YAKIMA BASIN SIDE CHANNELS

FY 2018 ANNUAL REPORT

SEPTEMBER 1, 2017 – FEBRUARY 28, 2018

CONTRACT #56662 REL 141 & 151

PROJECT #1997-051-00

Prepared by

Yakama Nation

Yakima/Klickitat Fisheries Project (YKFP)

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Contents

1. Introduction:

The project serves as the overarching habitat stewardship program for YKFP in the Yakima Subbasin, for off-reservation activities. Examples of work that is performed under this project includes all aspects of stream restoration including revegetation, weed control, fencing, removal of fish passage barriers, installation of NOAA-compliant fish screens, placement of woody material in streams at strategic locations, levee removal and road relocation. Other activities include collaboration with other resource management entities, review and input on restoration plans and programs, review and comment on land use plans and development projects. The project has a strong history of collaboration with many entities. Over 50 miles of habitat has been reopened to anadromous fish through this program, dozens of screens have been installed and over 80 restoration and protection projects have been implemented.

2. Restoration Projects:

2.1. Yakima Basin Wood Fiesta Helicopter Aquatic Restoration Phase I:

The Yakima Basin Wood Fiesta Helicopter Aquatic Restoration Project (Wood Fiesta) is a multi-watershed collaborative effort in coordination with the Yakama Reservation Watershed Project (YRWP), Yakama Nation Wildlife Program (YN-Wildlife), Mid-Columbia Fisheries Enhancement Group (MCFEG), U.S. Forest Service (USFS), Washington Department of Fish & Wildlife (WDFW), Washington State Department of Natural Resources (WDNR), Kittitas Conservation Trust (KCT), and The Nature Conservancy (TNC). Yakama Nation's Yakima/Klickitat Fisheries Project (YKFP) staff were responsible for the coordination and implementation of the following projects and target watersheds: 1) Lick Creek, 2) Swauk Creek, 3) Little Naches River, 4) North Fork Manastash Creek, 5) Umtanum Creek, and 6) Little Rattlesnake Creek which are included in this report. YN-Wildlife and YRWP also implemented a project on Satus Creek as part of the Wood Fiesta. Refer to Figure 1 for a map of all Wood Fiesta tributaries.

Logs, whole trees, rootwads and other coarse woody material shall be placed in the channel and on the floodplain by the helicopter in natural-like configurations consistent with the conceptual design set forth in Figure 2. The location and arrangement of course woody material was placed via helicopter following guidance for large wood replenishment provided in the WDFW publication Stream Habitat Restoration Guidelines (available at this link: http://wdfw.wa.gov/hab/ahg/shrg/index.htm).

Wood placement by the helicopter will be directed by Yakama Nation personnel knowledgeable of fish and fish habitat in the Yakima River Basin and with expertise and experience in working in sensitive shoreline environments and with large wood replenishment for restoring stream channels. Wood movement and placement is done by the helicopter in a manner that minimizes damage to shoreline trees and shrubs and minimizes discharge of earth and fine sediment to creeks and associated wetlands.

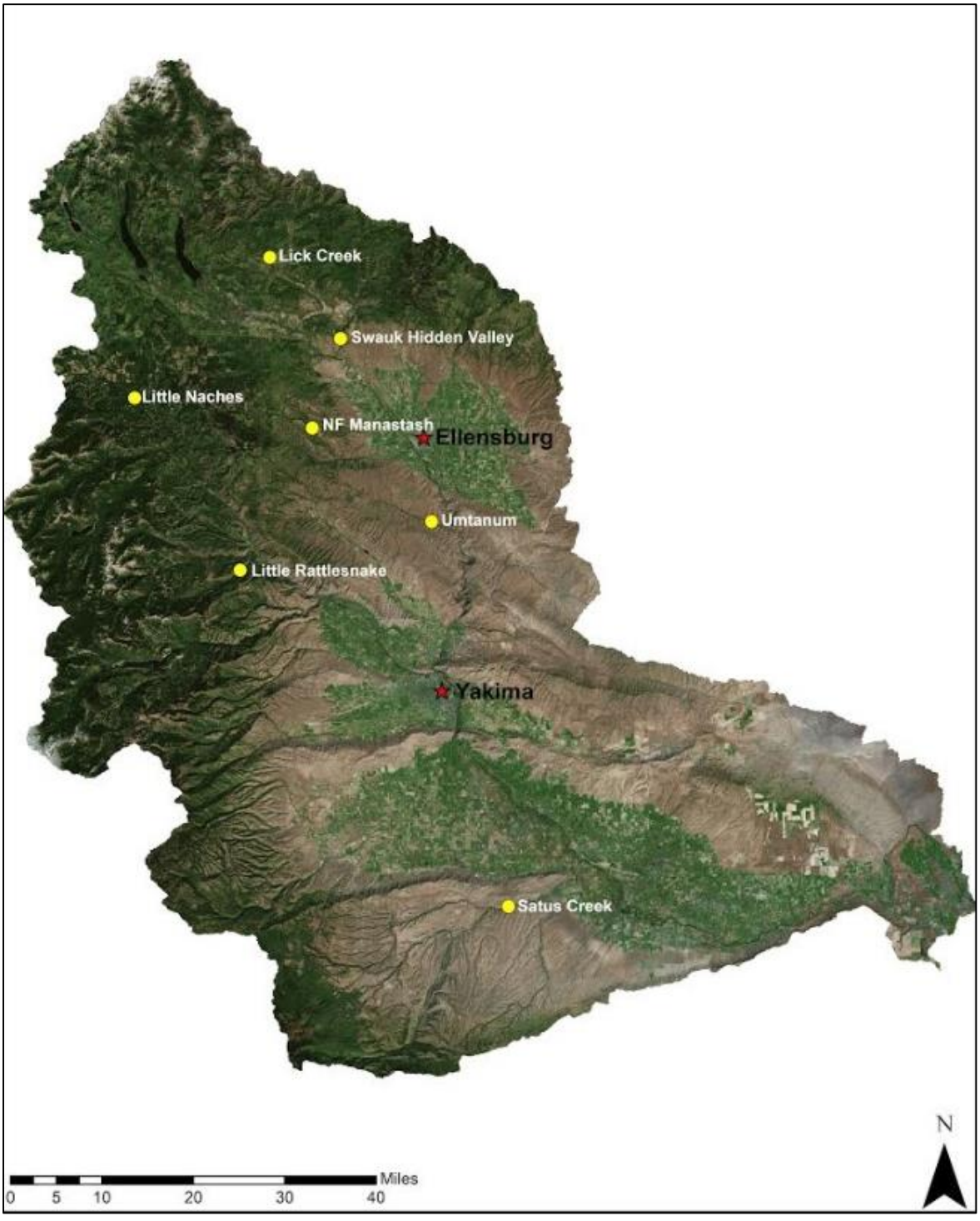


Figure 1. Yakima Basin Wood Fiesta Helicopter Aquatic Restoration Project Locations

