Prospectus of Proposed Project Opportunity

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Opportunity Title

Lostine River Poley-Allen Fish Passage Project

Opportunity Lead

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Landowners

Terry Jones
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Contacted: Yes
Supportive: Yes.
Contribution: The landowner will not be contributing to this project. Direct involvement will take place in working with the irrigation ditch president and other irrigators to collaborate project timing and dewatering.

River

Name: Lostine River
Mile: RM6.95 - RM7.0

Tributary: Wallowa River

Restoration Atlas

BSR: WLL-3
Tier: Tier 1
Initial Score: 75
Proposed Score: 20

Restoration Activities

2. Channel Reconstruction
9. Restoration of Floodplain Topography and Vegetation
11. Perennial Side Channel
23. Structural Passage (Diversions)
26. Boulder Placement
27. LWD Placement
28. Modification or Removal of Bank Armoring
34. Upland Vegetation Treatment - Management

Species Affected

Focal: Snake River Spring Chinook, Snake River Steelhead, and Bull Trout.
Other: Reintroduced Coho Salmon, Pacific Lamprey, resident Rainbow Trout, and various other resident native fish species.

Description

The existing Poley-Allen irrigation diversion is located on the west side of the Lostine River and consists of a headgate intake structure, a forebay with a second headgate that provides the irrigation water right to a gravity-driven open channel. A drum screen is located approximately 470 feet north of the irrigation diversion with a piped fish return. The diversion includes a sill located between two concrete abutments on each channel bank and holds a series of boards in the vertical slots in six concrete piers. The boards are used to maintain a minimum water surface elevation that provides the hydraulic head required to deliver between 9 and 11 cubic feet per second (cfs) into the irrigation ditch.

A low-flow fish passage channel is located on the west side of the sill and is adjacent to and connected with the irrigation diversion entrance. The passage channel does not appear to be functioning well and likely not able to reliably pass fish during low flows. Exacerbating the poorly functioning passage channel is its location. Because the passage channel is oriented such that passing fish are encouraged into the apparent velocity refugia of the irrigation forebay, fish end up being entrained into the irrigation system.

The Poley-Allen diversion sill and the channel downstream create profile

discontinuity. Downstream of the sill, the streambed is armored and there are three locations where boulder steps create water surface elevation drops that exceed one vertical foot during low flow and are fish passage barriers. One boulder step is approximately 10 feet downstream of the sill and another is approximately 60 feet downstream of sill. The third boulder step exists within the main channel, approximately 120 feet downstream of the sill.

An existing side channel confluence is on the right (eastern) side of the main channel, approximately 180 feet downstream of the sill. The side channel bed and the right bank of the main channel are comprised of angular riprap with material sizes up to 5 feet in diameter. Angular riprap lines the left (western) embankment approximately 170 feet downstream from the sill, which limits floodplain connectivity on the left bank. The concrete abutment and riprap scour protection that exists on the right (eastern) bank at and near the sill limit floodplain connectivity in this location.

The left (western) channel bank, upstream of the sill, is lined with riprap for approximately 270 feet. The channel bedform is plane-bed with boulders exposed above the water surface elevation at low flows and lacks a distinct low-flow thalweg. The left bank channel armoring, upstream of the sill, limits channel migration and prevents floodplain connectivity. A side channel inlet exists approximately 400 feet upstream of the sill on channel right (eastern). Evidence of anthropogenic grade control efforts at the side channel inlet include an exposed sheet pile wall. The side channel appears to activate at flow less than the bankfull event. The existing side channel inlet bed is comprised of rounded boulders and cobble.

A high-flow side channel extends approximately 570 feet on the right (eastern) side of the main channel. The side channel has a defined bed and bank, which suggests flow is present at least annually. However, overall, the side channel lacks complex structure such as Large Woody Material (LWM) and, as a result, low velocity juvenile rearing areas are sparse but potential for restoring them is high.

The current diversion structure is an upstream passage barrier for ESA listed spring/summer Chinook Salmon, steelhead and Bull Trout. The goal of this project is to restore fish passage through the Poley-Allen diversion structure while maintaining a minimum water surface elevation upstream of the diversion structure sufficient for the delivery of legal irrigation withdraws for the associated landowners.

Objectives

1. Implement a 150 feet long roughened channel engineered streambed material design suitable for passage of juvenile and adult Bull Trout, steelhead, and spring/summer Chinook Salmon during periods of migration that achieve Oregon Department of Fish and Wildlife (ODFW) and National Marine Fisheries Service (NMFS) fish passage criteria to the greatest extent practical by 2023.

2. Modify existing channel spanning concrete sill and concrete abutment by 2023. This will be achieved by removing a portion of the top of the sill to provide a low flow channel and removing the abutment and grading the bank of the abutment to reduce flow constriction and increase stream stability. Fish passage design will maintain access and use of irrigation water for water rights holders and irrigators.

3. Install a series of LWM structures within the side channel east of the diversion structure to increase channel complexity, channel stability, and create diverse fish habitat by 2023.

Major Risks

Management of the timing and quantity of water delivery to the water rights holder will be coordinated and likley unchanged. The project design development focused on mitigating fish passage limitations associated with the mechanical manipulation of the channel and providing irrigation water to the water right holders. The design development also included side-channel habitat improvements with LWM structures. We developed the proposed actions collaboratively with the landowners and the NPT and identified the roughened channel as the preferred alternative for providing fish passage while maintaining the necessary head for irrigation delivery.

Permits and Consultation

ESA Section 7 USFWS: Applicable
ESA Section 7 NMFS: Applicable
COE or DSL Permit: Applicable
Cultural Resources Section 106: Applicable
DEQ 401 Water Quality Permit: Applicable

Project Schedule

Year: 2022

Monitoring: Radio telemetry studies conducted by the Nez Perce Tribe Fisheries - Research Division identified the Poley-Allen Diversion as a partial migration barrier to adult Chinook, which is restricting access to high quality spawning and rearing habitat upstream. This telemetry study will continue to monitor the Poley-Allen Diversion and collect adult Chinook upstream migration passage timing data following implementation of this restoration project.

Project Relations

Multi-phase Effort: No

Preliminary Cost Estimate

Total: $400,000
BPA Funding: $200,000
OWEB Funding: $0

Design Funding

Design Funds Requested: No