Yakama Nation

Upper Columbia Habitat Restoration Project

ANNUAL REPORT

JANUARY 1ST, 2016 THROUGH DECEMBER 31ST, 2016

BPA Project #2009-003-00
Master Agreement #56662 - Releases 58, 88, 111, and 119

Table of Contents

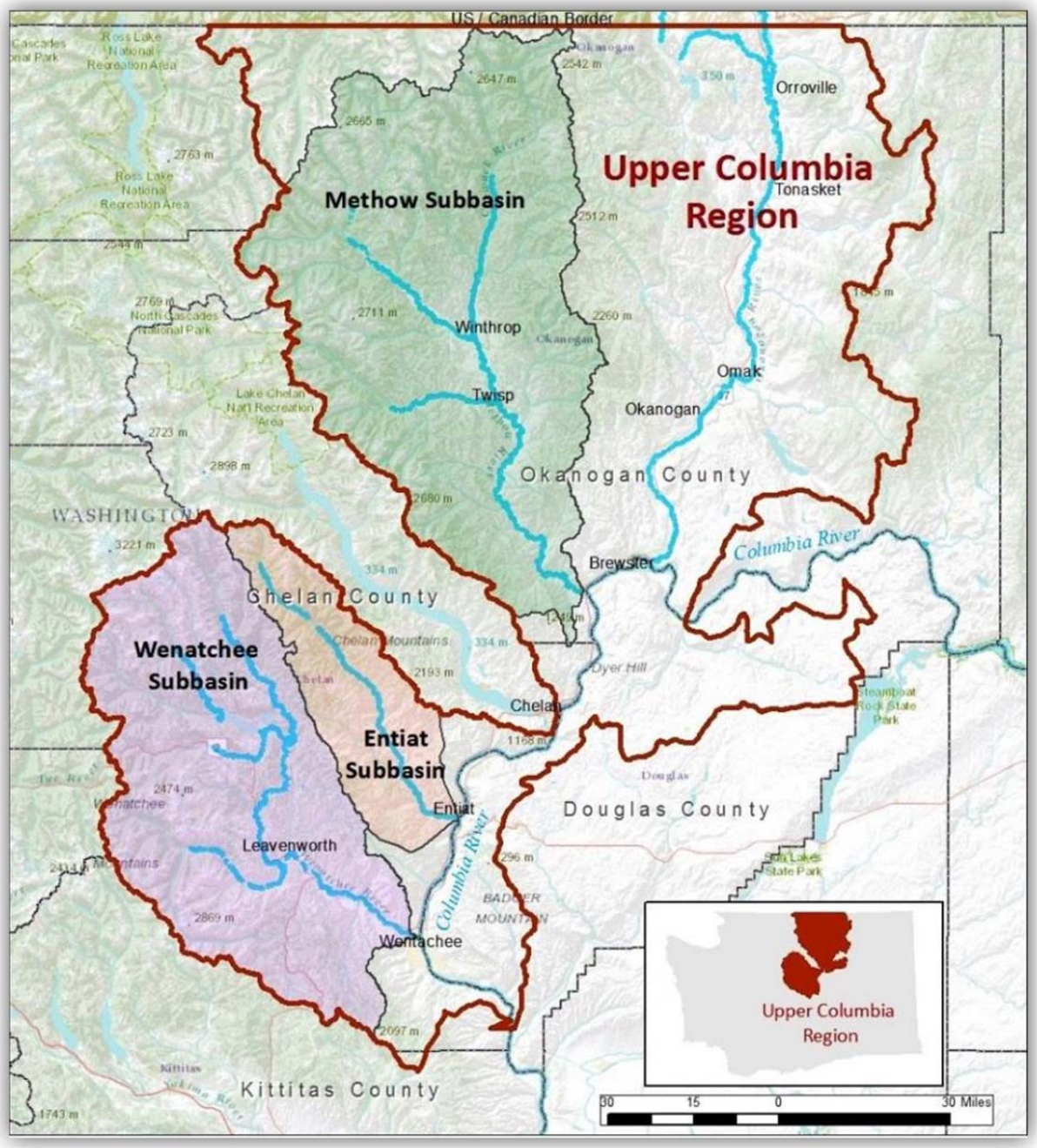
Project Overview

Using funding from the 2008 Columbia Basin Fish Accords, the Yakama Nation Fisheries' Upper Columbia Habitat Project (YN UCHRP) works to plan and implement habitat related salmon recovery actions in the Wenatchee, Entiat, and Methow Subbasins as guided by the Federal Columbia River Power System (FCRPS) biological opinion. This report summarizes the work performed by the YN UCHRP under BPA Project #2009-003-00-Master Agreement #56662 in calendar year 2016. This one year time period spanned multiple Scopes of Work and Budget Releases under Master Agreement 56662, including portions of Releases 58, 88, 111, and 119.

During this reporting period, the YN UCHRP built upon previous project development momentum in all three subbasins to move forward reach assessments in priority tributaries, conservation acquisitions, restoration designs for future projects, and complete multiple large scale habitat restoration projects which contribute directly to FCRPS biological opinion targets. Restoration actions completed during the reporting period include:

- **Twisp Ponds Left Bank Side Channel (Methow Subbasin)**
- **Newby Narrows Fish Enhancement Project (Methow Subbasin)** ***partial completion**
- **Nason Creek Lower White Pine Groups 2 & 3 (Wenatchee Subbasin)**

Upper Columbia Basin Map



Restoration Objectives/Strategies/Priorities

Salmon habitat restoration objectives, strategies, and priorities in the Upper Columbia Basin are guided by the 2007 Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan (the Recovery Plan) and the frequently updated Regional Technical Team Biological Strategy (Appendix C of the Recovery Plan). The Recovery Plan and Biological Strategy identify specific priority areas and impaired ecological conditions by which targeted restoration actions should help increase population metrics for endangered fish stocks. Within priority areas identified by the Biological Strategy, the YN UCHRP performs habitat and geomorphic Reach Assessments to better understand existing conditions and ecological concerns for the development of restoration actions. From these Reach Assessments we identify specific project actions that could be implemented to reduce ecological impairments. The Reach Assessments are reviewed by the Regional Technical Team and the new data and information is used to update to Biological Strategy as necessary.

