

Deep Creek – Relict Weir Fish Passage Project

Adel, Oregon



Final Completion Report

March 9, 2021

Final Completion Summary

The Relict Weir Fish Passage Project is located on Deep Creek near the town of Adel in Lake County, Oregon. Deep Creek begins in the Warner Mountains and flows to the east before joining Crump Lake in the Warner Basin. Deep Creek provides spawning and rearing habitat for Warner sucker, Warner Lakes redband trout, tui chub, and speckled dace. Surface water diversions provide irrigation water for basin water users. The Relict Weir, located at river mile 3.9, is the first irrigation diversion on Deep Creek. Oregon Department of Fish and Wildlife (ODFW) monitoring results suggest Warner Sucker are partially blocked by the Relict Weir as the species has not been sampled upstream of the diversion.

The Warner Basin Aquatic Habitat Partnership (WBAHP) and the Adel Water Improvement District (AWID) began evaluating fish passage alternatives in 2017. Stakeholders selected a preferred alternative which included a rock ramp/roughed channel fish passage. The rock ramp fishway was constructed in the fall of 2020 with the purpose of meeting sucker and trout fish passage criteria while still providing irrigation water for local agriculture producers. In the spring of 2021 fish passage effectiveness monitoring will be conducted at the newly implement project site to determine Warner sucker's ability access waters upstream of the diversion site. Successful passage at the Relict Weir site will provide fish species four additional miles of stream habitat.

WBAHP includes the Lake County Umbrella Watershed Council, Lakeview Soil and Water Conservation District, ODFW, U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service, and River Design Group. AWID includes private landowners and agriculture producers whose livelihoods depend on Deep Creek water for irrigation.

Background

Lower Deep Creek was historically characterized by a distributary channel network and expansive wetlands.

Settlers to the Warner Basin in the late 1800s and early 1900s modified the stream system to promote agriculture production throughout the valley. The stream network was transformed into an irrigation system where the primary Deep Creek channel was excavated through the historical lake bed wetland south of Pelican and Crump lakes. Dredged lake bed sediment was placed along the channel to create elevated berms that further confined the stream flow to the corridor. To further support flood irrigation efforts across the valley, irrigation diversion structures were installed to divert water into canals and ditches - allowing for control and distribution.

Today the altered stream network and established irrigation system are still intact and agriculture continues to support the local economy. Cattle ranching and hay production make up

the agriculture enterprise in the Warner Basin. Flood irrigation begins in April and extends through June when Deep Creek flows are at a sufficient amount. As flows decrease, water remains through the system for livestock to drink.

Although irrigation diversions are a vital component of Warner Basin agriculture, the structures impact native fish species. The Warner Sucker, once abundant and widely distributed throughout the lakes, has declined over the past century mirroring agricultural development in the basin. Population declines are attributed to poor connectivity and habitat fragmentation.

The Relict Weir Fish Passage project was completed to address fish passage concerns, reconnect the watershed, and also improve the operation of the irrigation infrastructure.

Work Done

In 2020 the Relict Weir Fish Passage Project was completed with the implementation of a rock ramp/roughened channel fish passage. Relict weir is the first upstream diversion on Deep Creek and was considered a partial barrier to Warner sucker seeking upstream habitat and refuge. With its completion, along with the completion of Starveout Diversion Fish Passage in 2020 and Town Diversion Fish Passage in 2019 - a total of 7 miles of stream has been reconnected. Project objectives have been met by restoring watershed connectivity while improving operational maintenance and safety for irrigators.

Public Awareness or Education

The following platforms are used by the LCUWC to continue outreach, education, and engagement efforts. <https://lakecountywsc.com>

- Local Newspaper: A newspaper article is submitted quarterly to highlight council activities, project status, updates, and progress.
- Website: The council maintains a website where the Warner Basin projects are published through video, booklet, and the Strategic Action Plan. All three online resources discuss the WBAHP goals and objectives and highlight on the power or partnerships.
- Annual Report: Also found on the website is the LCUWC annual report. The report includes information on the WBAHP annual accomplishments.
- Social Media: LCUWC posts weekly on their Facebook and Instagram page sharing all things watershed related as

a platform for education and outreach. The weekly posting is called “Watershed Wednesday.”

Project status,

photos, updates, and progress are also posted throughout the year.

- Tours: The LCUWC gives tours of the completed projects in the Warner Basin and also future projects to be

implemented. Tours are given to funding partners, local planners, and to the board.

- Presentations: The LCUWC presents annually to the County Commissioners on the Warner Basin projects along

with other organizations who are interested in the work. The council also holds an annual gathering with partners

providing status and progress through the year.

Lessons Learned

The Relict Weir Fish Passage Project went relatively smooth overall. LCUWC did hire the same contracting company to implement two fish passage projects within 1 mile of each other. This allowed a cost saving on mobilization of equipment. It also allowed there to be staggering of prep work as one project was wrapping up the other was getting underway. Hiring the one contracting company was also beneficial as the rock ramp design was implemented on the two projects. As the work progressed the contract crew developed a system and became very efficient at placing material in alignment with engineer specifications.

Recommendations

When evaluating contracting companies for hire it is recommended the company has the personnel and equipment capacity to complete the project in the time frame planned. There is a small in-stream work window in the area, a contract crew with enough capacity is more than likely to reach implementation objectives during the narrow work window.