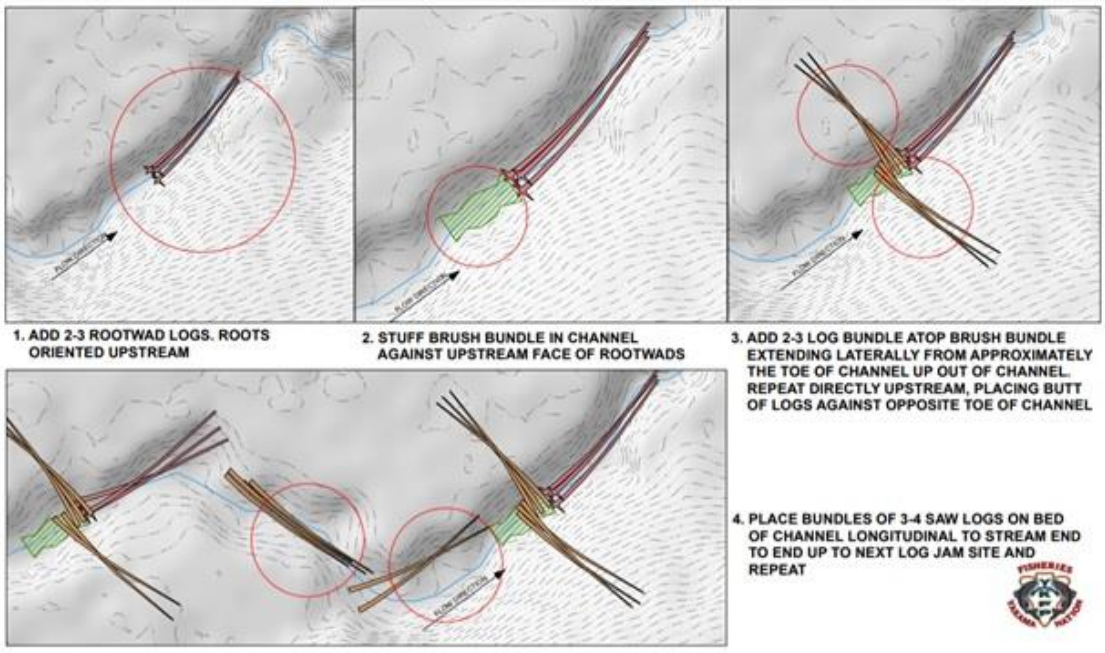


Figure 2. Conceptual design for natural-like configurations of wood placed by the helicopter.

Large pieces of woody material were placed unanchored in the active channel in remote areas with no risk to downstream property, infrastructure or public safety. To the extent that the project succeeds over time in reestablishing natural floodplain connectivity, it should attenuate downstream peak flood flows and enhance base flows by temporary storage of streamflow on the floodplain as shallow groundwater. Source wood harvest and wood delivery and staging occurred August 1, 2018 to September 30, 2018. Staged wood was placed instream and on the adjacent floodplain of each project reach during October 1, 2018 to November 30, 2018 (with a total of 13 flight days). Helicopter wood placement was scheduled to avoid the modern firearm hunting season for projects occurring on public lands.

The goal of the proposed work within the Yakima River Basin is to restore hydrologic and habitat function for improved production of Yakama Nation treaty reserved fish species, including the Middle Columbia River Steelhead (*Oncorhynchus mykiss)*, a species listed as threatened by the National Marine Fisheries Service (NMFS). This goal will be achieved through the following objective: Place woody material in streams and on adjacent floodplain surfaces to provide roughness which will help capture mobile sediment and promote stream aggradation, create channel complexity, attract beavers, recharge shallow groundwater (improve base flows), reduce peak flows, improve stream temperatures, and establish a robust and species rich riparian corridor.

2.1.1. Lick Creek

Favorable late season weather permitted a large volume of restoration work to be implemented in a number of priority tributaries in the Teanaway Community Forest (TCF) – 2018, despite a relatively late start. In addition to hand winches and heavy equipment, a novel strategy of installing woody materials instream with a helicopter was successfully employed. The proposed work described in the Teanaway Community Forest Aquatic Restoration Project Report-2016, is nearly complete. In addition, a number of outreach events have been accomplished by YKFP staff and partners.

Timeline Summary:

- Transported woody materials donated by WA DNR from Middle Fork Teanaway, and staged materials at two staging areas within APE at the Lick Creek Site. Intermittent August-October 2018
- Received SHPO Concurrence. 8/17/2018
- Site visit with helicopter contractor reveals refueling area is not sufficiently sized and will not work. 8/21/2018
- Identified new refueling area outside of APE. Surveyed new site for cultural resources with YN and BPA Archaeology staff 9/4/2018
- Received notification from BPA Archaeology staff that the new refueling area was in compliance with section 106. 9/28/2018
- Placed materials via helicopter. 10/15/2018
- AmeriCorps labor crew seeded disturbed surfaces throughout the Lick Creek Project Site with native riparian and upland seed mixes. 11/28/2018
- AmeriCorps labor crew bucked suspended logs with chain saws placed by helicopter instream so that woody materials are now sufficiently engaged with the active channel. 11/28/2018

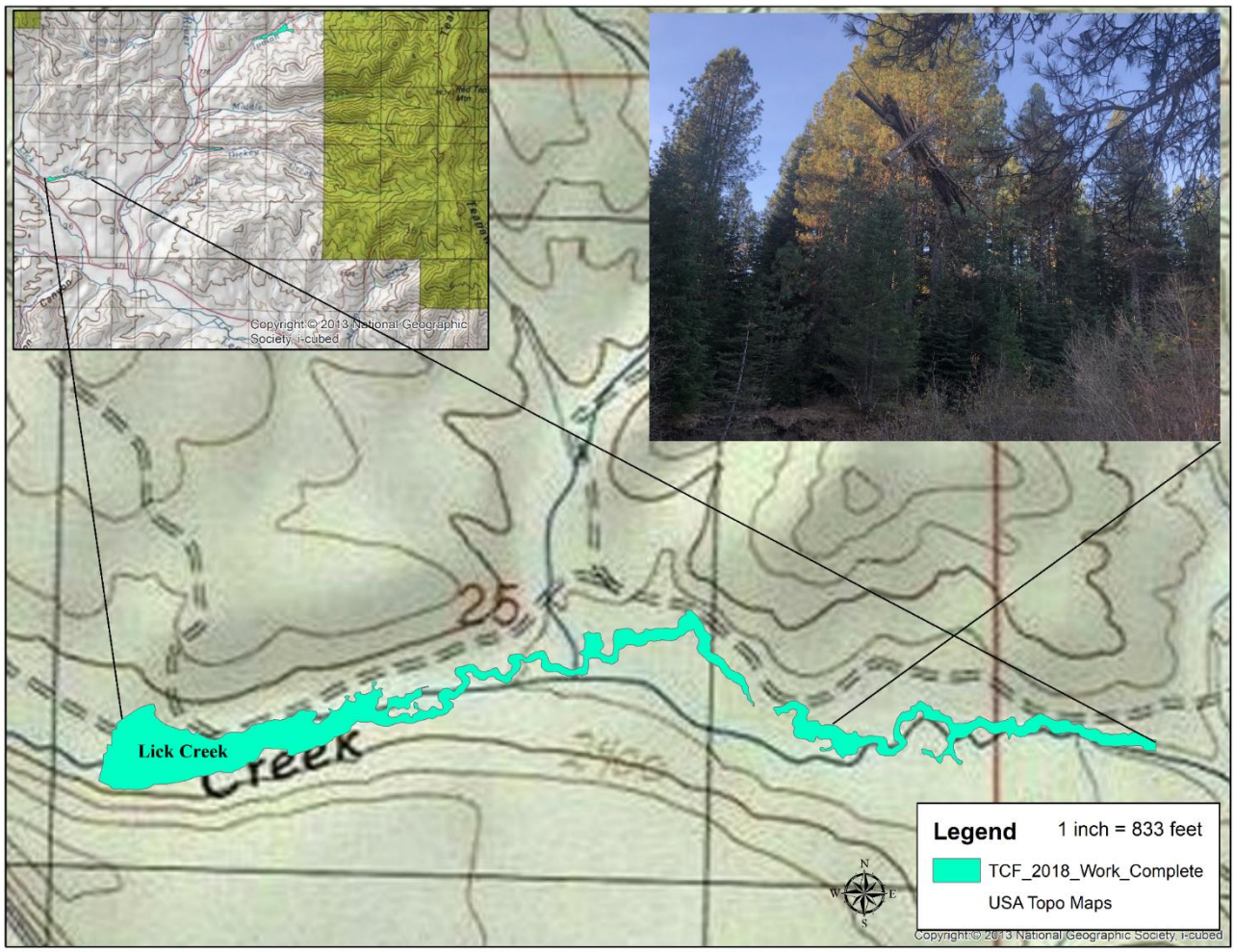
Discussion:

As mentioned in the overview, it was fortunate that weather conditions remained conducive to construction activities well into December, as reaching timely section106 compliance proved a challenge. Changes to the area of potential effect map on Lick Creek to include an alternate helicopter refueling area caused delays to implementation close to flight time, however archaeological stakeholders were able to expedite review of the cultural amendment, to allow the schedule to proceed as originally planned.

