

## Swauk Creek RM 17.3 to 18.8 Floodplain Reconnection Design

**State(s):** Washington

**Managing Agency/Organization:** Mid-Columbia Fisheries Enhancement Group

**Type of Organization:** Nonprofit Organization

**Project Status:** Underway

**Project type:** WNTI Project

**Project action(s):** Riparian or Instream Habitat Restoration (Design)

**Trout species benefitted:** Westslope Cutthroat Trout, resident Rainbow Trout, steelhead

**Population:** Yakima Watershed/ Swauk Creek

### Project summary:

This proposal advances a restoration project and reduce costs by pairing the restoration work with an adjacent highway project. Funds are requested to complete final design and permitting for in-stream and floodplain restoration work in a 1.5 mile reach of Swauk Creek. By completing design and permitting in 2016, we can significantly reduce permitting and implementation costs by including the project in the environmental review for two highway culvert replacement projects. The restoration project will improve habitat for Westslope Cutthroat Trout, Rainbow Trout, and Steelhead in this tributary to the Upper Yakima River. The project involves multiple partners. The project will increase the quality and quantity of native trout habitat by:

1. reducing channel confinement by lowering the berm that constrains Swauk Creek;
2. improving floodplain function to reduce scour and augment low summer flows;
3. increasing channel complexity and improving in-stream habitat;
4. encouraging streambed aggradation; and
5. increasing floodplain roughness and streamside shade.

### Problem the Project Addresses:

By reconnecting the floodplain adjacent to Swauk Creek, this project will enhance a Major Spawning Area for the Upper Yakima steelhead population as well as resident trout species as designated by the Yakima Steelhead Recovery Plan, 2009. The restoration project will improve spawning and rearing habitat for resident Rainbow and Westslope Cutthroat Trout, and the anadromous steelhead populations. This project meets WNTI objectives by enhancing native trout populations, restoring critical habitat that has been impaired by human activities, and demonstrating a collaborative approach between agencies.

The most immediate cause of impaired floodplain function and habitat degradation in the project area is the proximity of Highway 97 to Swauk Creek. The length of Swauk Creek from river mile 17.3 to 18.3 was moved to accommodate the highway. Historic construction plans (1952) show beaver ponds, oxbows, and side channels that were destroyed in order to simplify the stream system. When the highway was constructed, the creek was confined into a straight, narrow channel which reduced the connection of the creek with its floodplain (Figure 2), and impaired the ability for late season baseflow to be stored and transferred to the stream. A 2004 USDA Forest Service (USFS) survey found the creek to be warm (>61°F), wood deficient, pool-limited, lacking in shade, and having poor bank condition (Cle Elum RD, 2005). Currently, we have an opportunity to design a restoration project to specifically address these habitat constraints concurrent with work on the highway. The addition of large wood and lowering of the berm will allow the streambed to aggrade and the stream to meander into its historic floodplain. The project will also change the elevation of culverts that currently drain the meadow northwest of the creek. This change will improve the function of the meadow to trap and slow floodwaters, allowing for decreased scour during spring runoff and increased summer baseflow. The installation of large wood will increase the retention of spawning gravels. Planting along the streambanks will increase shade to the stream channel.

### Objectives:

This proposal seeks to take advantage of an opportunity to increase project efficiency and reduce disturbance to Swauk Creek. WSDOT is funded to replace two barrier culverts within the project reach. Replacement of the culverts will require NEPA, NHPA, and ESA analysis, along with permits from the US Army Corps of Engineers and WDFW. WSDOT's inclusion of the proposed restoration work in their analysis of fish passage improvements will reduce project costs (an efficiency estimated at \$15,000). If the restoration project can be permitted concurrently with the culvert replacements, the construction work can also be

conducted concurrently. This will further reduce the costs by saving on mobilization and traffic control, and reduce the duration of disturbance to Swauk Creek.

The restoration project will improve trout habitat by:

1. Reducing channel confinement by lowering the berm that constrains Swauk Creek (increase floodprone width from 25 feet to 100 feet along 1,500 feet of stream);
2. Trapping floodwaters on the disconnected floodplain northwest of Highway 97 by changing the inlet
3. elevation of the culverts that currently drain it (increase floodplain storage capacity on 6 acres by 1 – 2 feet);
4. Encouraging streambed aggradation and increasing channel complexity through placement of 210 logs in stream (increase large wood frequency from 9 pieces/mile to 140 pieces/mile, decrease percent of bed in exposed bedrock from 13% to 5 %, and create approximately 75 new pools ); and
5. Increasing floodplain roughness and streamside shade through planting in footprint of berm (1.3 acres) and placing large wood (60 pieces).

**Partners:**

- Mid-Columbia Fisheries Enhancement Group
- Bureau of Land Management
- Washington State Department of Transportation (WSDOT)
- Washington Department of Fish and Wildlife (WDFW)
- USDA Forest Service

**Project Monitoring:**

An outline of monitoring actions has been developed. A monitoring plan will be completed as part of the design work. The design work will also document pre-project conditions, needed to later monitor and evaluate changes after project implementation. As part of the monitoring plan, Mid-Columbia Fisheries Enhancement Group staff and interns will document and evaluate changes to floodprone width, floodplain connection, streambed aggradation, wood and pool frequency, percent of exposed bedrock, and successful establishment of riparian plantings. WSDOT will be responsible for the maintenance of their culverts and inlets.

**Funding Source(s):** National Fish Habitat Action Plan

**Project cost:** \$35,000.00

**Start Date:** 07/01/2016 **Completion Date:** 12/31/2016

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