer Creek watershed again in FY2023, which will help evaluate the restoration work.

**Qualifications/Expertise**

The NPT WRD has extensive experience in successfully implementing water quality improvement projects since the early 1990s, including several assessment and restoration projects within the Lawyer Creek Watershed. The current staff has substantial expertise in aquatic ecology, stream restoration techniques, and water quality monitoring protocols.



*Figure 1. Cut banks located at the proposed restoration site along unnamed tributary in the Lawyer Creek watershed.*



*Figure 2. The cattle crossing on the unnamed tributary that needs to be reestablished.*