YKFP Outreach:

- Field tour with Central Washington University Natural Resources Management class 6/21/2018
- In class lecture to Central Washington University Fluvial Geomorphology class on TCF Tributary work 10/25/2018
- Presentation of project progress to Teanaway Community Forest Advisory Committee 12/13/2018

- Currently collaborating with American Rivers staff in the development of an Arc GIS storymaps.



Status: Completed

Targeted Populations: Middle Columbia River Steelhead

Location Area (Basin, sub-basin): Yakima River, Teanaway River, Lick Creek

In partnership with: BPA

Limiting Factors: Floodplain connectivity, elevated temperatures, low streamflows

Project Manager: Ryan DeKnikker

2.1.2. Swauk Creek

OVERVIEW: YKFP habitat biologists successfully directed the placement of 552 with and without rootwads instream and on the adjacent floodplain in Lower Swauk Creek on October 13, 2018. These logs were sourced from the Washington Department of Fish and Wildlife or WDFW-managed LT Murray Wildlife Area, as part of a forest health prescription to thin less dominant trees and make the forest more resilient to wildfire. The logs were placed in approximately one mile of lower Swauk Creek that runs through private property. Due to lack of access for heavy equipment, this project relied solely on the use of a helicopter to place wood and enhance aquatic habitat. Woody material was placed at strategic locations where the maximum extent of overbank flows was expected to occur. Work was coordinated with private landowners who were very supportive of the project goals.

PROJECT NARRATIVE: Swauk Creek, a left bank tributary to the Upper Yakima River, is occupied by Middle Columbia River (MCR) steelhead, interior redband rainbow trout, and westslope cutthroat trout (USDA Forest Service 2016). Swauk Creek is considered a major spawning tributary for the Upper Yakima population of MCR steelhead (listed as threatened under the Endangered Species Act or ESA), which is considered severely depressed with an estimated spawner abundance of 85 adults (YBFWRB 2009). Swauk Creek was also designated as critical habitat for ESA-listed bull trout by the United States Fish and Wildlife Service as of 2010 (USFWS 2010).

The project reach for the 2018 Swauk Hidden Valley Wood Replenishment included 1-mile of stream and adjacent floodplain habitat within the lower 4-miles of Swauk Creek. Woody material was sourced from nearby units in Robinson Canyon, part of the LT Murray Wildlife Area, managed by the Washington Department of Fish and Wildlife (WDFW). This work was part of a Washington Wildlife and Recreation Program (WWRP)- funded forest health thinning project. In the summer of 2018, wood was transported from these thinning units to two staging locations on privately owned property along Raptor Ridge Road, east of the wood placement reach. Heavy equipment utilized for staging the wood included logging trucks and log loaders.

A number of private landowners willingly participated in the project. The owners of Swauk Valley Ranch on Highway 10 in Thorp, WA allowed the use of their property to access the restoration stream reach. Another private landowner allowed the use of their large gravel pit along Highway 97 for a helicopter landing and refueling area. Two additional landowners along Raptor Ridge Road in Thorp allowed the use of their land for wood staging for the project. YKFP staff developed landowner agreements for the project to ensure the use of the aforementioned properties for this restoration project.

Wood was placed in lower Swauk Creek and the adjacent floodplain during daylight conditions on October 13, 2018 using a 107-Vertol helicopter. A total of 552 logs were

placed unanchored into the active channel and floodplain following concepts outlined in WDFW's Stream Habitat Restoration Guidelines (2012) for Wood Replenishment. Wood was placed in areas where it is likely to improve instream habitat, reestablish natural floodplain connectivity, attenuate downstream peak flows and enhance base flows.

The below figures include a map of the project area and photos of Swauk Creek before, during and after wood placement via helicopter. Aerial photos of the creek were taken by a consultant pre and post implementation to document changes to aquatic habitat and are currently being processed.

In 2019, another mile of wood replenishment is planned downstream of this project on private land. YKFP staff were awarded a Salmon Recovery Funding Board grant that will partially cover the costs for this work.

LESSONS LEARNED:

- When possible, have contractor (in this case Columbia Helicopters Inc.) look at the helicopter maintenance/refueling areas and wood staging areas early on to avoid changes to the APE
- Take lots of photos pre and post implementation to document changes to the stream/floodplain
- Be ready to adapt to change and try to prepare ahead for risk management where possible
- Communicate clearly and effectively to partners, contractors, and permitting agencies on the project scope, goals, and deliverables so everyone is on the same page
- Be ready to cover costs associated with revegetation and road maintenance to bring everything back to existing condition or better, post implementation
- Be prepared for increased cost associated with helicopter projects

Status: Active

Targeted Populations: Middle Columbia River Steelhead

Location Area (Basin, sub-basin): Yakima River, Swauk Creek

In partnership with: BPA and USFWS

Limiting Factors: Floodplain connectivity, elevated temperatures, low streamflows

Project Manager: Ashton Bunce

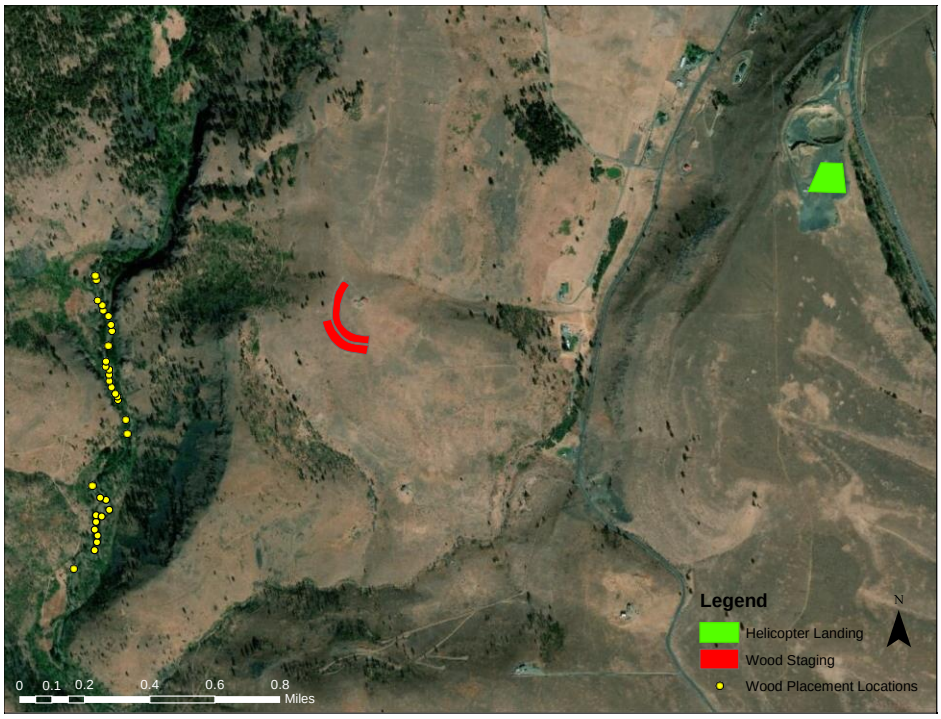


Figure 1. Overview of Swauk Hidden Valley Wood Replenishment project area.

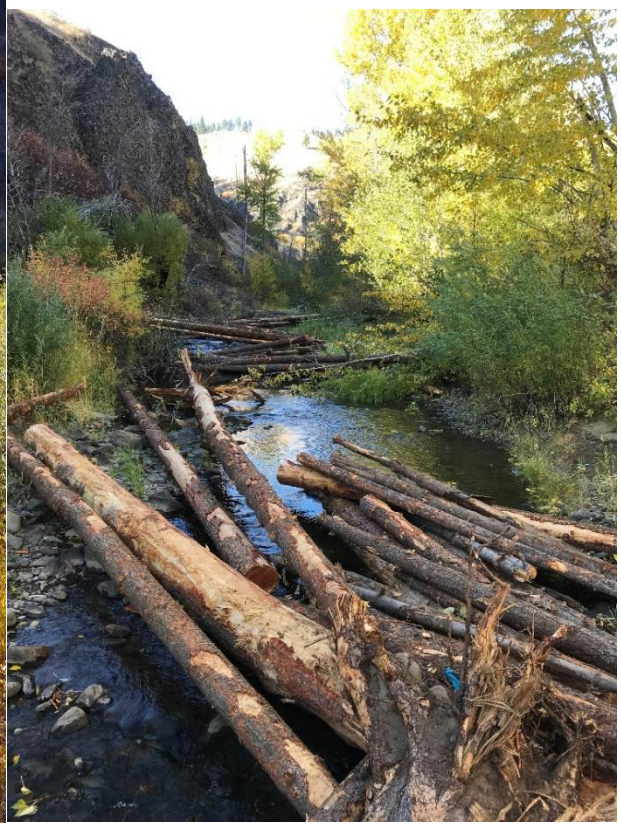
Figure 2. Aerial drone imagery prior to project implementation.