Aquatic Habitat

Using Pg. 43 of the document, Fish Passage Structures, regulatory requirements were met with the following permits and authorizations.

- DSL – Permit to construct fish passage structure; General Authorization for Fish Enhancement or Removal/Fill permit.

- ODFW - 1) a determination that fish are present and that fish passage must be maintained; 2) an approval of a proposed fishway design, if one is required; and 3) a determination that the fishway, once constructed, is adequate and operated in an appropriate manner.

Guidance and/or Considerations were sought from the local ODFW Fish Biologist (Lakeview Office).

When fish passage facilities are planned or constructed around an in-channel barrier (temporary or permanent), the local ODFW District Fish Biologist should be contacted to: Determine what species of fish are present. Review passage structure designs, giving consideration to all native species. Obtain sources of technical assistance.

Technical assistance for the design of fish passage structures can also be obtained from the ODFW Fish Passage Coordinator (Portland Headquarters office).

Special Conditions

- 1) A flow meter or other water use measuring device shall be installed as part of the Project.

- 2) The project completion report shall include a copy of the operations agreement for the sediment sluiceway. The agreement should clearly outline the operation and maintenance requirements, as well as clearly outline roles and responsibilities for each signing party.

<i>Funding Sources</i>				
Source	Identifier	Cash	Inkind Type	Inkind
Bureau of Land Management		\$18,120.00		\$0.00
Desert Fish Habitat Partnership		\$43,480.00		\$0.00
WNTI/Open Rivers Fund	ORI	\$105,500.00		\$0.00
OWEB	220-8215-18644	\$267,598.00		\$0.00

<i>Totals</i>					
OWEB Amount	Non OWEB Cash	Inkind Total	Non OWEB Amount	OWEB Match	Total Project Cost
\$267,598.00	\$167,100.00	\$0.00	\$167,100.00	62.0%	\$434,698.00

* This grant agreement has a special condition that alters the match funding requirement; to read the requirement see Exhibit B of the grant agreement.

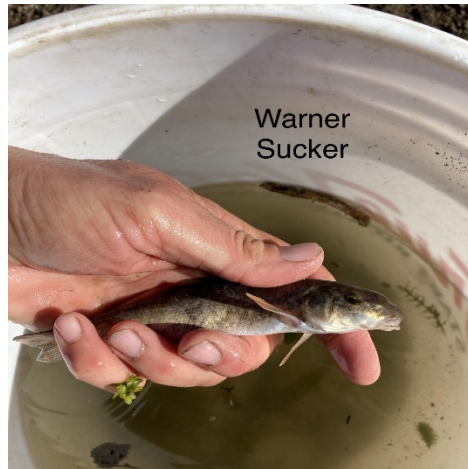
<i>Uploaded Files</i>		
Image Type	File Name	Description
Exhibit B	18644_Conditions.pdf	
Photo Point	1 Pre Project Looking Across Weir.jpg	Relict Weir looking across the weir facing to the west
Photo Point	2 Pre Project Upstream of Weir.jpg	Relict Weir upstream of weir looking to the north/northwest

Photo Point	3 Pre Project Downstream of Weir.jpg	Relict Weir downstream of weir looking south/southwest
Photo Point	1 Post Project Looking Across Old Weir .jpg	Relict Weir Project looking across the stream at the location of old weir facing west
Photo Point	2 Post Project Upstream of Old Weir.jpg	Relict Weir upstream of old weir looking north/northwest. Sediment cleanout ramp constructed.
Photo Point	3 Post Project Downstream of Old Weir .jpg	Relict Weir Project downstream of project looking to the south/southwest
Photo (other)	Pre-Project Photos.pdf	Pre-Project Photos
Photo (other)	Fish Salvage Photos.pdf	Fish Salvage Photos
Photo (other)	Construction Photos.pdf	Construction Photos
Photo (other)	Post Project Photos.pdf	Post Project Photos

Pre-Project Photos



Fish Salvage



Construction Photos



Post Project Photos



220-8215-18644 Before and After Photos



Photo Point: Before #1
File Name: 1 Pre Project Looking Across Weir.jpg
Photo Description: Relict Weir looking across the weir facing to the west
Photo Date: 05/18/2020



Photo Point: After #1
File Name: 1 Post Project Looking Across Old Weir .jpg
Photo Description: Relict Weir Project looking across the stream at the location of old weir facing west
Photo Date: 01/21/2021

220-8215-18644 Before and After Photos



Photo Point: Before #2
File Name: 2 Pre Project Upstream of Weir.jpg
Photo Description: Relict Weir upstream of weir
looking to the north/northwest
Photo Date: 05/18/2020



Photo Point: After #2
File Name: 2 Post Project Upstream of Old Weir.jpg
Photo Description: Relict Weir upstream of old weir
looking north/northwest. Sediment cleanout ramp
constructed.
Photo Date: 01/21/2021

220-8215-18644 Before and After Photos



Photo Point: Before #3
File Name: 3 Pre Project Downstream of Weir.jpg
Photo Description: Relict Weir downstream of weir
looking south/southwest
Photo Date: 05/18/2020



Photo Point: After #3
File Name: 3 Post Project Downstream of Old Weir
.jpg
Photo Description: Relict Weir Project downstream of
project looking to the south/southwest
Photo Date: 01/21/2021