

## Lower Staley Creek Floodplain Restoration

**State(s):** Oregon

**Managing Agency/Organization:** U.S. Forest Service

**Type of Organization:** Federal government

**Project Status:** Underway

**Project type:** WNTI Project

**Project action(s):** Barrier Removal or Construction, Riparian or Instream Habitat Restoration, Monitoring, Education/Outreach

**Trout species benefitted:** Bull Trout, Coastal Cutthroat Trout, Spring Chinook salmon

**Population:** Upper Middle Fork Willamette River/ Staley Creek

**Project summary:** The Upper Middle Fork Willamette (UMFW) 5th field watershed, headwaters of the Willamette River, is a 400- square mile area with a unique intersection of physical and biological processes in the Willamette Valley. Continual cold water seeps from the High Cascades geology, as well as broad U-shaped glacial valleys historically provided the cold and clean water that is optimal for Bull Trout, Coastal Cutthroat Trout, and as many as 15 additional native fishes. However, negative effects from historic land use and management (dam construction, piscicide treatment to remove "rough fish", road construction, and intensive timber extraction) contributed to the extirpation of Bull Trout by the mid-1990s. In response the Upper Middle Fork Willamette Bull Trout Rehabilitation Program was formed in 1996, and has since successfully reintroduced Bull Trout to the UMFW. While natural production has been continually documented over the past ten years, the population remains unstable. Recently acquired LiDAR coverage of the watershed reveals that floodplain connectivity and channel complexity remain substantially reduced due to relic man-made features from past activities (berms, roads, levees, etc.), thus limiting habitat quantity and quality for all life stages of native trout. Staley Creek is a large tributary to the UMFW and critical habitat rearing and foraging habitat for ESA listed "threatened" Bull Trout and Spring Chinook Salmon. The Lower Staley Creek Floodplain Restoration project will remove all remnant constructed features from approximately 1.5 miles of lower Staley Creek (reconnecting 42 acres of floodplain/riparian habitat) and reintroduce upwards of 550 large whole trees with rootwads across its floodplain.

**Problem the Project Addresses:** Aerial imagery from the past seven decades reveals the extent and intensity of clear-cut logging operations throughout the Staley Creek sub-watershed, a major tributary to the UMFW and listed Critical Habitat for Bull Trout and Spring Chinook salmon. Specifically, the Lower Staley Creek Floodplain project area falls within a 500-acre parcel previously owned by the Pope and Talbot (P&T) Lumber Company, and was subsequently obtained by the USFS in the late 1980s. By 1981, greater than 90% of the P&T parcel had been clear-cut to the stream bank and all large woody material was harvested. It is well documented that stream cleaning contracts were common in the UMFW throughout the 1970s. There is currently no naturally occurring large wood within the project area, standing or in-stream. In order to protect their infrastructure (roads and bridges) P&T bermed banks upstream of a stringer bridge and aggraded road that bisects the broad alluvial fan.

As engineered, lower Staley Creek remains confined to a single channel with berms as high as 3 meters in places where the stream has been deeply scoured to bedrock, and is currently not properly functioning. The Aquatic and Effectiveness Monitoring Program (AREMP), a federal interagency monitoring group, conducted a stream survey in lower Staley Creek in June 2015 that confirmed the degraded condition. AREMP reported a D50 of 75mm (large cobble size), only two pools, and no large class woody debris. The broad alluvial fan of lower Staley Creek provides an excellent restoration opportunity once hydrologic processes and ecological function are restored.

**Objectives:** The UMFW 5th field watershed was identified by the Willamette National Forest (WNF) as the highest priority on the Forest for aquatic and terrestrial values in need of restoration (U.S. Forest Service 2009). Additionally, Staley Creek 6th field sub-watershed is a priority sub-watershed under the U.S. Forest Service's Watershed Condition Framework. This project is the last essential project to be completed in the Staley Creek Watershed Restoration Action Plan, and is fully supported by the U.S. Forest Service, Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Army Corps of Engineers, and the watershed council. The project is the last in a series of targeted prioritized restoration actions for the Staley Creek sub watershed. Implementing the 2011 Watershed Restoration Action Plan (WRAP), the U.S. Forest Service has completed significant restoration and stewardship activities in the watershed. These efforts include meadow restoration, dispersed camping area treatments, road treatments, tipping whole trees, and helicopter large wood placement in the upper reaches of Staley Creek. The final component will be restoring hydrologic process and function in lower Staley Creek floodplain just above the confluence with the Middle Fork Willamette River. The proposed project is the last essential project to be completed in the Staley Creek

Watershed Restoration Action Plan, and once it is completed, the sub-watershed will shift from "Partially Functioning" to "Functioning" under the Watershed Condition Framework.

The Middle Fork Willamette Watershed Headwaters to Confluence 10 Year Action Plan (MFWWC 2012) prioritizes the restoration of channel habitat complexity in the UMFWR, including Staley Creek, through the placement of large wood and reconnection of side channels.

**Specific project objectives:**

1. Create up to 2.5 acres of early seral gaps to benefit wildlife
2. Generate up to 200 medium sized trees (80' long with average diameter of 18") associated slash for large wood complexes in lower Staley Creek floodplain
3. Increase active floodplain area by 150% in 5 years.
4. Increase linear distance of active channels at base flow by 50% in 5 years.
5. Increase linear distance of active channels at bankfull by 150% in 5 years
6. Increase linear distance of active channels at flood prone stage by 200% in 5 years
7. Increase combined area of emergent wetland and riparian vegetation area by 75%
8. Increase wood frequency in channels and across the floodplain to at least 500 pieces per mile of all size classes (small = 12"-24"DBH and >25' long; medium = 24"-36" DBH and >25' long; large =>36" DBH and >50' long), of which at least 175 pieces per mile are in the medium and large size classes upon project completion.
9. Increase the quantity and quality of spawning and foraging habitat for Bull Trout and Spring Chinook salmon.
10. Increase complex pool habitat by 200% in five years
11. Restore 14 acre of floodplain currently being used as a dispersed camping area
12. Remove relic anthropogenic conditions (roads, dikes, etc.)
13. Rehabilitate any disturbance created by restoration efforts.

**Partners:**

- U.S. Forest Service
- Middle Fork Willamette Watershed Council
- Oregon Department of Fish and Wildlife
- Aquatic and Riparian Effectiveness Monitoring Program
- Upper Middle Fork Willamette Bull Trout Workgroup
- Southern Willamette Forest Collaborative

**Project Monitoring:** The project has a number of specific objectives with measurable outcomes that will be monitored annually by AREMP and USPS crews, the former conducting seasonal stream survey training in the UMFW.

- Acres of early seral habitat created
- # of small trees generated for floodplain restoration
- Acres of additional floodplain reconnected during base, bankfull and flood flow (low elevation photography, photo points and field observations of channel use) as compared to pre-project modeled bathymetry
- Feet of secondary channels wetted, both perennially and intermittently, pre- and post- project (field assessment of hydrologic signatures, sorting, imbrication, inundation, etc.)
- # of small and large wood pieces per mile in each size class measured during stream habitat surveys conducted within one year of project's completion, and every 5 years to follow.
- Square feet of spawning surface area and substrate composition measured during habitat surveys (Wolman pebble counts for substrate size).
- # complex pools measured during habitat and snorkel surveys post project
- Acres of floodplain converted from dispersed camping to active floodplain
- Acres of past or present disturbed area restored

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

**Project cost:** \$24,450.00

**Start Date:** 08/01/2017 **Completion Date:** 9/30/2019

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