Figure 3. Photo of Swauk Creek showing an oversimplified channel with low instream habitat complexity that was characteristic of the project reach.

Figure 4. Photo of Swauk Creek showing an oversimplified channel with low instream habitat complexity that was characteristic of the project reach.

Figure 5. Photo of project reach demonstrating lack of cover for fish.

Figure 5. Photo of the 107-Vertol helicopter placing wood instream during project implementation.

Figures 6 & 7. Photos of wood placement post implementation.

Figure 8. Photo of wood placement post implementation.

2.1.3. Little Naches River

OVERVIEW: YKFP habitat biologists successfully directed the placement of 1000 pieces of large wood (50 with roots, 950 without roots) instream and on the adjacent floodplain in the Little Naches River on November 5th, 6th and 10th, 2018. These logs were sourced within the watershed from The Nature Conservancy, as part of a forest health prescription to thin less dominant trees and make the forest more resilient to wildfire. The logs were placed in a 1.5 mile reach of the Little Naches River on the Wenatchee National Forest. Due to lack of access for heavy equipment, this project relied solely on the use of a helicopter to place wood and enhance aquatic habitat. Woody material was placed at strategic locations where the maximum extent of overbank flows was expected to occur. Work was coordinated with the US Forest Service.

PROJECT NARRATIVE: The Little Naches River is within the Yakima River basin and is a tributary to the Naches River in northwest Yakima County, Washington. The Little Naches River is occupied by Middle Columbia River steelhead (Oncorhynchus mykiss) and bull trout (Salvelinus confluentus), both of which are listed as threatened by the Endangered Species Act (ESA).

The past 100 years of management practices within the Little Naches watershed have negatively altered aquatic habitat conditions. Past aquatic habitat surveys performed by the Naches Ranger District have found that the Little Naches River is deficient of instream wood. The lack of instream wood has resulted in decreased hydrologic and habitat function, including increased risk of flooding and diminished spawning and rearing habitat for fish. There is a need for wood replenishment within the Little Naches; however, terrain and vegetation in these areas make them inaccessible to traditional ground-based methods for wood placement.

USFS survey data from 2014 shows that the project reach of the Little Naches River has 35 key pieces of wood per mile, and 82 pieces of wood per mile overall. These numbers are very low in comparison to reference data from the American River, which has 130 key pieces/mile and 324 total wood pieces/mile. This wood deficiency can be attributed to multiple causes; past management practices from the 1970s included wood removal from streams for the intended purpose of flood control; since that time, research has shown that this type of effort actually results in increased flooding. Additionally, as a result of past forest practices and the development of roads, significantly less wood is available today for recruitment from riparian areas to the stream than under historic conditions. The USFS aquatic survey data highlights the necessity of large wood replenishment in the Little Naches River.

Part of the objectives of the Aquatic Conservation Strategy (NWFP 1994) is to restore watershed condition and function by maintaining and restoring in-stream flows, sediment regimes and timing, variability and duration of floodplain elevation and water table elevation. This purpose of this project is to achieve these objectives through the

placement of LWD. LWD has been shown to improve hydrologic and habitat functions by providing roughness to the stream channel which will help capture mobile sediment and organic matter and promote stream aggradation, create channel complexity, attract beavers, recharge shallow groundwater (improve base flows), reduce peak flows, improve stream temperatures, provide habitat to insects, invertebrates and fish and establish a robust and species rich riparian corridor. These improvements will directly address limiting factors of the recovery of Yakama Nation treaty reserved fish species including diminished habitat complexity, a lack of large wood, elevated temperatures, and reduced stream flows.

Wood was placed in the Little Naches and the adjacent floodplain during daylight conditions on November 5th, 6th and 10th, 2018 using a 107-Vertol helicopter. A total of 1000 logs were placed unanchored into the active channel and floodplain following concepts outlined in WDFW's Stream Habitat Restoration Guidelines (2012) for Wood Replenishment. Wood was placed in areas where it is likely to improve instream habitat, reestablish natural floodplain connectivity, attenuate downstream peak flows and enhance base flows.

The below figures include a map of the project area and photos of the Little Naches before, during and after wood placement via helicopter. Aerial photos of the creek were taken by a consultant pre and post implementation to document changes to aquatic habitat and are currently being processed.

Status: Completed

Targeted Populations: Middle Columbia River Steelhead, Coho, Chinook

Location Area (Basin, sub-basin): Yakima River, Naches River, Little Naches River

In partnership with: BPA and YBIP

Limiting Factors: Instream habitat complexity, floodplain connectivity, elevated temperatures, low streamflows

Project Manager: John Marvin

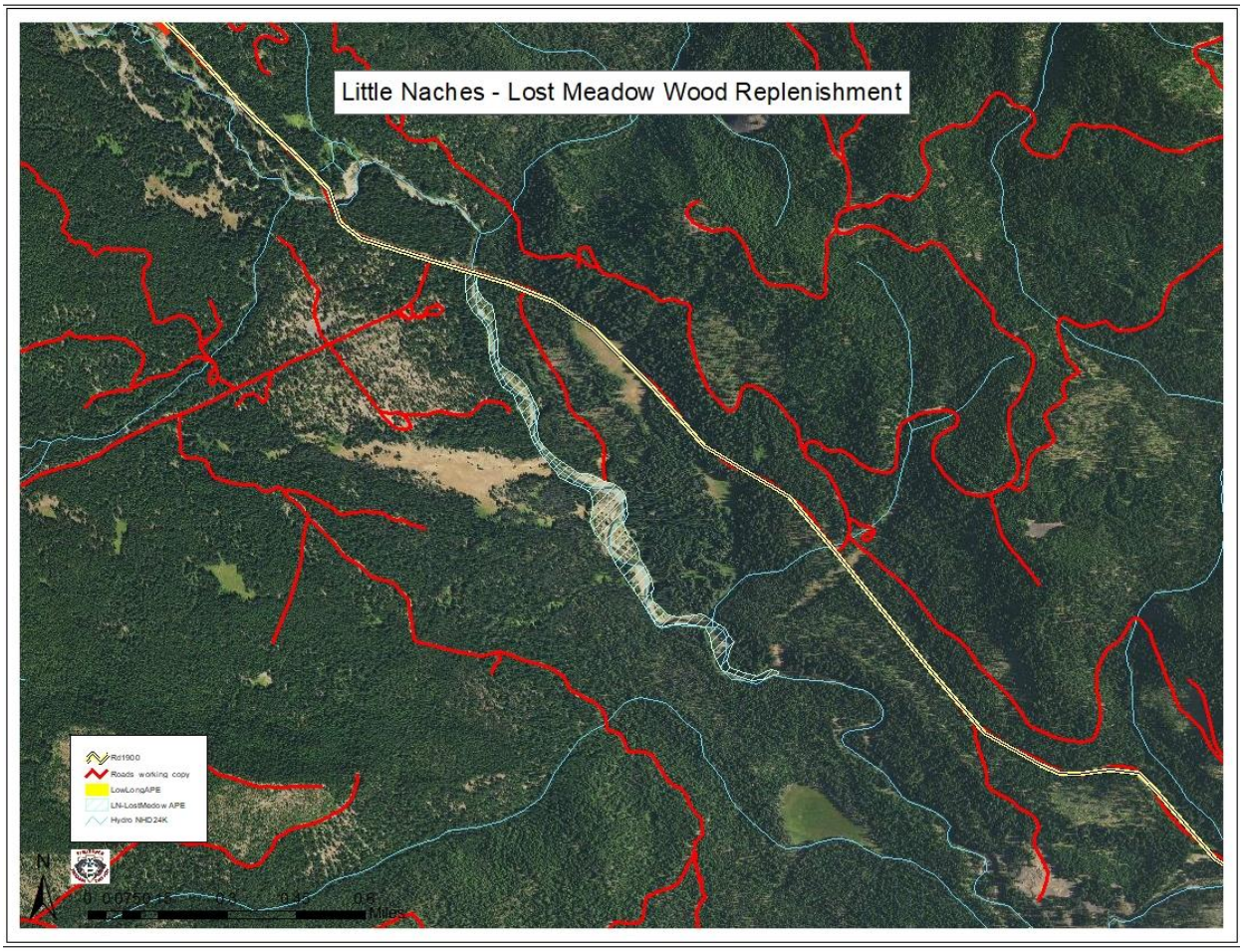


Figure 1. Overview of Little Naches Wood Replenishment project area.

