

Final Completion Summary

The Middle Diversion Fish Passage Project is located is at RM 7.5 on Deep Creek near the town of Adel, Oregon. The goal of project was to address fish passage and habitat limiting factors leading to the recovery and delisting of Warner sucker, and population expansion for Warner Lakes redband trout. The transfer of four water rights from the diversion and the implementation of two necessary irrigation turnouts, provided the means to remove Middle Diversion concrete weir in its entirety. The removal of the Middle Diversion in October of 2022 was a strategic action to support a connected watershed as it marks four of six irrigation diversions addressed for fish passage on Deep Creek since 2019.

Background

Deep Creek is a 280 sq mile watershed that flows from the Warner Mountains (elevation 8347 ft) to the Warner Valley (elevation 4547ft) – eventually feeding into Pelican and Crump Lake, two of the twelve chain of lakes that collectively make up the Warner Lakes. Deep Creek is the largest tributary to these lakes providing water from snowpack and precipitation which can fluctuate dramatically from year to year. Periodic droughts substantially reduce inflows to the terminal lakes, resulting in dry lake beds.

Native species in this closed basin watershed have evolved in this dynamic environment by using both stream and lake habitats. Fish species native to the Warner Valley include the Warner sucker and the Warner Lakes redband trout - historically these natives were abundant and widely distributed throughout the Warner Basin. During the late 1800s, settlers to the Warner Basin altered the stream networks to facilitate land drainage and flood irrigation for agricultural development. Irrigation structures were built to divert water from the mainstream channel and into irrigation canals. Six diversions on Deep Creek have impeded fish migration and reduced stream flows for approximately a century. Other limiting ecological factors that have impacted species decline include non-native fish predation, altered habitat, and fish entrapment.

The Warner sucker was federally listed as “threatened” under the U.S. Endangered Species Act in 1985 and a recovery plan was published in 1998. The Recovery Plan for the Threatened and Rare Native Fishes of the Warner Basin and Alkali Subbasin sets recovery criteria for delisting the Warner sucker. The Warner Lakes redband trout is classified “at risk” by Oregon Department of Fish and Wildlife (ODFW) interim assessment. ODFW evaluates the health of fish populations using six categories defined in Oregon’s Native Fish Conservation Policy. These six categories include: existing populations, habitat use distribution, abundance, productivity, reproductive independence, and hybridization. An at-risk designation is applied when three or fewer criteria are met for the populations in the basin. Warner Lakes redband trout populations fail in distribution, abundance, and productivity.

The Middle Diversion was an instream concrete weir with a fixed crest, and an intake on the river left side of the weir. The existing headgate was difficult to operate and functioned poorly. The gate did not fully close, which resulted in leakage and loss of flow from the stream. The Deep Creek Middle Diversion Fish Passage Project completion was another step towards a connected watershed and Warner sucker recovery.

Work Done

1. The project supported the transfer of four water rights from the Middle Diversion to the upstream O'Keeffe Diversion which was necessary for the diversion to be removed. 2. Once water rights were transferred, two water delivery turn outs to serve irrigation water to Jones Ranch and Griener Ranch were implemented in September of 2022. To accommodate the changes in delivery point at the Greiner turnout - a precast twin track weir was installed at the inlet to allow water to connect to from the O'Keeffe ditch to the Greiner Middle ditch through 100 ft 8" pipe. To accommodate the changes in delivery point at the Jones turnout – a precast twin track weir was installed at the inlet to allow water to connect from O'Keeffe ditch to the Jones Middle ditch through a 140 ft (+/-) 8" pipe. The activities described are necessary steps to maintain the integrity of the water rights and irrigation operations as the Middle Diversion will no longer function once removed. 3. The Middle Diversion concrete weir was removed in October of 2022. The weir was approximately 3 ft to 5 ft high over the underlying bedrock outcrop. Restoring volitional fish passage at this particular project site was accomplished.

Changes from Proposed

The cost of fuel and supplies increased rapidly over short period of time. By the spring of 2022 it was uncertain if the project could be implemented with the available funds. At this point, the LCUWC worked with ODFW, BLM, and Western Native Trout Initiative to secure additional \$93,000 in funding. By June of 2022, partners were confident the project would proceed.

