Willow Creek Fish Passage (Huber)

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Performance Period: 7/1/2022 - 6/30/2023

Habitat Completion Report

For period of 7/1/22 – 12/31/22

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Location

Willow Creek, a tributary of the Grande Ronde River, is located at the downstream and north end of the Grande Ronde valley near Imbler, Oregon. The Huber Irrigation dam is located on RM 2.28. Summer steelhead currently inhabit the mainstem and tributaries of Willow Creek. Adults typically enter Willow Creek in March through mid-June each year and some of the highest redd densities in the subbasin have been documented. Juvenile steelhead outmigration timing varies with the age of the fish but most often coincides with increases in stream flow during the spring and fall.

Introduction

The construction of the Huber irrigation dam in the 1950's created physical obstructions for salmonid migration into the Willow Creek Watershed. In combination with instream flow limitations during key times of the year, passage of adult salmonids upstream and juvenile salmonids downstream is potentially completely blocked as surface flow decreases. Although adult steelhead are able to pass over the dams at higher flow, spring/summer Chinook salmon adults moving into Willow Creek in the early summer months are specifically impacted by the decrease in instream flow and no jump pool at the Huber diversion structure. Fish screens were not needed at this site since irrigation water is taken from the backwater by a set of pump intakes, which are all currently screened.

Objectives

- Increase fish passage for juvenile and adult spring/summer Chinook salmon (Oncorhynchus tshawytscha) and summer steelhead (Oncorhynchus mykiss) 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 possible.
- Construct fish passage that maintains access and use of irrigation water for water rights holders and irrigators.
- Construct a sustainable, permittable, easily maintained design at a reasonable cost.

Project Accomplishments

The project constructed a 100-foot long, 10-foot wide vertical slot fishway at the Huber Dam site. The fishway consists of 10 bays with vertical weir walls to maintain the hydraulic drop throughout a range of flows. A 4-inch orifice was constructed at the bottom of each bay wall and radius corners were built into each weir to accommodate pacific lamprey passage. In addition to the fishway, a grade control structure was constructed in the Willow Creek channel to maintain channel bed elevation at the fishway entrance. An encapsulated soil lift was constructed along the river left streambank, across from the fishway entrance to ensure bank stability and promote riparian vegetation. Approximately 700 willow stakes were planted in the encapsulated bank and all disturbed areas were seeded with site appropriate herbaceous seed mixtures.

Results

The restoration actions were designed to increase passage time throughout the spring migration period. However, water quantity through the fishway will allow efficient passage for adult spring chinook into Upper Willow Creek and its tributaries.

Figure 1. Pre- and Post- project at the Huber Dam backwater.

Figure 2. Huber Dam Fishway construction, weir wall forms.

Figure 3. Huber Dam Fishway activated with flow.

Figure 4. Huber Dam Fishway, installation of surrounding rock apron.

Figure 5. Construction of encapsulated soil lift.

Figure 6. Completed encapsulated soil lift.