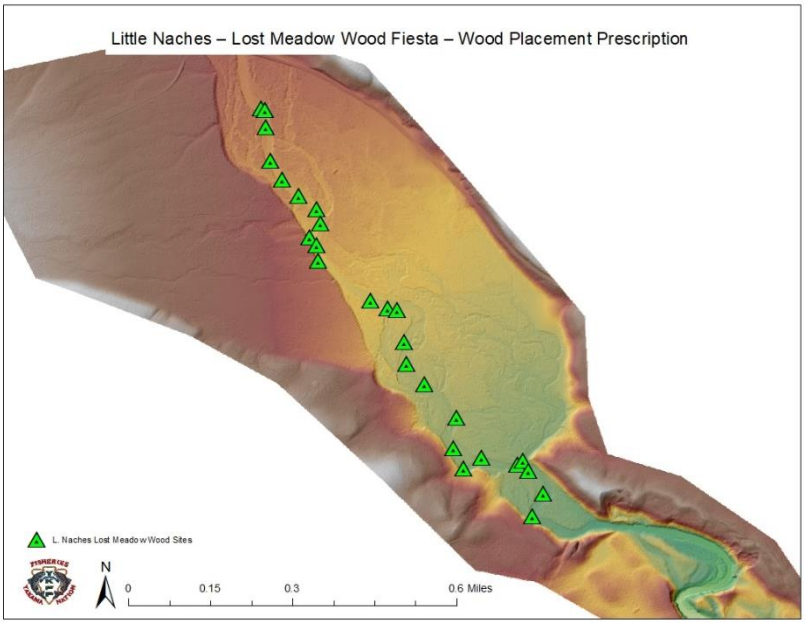


Figure 2. Little Naches wood placement.

Figure 3. Photo of wood staged for project implementation.

Figures 4. Photos of wood placement pre implementation.

Figure 5. Photo of wood placement post implementation.

2.1.4. North Fork Manastash

North Fork Manastash Creek is a right bank tributary to the Upper Yakima River and is located on Washington Department of Fish and Wildlife's LT Murray Wildlife Area in Kittitas County, WA. North Fork Manastash Creek provides prime habitat for ESA-listed steelhead and resident trout. A survey conducted 2015 showed that the stream was devoid of large wood. The channel is incised and disconnected from its floodplain likely due to the presence of a decommissioned road that runs for much of its length.

YKFP habitat biologists, in partnership with Mid-Columbia Fisheries Enhancement Group, successfully directed the placement of 2,000 logs with and without rootwads instream and on the adjacent floodplain in NF Manastash Creek October of 2018. The amount of wood needed for the 7.5-mi helicopter reach was underestimated and approx. 2 miles between RM 5 and RM 7 within T18N, R16E, S26, S35 and T17N, R16E, S2 were not treated. This section of stream contains high priority broad disconnected floodplains with dry meadow vegetation. Placement of wood will aggrade the channel, reconnect it to its floodplain and return it to historic condition. YKFP is proposing a second phase of helicopter wood replenishment during August 2019 to add 500 pieces of large wood to the identified locations within the blue polygon.

Figure 1. Helicopter flying wood into North Fork Manastash

Figure 2. Helicopter placing wood in North Fork Manastash

Status: Active

Targeted Populations: Middle Columbia River Steelhead

Location Area (Basin, sub-basin): Yakima River, Manastash Creek, North Fork Manasatsh Creek

In partnership with: BPA, SRFB, and McNary Mitigation Fund

Limiting Factors: Floodplain connection, elevated temperatures, low streamflows

Project Manager: Kelly Clayton

2.1.5. Umtanum Creek

Umtanum Creek runs for ten miles through the Wenas Wildlife Area owned and managed by Washington Department of Fish and Wildlife before emptying into the Yakima River. Steep basaltic cliffs rise on both sides of the stream corridor. The narrow riparian forest zone adjacent to Umtanum Creek is comprised of ponderosa pine, Douglas fir, black cottonwood, aspen and willows. Beaver are active in this drainage. Instream wood is limited within the stream reach with no access. This project used wood sourced from the LT Murray Wildlife Area as part of a WWRP funded forest health thinning project to improve instream habitat. Large wood was hauled to nearby staging areas and placed in Umtanum Creek via helicopter. This project will improve habitat complexity in 4.5 miles of stream for Middle Columbia River Steelhead, Spring Chinook and Coho by adding 1,000 pieces of course woody material with and without rootwads attached, including small diameter trees and slash, to the stream channel and adjacent floodplain.

Status: Completed

Targeted Populations: Middle Columbia River Steelhead

Location Area (Basin, sub-basin): Yakima River, Umtanum Creek

In partnership with: BPA, WWRP, and McNary Mitigation Fund

Limiting Factors: Floodplain connection, elevated temperatures, low streamflows

Project Manager: Kelly Clayton

Figure 1. Drone imagery of Umtanum Creek post implementation

2.1.6. Little Rattlesnake Creek

OVERVIEW: YKFP habitat biologists, in partnership with Mid-Columbia Fisheries Enhancement Group, successfully directed the placement of 496 logs with and without rootwads instream and on the floodplain in Little Rattlesnake Creek between November 9th-10th, 2018. The logs were purchased from a private contractor and were delivered to 5 staging polygons on Cowpuncher Ridge just north of the creek, during the month of September 2018. The logs were then placed in the lower five miles of Little Rattlesnake Creek, which falls within Washington Department of Natural Resources or WA-DNR-managed lands. Due to lack of access for heavy equipment, this project relied solely on the use of helicopter for wood placement to enhance aquatic habitat. Woody material was placed at strategic locations where the maximum extent of overbank flows was expected to occur. Work was coordinated with WA-DNR under an existing Memorandum of Understanding entered between the Yakama Nation and WA-DNR.

PROJECT NARRATIVE: Little Rattlesnake Creek flows into Rattlesnake Creek and the Naches River in Yakima Country, both of which are important habitat for steelhead and bull trout. The Little Rattlesnake Road (FS1501) that ran adjacent to Little Rattlesnake Creek had been vulnerable to stream water damage during high flows, having

experienced major flood events in 2009 and 2011 that resulted in road damage and contributed to stream sedimentation. The May 2011 flood event resulted from approximately 3-4 inches of rainfall occurring within a 24-hour period. The peak stream flow was estimated to be greater than a 100-year return interval which is approximately 850 cubic feet per second (cfs) in the lower Little Rattlesnake Creek. The FS1501 road was decommissioned in 2014 (a Mid-Columbia Fisheries Enhancement Group project with a Salmon Recovery Funding Board (SRFB) grant). The total project area road decommissioning occurred along the first 5 miles of road, including the road prism, road shoulder, and road embankments.

As a result of past road network development in the floodplain of Little Rattlesnake Creek, the channel had become oversimplified, straightened, and incised in some areas. As a result, the need for wood replenishment was identified by Yakama Nation YKFP staff during the road decommissioning project. Wood replenishment in the adjacent 5 miles of stream was previously included under BPA contract #56662 REL 61 WE Q 29 but had been canceled due to permitting not being completed prior to road decommissioning.