Public Awareness or Education

The project has been featured in the Council's Annual Report in 2020,2021, and 2022. The Annual Report is published on the Council's website for public view and information <https://lakecountywsc.com/>. The Annual Report was also presented during the Annual Gathering in 2021 and 2022. The Annual Gathering is attended by partners, funders, stakeholders, and community members. The project objectives and progress have also been featured on the Council's social media pages in 2022.

Lessons Learned

Partners learned a great deal about the OWRD water right transfer process from start to finish. Partners also learned how closely intertwined irrigation infrastructure improvements and fish passage truly are. We recognize the importance of a well-established plan with the ability to remain flexible as project objectives are accomplished.

Aquatic Habitat

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

1. Department of State Lands – Permit to construct fish passage structure; General Authorization for Fish Enhancement or Removal/Fill permit. 2. Oregon Department of Fish and Wildlife - 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: i Determine what species of fish are present. i Review passage structure designs, giving consideration to all native species. i 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)

<i>Funding Sources</i>				
Source	Identifier	Cash	Inkind Type	Inkind
Bureau of Land Management	BLM	\$65,546.00		\$0.00
WNTI/Open Rivers Legacy Fund	ORF	\$57,467.00		\$0.00
Oregon Department of Fish and Wildlife	ODFW	\$93,529.00		\$0.00
OWEB	222-8215-19381	\$106,962.00		\$0.00

<i>Totals</i>					
OWEB Amount	Non OWEB Cash	Inkind Total	Non OWEB Amount	OWEB Match	Total Project Cost
\$106,962.00	\$216,542.00	\$0.00	\$216,542.00	202.0%	\$323,504.00

* 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	19381_Conditions.pdf	
Photo Point	pre project photo 1.jpg	Middle Diversion weir looking upstream
Photo Point	pre project photo 2.jpg	Middle Diversion weir looking across the stream
Photo Point	pre project photo 3.jpg	Middle Diversion weir looking downstream-backside of diversion
Water Right Transfer Document	Final Order WR Transfer Jones.pdf	Final Order Water Right Transfer Jones
Water Right Transfer Document	Final Order WR Transfer Greiner.pdf	Final Order Water Right Transfer Greiner
Project Design	RDG-19-068_DeepCreek-MiddleDiversion_Design.pdf	Design Plan
Map	Middle Diversion Map.pdf	Vicinity Map
Photo (other)	Deep Creek Middle Diversion Removal Photos.pdf	Diversion Removal Photos
Photo Point	IMG-7671.jpg	Looking across creek where Middle Diversion was removed.
Photo Point	IMG-7669.jpg	Looking upstream where the Middle Diversion was removed.
Photo Point	IMG-7672.jpg	Looking downstream where Middle Diversion was removed.
Photo (other)	Irrigation Turnout Post Project Photos.pdf	Post project photos of newly implemented irrigation turnouts

Deep Creek Middle Diversion



Figure 1. The Middle Diversion from the river-left bank (left), and the river-right bank (right) taken during the 2019 survey.



Figure 2. Distant (left) and close-up (right) views of the Middle Diversion intake headwall with road sign in front of the intake for controlling flow into the pipeline.



Figure 3. A view across the Middle Diversion weir from river-left showing the bedrock outcrop on the left bank (left), and a view of coarse bed materials upstream from the weir (right).

Deep Creek Middle Diversion Removal Photos

September 14, 2022



Irrigation Turnout Post Project Photos 2/1/2023

Two new irrigation turnouts were implemented as part of the project. The Greiner and Jones water rights were transferred upstream to the O’Keeffe Diversion POD and water is diverted through a different route on the upper ditch. The turnouts drop water from the upper ditch into the existing lower ditch to irrigate as before.



Photos above: Greiner Ranch turnout with staff gauge mounted on side to measure flow. Water exits through concrete turnout into open top flume to existing lower ditch. Photos below: Jones Ranch turnout with staff gauge mounted. Water exits through concrete turnout into an underground pipe to lower ditch where it enters pool and ditch system. The pool was created in order to convert flood system into a sprinkler system in the future.