In July and August of 2014, Mike Bosko of Mid-Columbia Fisheries Enhancement Group surveyed four reaches, each approximately ½ mile, along the five-mile stretch of the decommissioned road FS1501, beginning at the stream's confluence with Rattlesnake Creek. A total of 2.8 miles of stream were measured. The survey was designed to measure 40% of the total length of stream impacted by the road closure. Four reaches (R1, R3, R5, R7) were selected based on the greatest potential for fish holding habitat (0% - 3% stream channel gradient). The 2014 Little Rattlesnake Creek stream habitat inventory was conducted using the methods described in the USFS Stream Inventory Handbook.

In 2018, Mid-Columbia Fisheries Enhancement Group partnered with YKFP staff to place wood in the lower 5 miles of Little Rattlesnake Creek. Mid-Columbia Fisheries Enhancement Group still had some remaining funds from the SRFB grant to decommission the FS1501, which in addition to BPA funds, covered the 2018 wood replenishment work. This included placement of 496 logs into Little Rattlesnake Creek on November 9th and 10th, 2018 with the 107-Vertol Helicopter.

YKFP staff plan to do an additional phase of wood placement in the lower 5 miles of Little Rattlesnake Creek in 2019 using a helicopter. The creek is heavily degraded and while the 496 pieces placed in 2018 was a great boost to aquatic habitat, heavier wood loading is needed to reverse incision, add channel complexity and reconnect the stream with its floodplain. YKFP is allow hoping to work with Mid-Columbia Fisheries Enhancement Group to data to follow up on data collection from 2014 and get some post implementation data collection completed.

The below figures include a map of the project area and photos of Little Rattlesnake Creek before, during and after wood placement via helicopter.

LESSONS LEARNED:

- Give as much lead time as possible for cultural review process
- Give as much lead time as possible for legal review of agreements, licenses, etc. between agencies
- Don't put RFP out for contractor until permitting is well underway and you have a good idea of when they can start working
- Communicate relentlessly with contractor, archaeologists, partners and those granting permits to keep everyone in loop
- Spend time on the front end of the project on project planning including identifying stakeholders, budget, timeline, scope of work, project goals and identifying risks associated with the project

Status: Active

Targeted Populations: Middle Columbia River Steelhead

Location Area (Basin, sub-basin): Yakima River, Naches River, Little Rattlesnake Creek

In partnership with: BPA and SRFB

Limiting Factors: Floodplain connection, elevated temperatures, low streamflows

Project Manager: Ashton Bunce

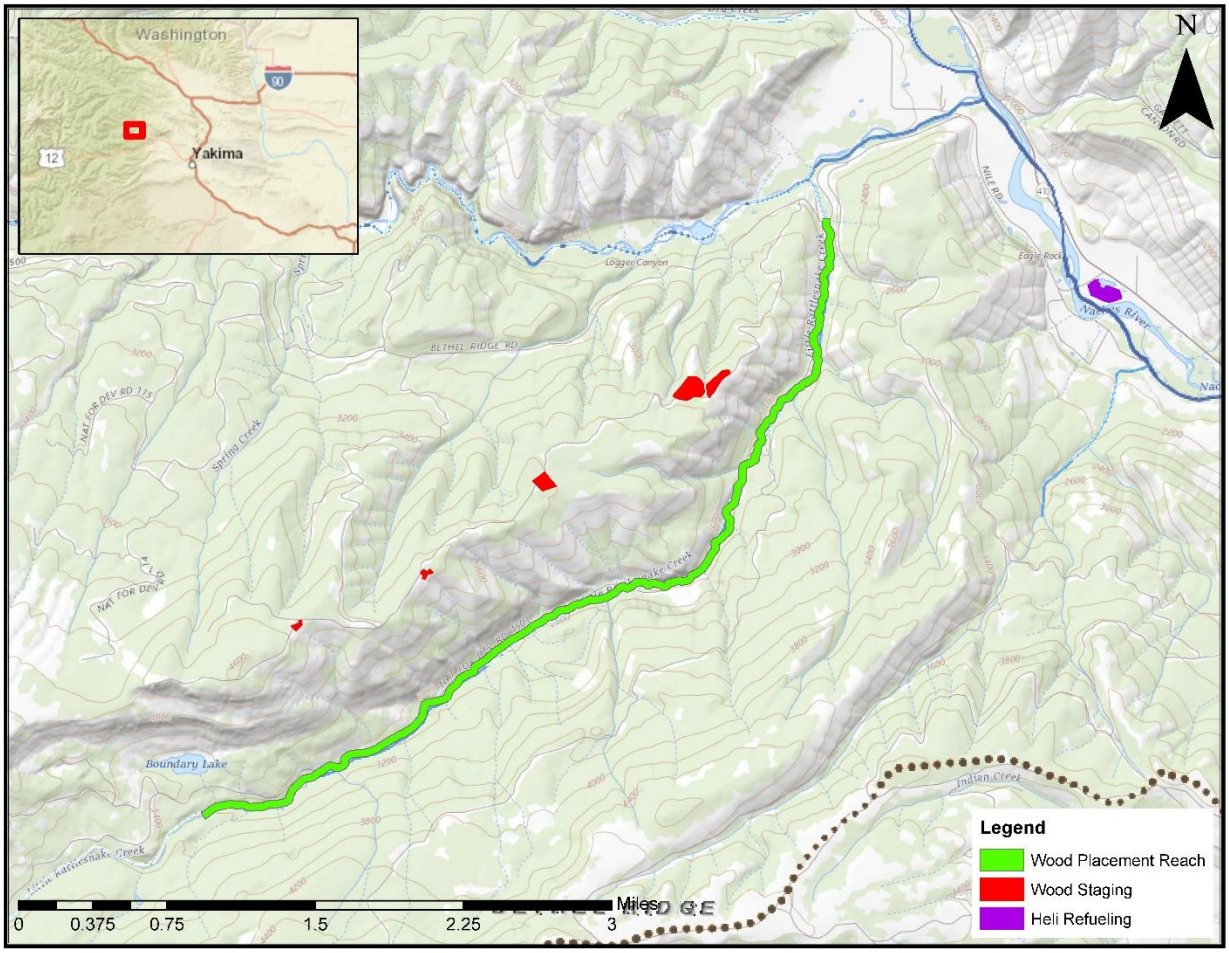


Figure 1. Overview of Little Rattlesnake Creek Wood Replenishment project area.

Figure 2. Photo of Little Rattlesnake Creek showing oversimplified, straightened channel, lacking in instream habitat complexity. This is characteristic of what was found throughout the project reach pre-implementation.

Figure 3. Photo of Little Rattlesnake Creek showing channel lacking in instream habitat complexity and cover.

Figure 4. Photo of Little Rattlesnake Creek showing channel lacking in complexity.

Figure 5. Photo of helicopter during implementation flying logs into Little Rattlesnake Creek.

Figure 6. Photo of biologists directing placement of wood in Little Rattlesnake Creek during implementation.

Figure 7. Photo of wood placement in Little Rattlesnake Creek.

Figure 8. Photo of wood placement in Little Rattlesnake Creek.

2.2. Teanaway Community Forest Aquatic Restoration Phase II:

Favorable late season weather permitted a large volume of restoration work to be implemented in a number of priority tributaries ion the Teanaway Community Forest (TCF) – 2018, despite a relatively late start. In addition to hand winches and heavy equipment, a novel strategy of installing woody materials instream with a helicopter was successfully employed. The proposed work described in the *Teanaway Community Forest Aquatic Restoration Project Report-2016,* is nearly complete. To date, YKFP staff have added high rates of woody materials to approximately 9.5 miles of instream tributary, and 110 acres of floodplain in Indian (including YKFP work from 2015), Middle, Jungle, Dickey, First, Rye, and Lick Creek Watersheds. This amounts to approximately, 5000 pieces of instream wood placed. In addition, 60 acres of upland, state owned forests were thinned not only to derive aquatic restoration materials, but to also promote fire resiliency and forest health in Kittitas County. In addition, a number of outreach events have been accomplished by YKFP staff and partners.

2.2.1. Indian Creek

- Contractor placed wood in Upper Indian Creek (Section 16 upstream to bridge) and on adjacent floodplain surfaces. 8/13/2018-8/17/2018
- AmeriCorps labor crew seeded disturbed surfaces throughout the Indian Creek Project Site with native riparian and upland seed mixes 11/27/2018
- Work remaining at Indian Creek includes spreading floodplain wood staged during 2017 construction period on left bank floodplain surfaces using small

winches and utility tractor/mini excavator. Completion of this work will commence, pending damage assessment discussion.

2.2.2. Rye Creek

- Contractor placed wood in Rye Creek, sourced from Morrison and Moonlight Canyon Forest Health Thinning Units. 10/1/18-10/12/18.
- Due to access constraints with heavy equipment, AmeriCorps labor crew was utilized to place and configure large woody materials staged by heavy equipment concurrently.
- AmeriCorps labor crew seeded disturbed surfaces throughout the Rye Creek Project Site with native riparian and upland seed mixes 11/27/2018

2.2.3. Dickey Creek

- Contractor staged materials at temporary staging locations sourced from Moonlight Canyon Forest Health Thinning Units. 10/17/2018-10/18/2018
- Contractor placed wood in Dickey Creek. 10/22/18-10/24/18.
- AmeriCorps labor crew seeded disturbed surfaces throughout the Dickey Creek Project Site with native riparian and upland seed mixes. 11/28/2018
- AmeriCorps labor crew applied chain to downstream most log jam. 11/28/2018
- AmeriCorps labor crew repositioned and installed previously staged wood within floodplain and instream using grip hoists. 12/5/2018-12/6/2018

2.2.4. First Creek

- Received notification from BPA Archaeology Staff that work within First Creek is compliant with Section 106. 10/24/2018
- Contractor staged materials at temporary staging locations sourced from Moonlight Canyon Forest Health Thinning Units.11/7/2018-11/9/2018
- Contractor placed materials in stream and on floodplain surfaces. 11/12/2018-11/14/2018
- AmeriCorps labor crew applied chain to downstream most log jams. 11/26/2018
- AmeriCorps labor crew repositioned and installed previously staged wood within floodplain and instream using grip hoists. 11/29/2018

2.2.5. Carlson Creek

- Completed forest health thinning work at Morrison and Moonlight Canyons and staged wood for Carlson Creek at Indian Creek and First Creek staging areas.
- Pending Section 106 and HIP3 conservation measures, construction will commence summer, 2019.

As mentioned in the overview, it was fortunate that weather conditions remained conducive to construction activities well into December, as reaching timely section106 compliance proved a challenge. August 16th, 2018, YKFP staff received notification

from Bonneville Power Administration (BPA) that construction in Upper Indian Creek (upstream of Section 16) was compliant with Section 106 and HIP 3. This was equivalent to a full month of work time lost as the in stream work window began July 16. September 28th, YKFP staff received notification we were clear to mobilize on Rye and Dickey.

Cultural resource avoidance areas at the First Creek site limited the amount of wood that could logistically be placed. In all cases, these were adjacent to areas of the stream profile that could benefit greatly from placement of woody materials. It is unfortunate that historic railroad prisms were being protected as a resource when they are in fact causing the degradation of aquatic resources by channelizing First Creek over much of the project reach. Despite the constraints on the woody material installation, a formidable amount of wood was placed and will provide substantial benefits. Perhaps a programmatic approach to documenting aquatic resource limiting cultural resources and then removal of said cultural resources, can be discussed and approved in the cultural resources management plan currently being developed by DFW and YN staff.

Next steps include working through the Section 106 process for Carlson Creek to identify avoidance areas and allow for completion of the overall restoration project summer, 2019. In addition, mitigation measures identified in the draft damage assessment need to be discussed and agreed to by all agencies so that wood placement can be completed at Jungle Creek and Lower Indian Creek ASAP.

YKFP Outreach:

- Field tour with Central Washington University Natural resources Management class 6/21/2018
- In class lecture to Central Washington University Fluvial Geomorphology class on TCF Tributary work 10/25/2018
- Presentation of project progress to Teanaway Community Forest Advisory Committee 12/13/2018
- Currently collaborating with American Rivers staff in the development of an Arc GIS storymaps.

Status: Active

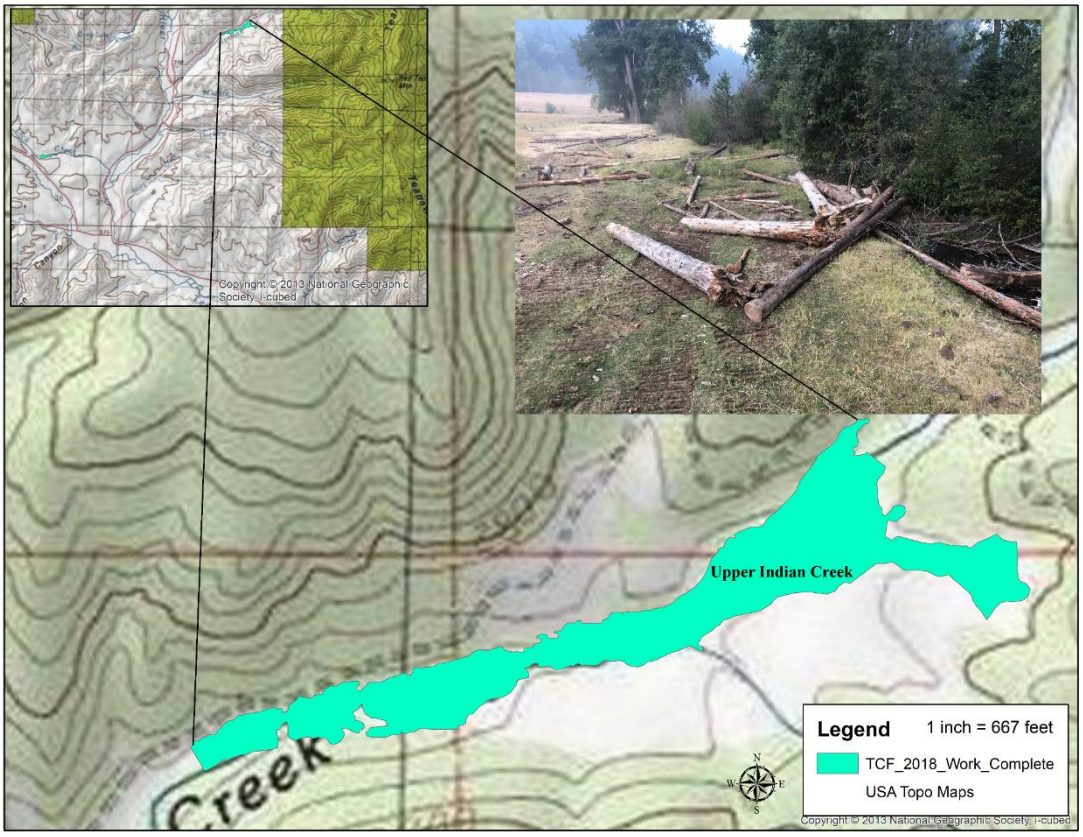
Targeted Populations: Middle Columbia River Steelhead

Location Area (Basin, sub-basin): Upper Yakima River, North Fork Teanaway River

In partnership with: BPA

Limiting Factors: Floodplain connectivity, elevated temperatures, low streamflows

Project Manager: Ryan DeKnikker


Upper Indian Creek
Creek
Legend
1 inch = 667 feet
TCF_2018_Work_Complete
USA Topo Maps
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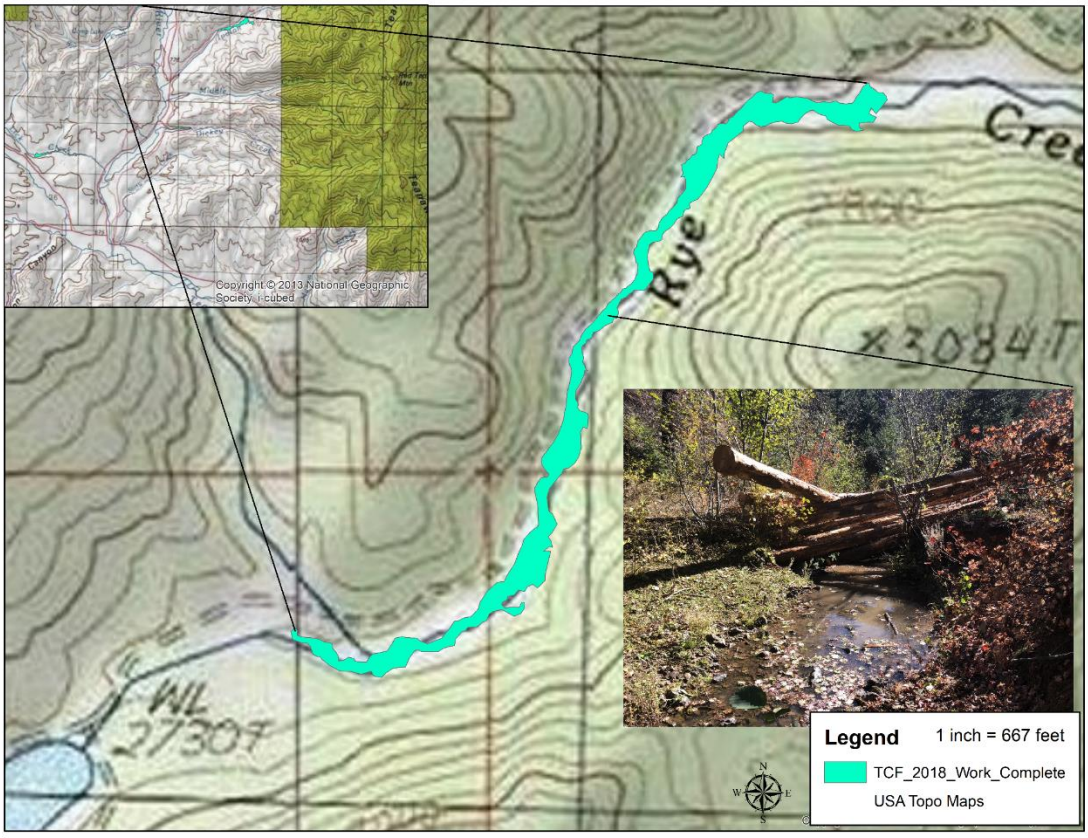
Rye
Legend
1 inch = 667 feet
TCF_2018_Work_Complete
USA Topo Maps
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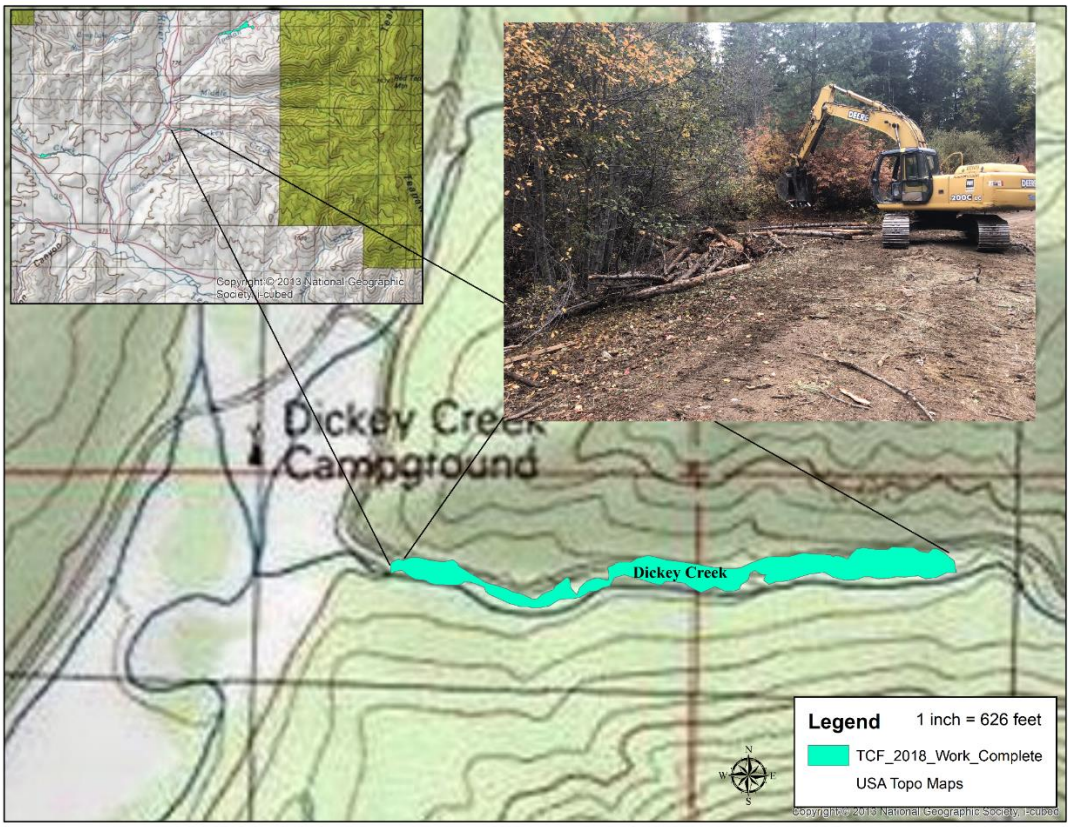
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Dickey Creek Campground
Dickey Creek
Legend
1 inch = 626 feet
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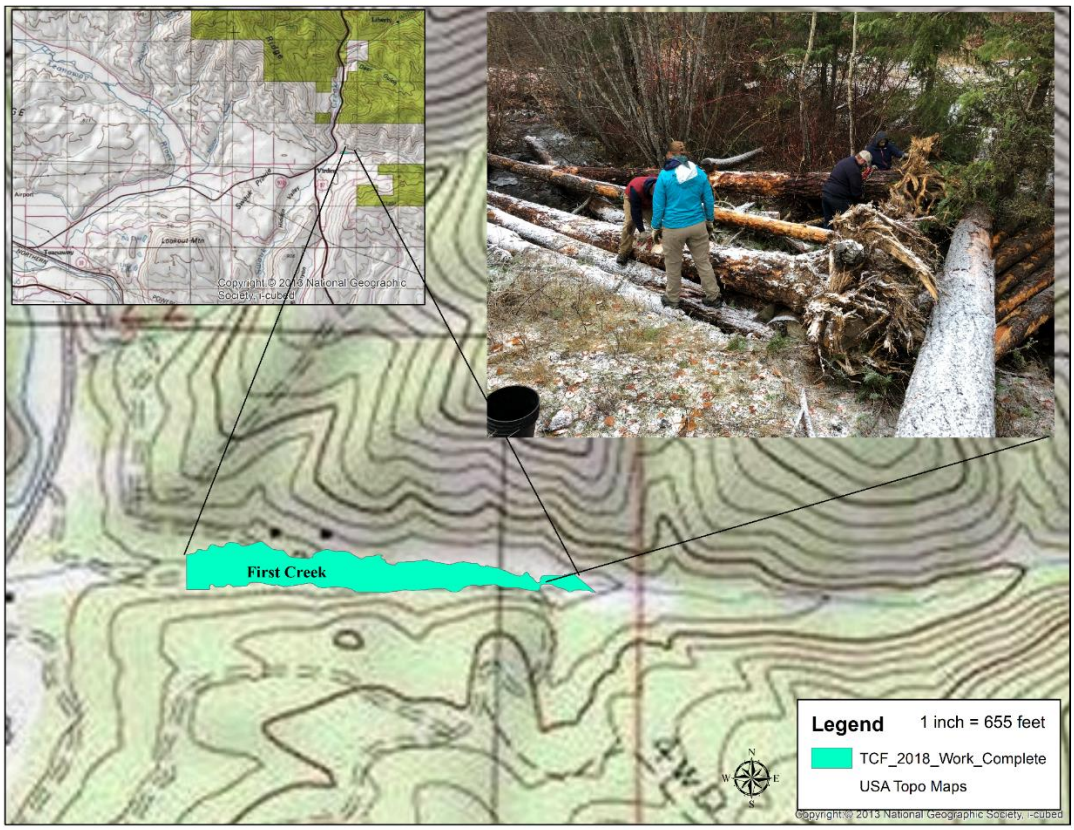
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First Creek
Legend
1 inch = 655 feet
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