Priority restoration actions identified in the Reach Assessments are developed by YN UCHRP staff into on the ground restoration projects through coordination and partnerships with underlying landowners, permitting/regulatory/land management agencies, local governments, and other restoration project sponsors. Most project coordination is facilitated through the Watershed Actions Teams. The YN UCHRP uses engineering and design firm subcontractors to develop detailed habitat restoration plans. Prior to implementation, final project designs are agreed to by participating and/or effected landowners and are used to acquire necessary permits and federal consultation permissions.

As deemed necessary to ensure prioritized restoration work can proceed, the YN UCHRP acquires land or right of entry agreements using both 2008 Columbia Basin Fish Accord funds and other grant monies available for targeted acquisitions. YN UCHRP acquisition projects are prioritized based on the identified need and existing prioritization scheme used to determine the schedule of habitat restoration work.

At the time of completing individual reach assessments, we perform a project prioritization scheme on all identified restoration actions within the reach assessment area to determine where to prioritize our restoration work, and which types of actions to pursue to get the highest biological benefit. Reach Assessment project ranking methods generally follow the following guidelines.

Reach Assessment Project Prioritization Guidelines

For each project site identified through a Reach Assessment process, assign the following scores in a table:

Step 1: **Benefit Score** Projects are scored according to 4 benefit categories, which include a "recovery gap" category and 3 additional categories. Scores for each category are summed to obtain the ***Benefit Score***.

Step 2: **Cost Score** Projects are given a *C**ost Score***, which reflects the overall *relative cost* for the project based on techniques, access, and construction feasibility issues.

Step 3: **Benefit-to-Cost Score** Total benefit score (sum of all 4 benefit scores) is divided by the cost score to obtain the ***Benefit-to-Cost Score***.

Step 4: **Feasibility Designation** Projects are given a ***Feasibility Designation*** based on the overall likely feasibility of being able to implement the project within a 10-year timeframe.

Benefit Score

The Benefit Score includes the summation of scores from 4 categories. These include the Recovery Gap score (0-6 points), the Fish Use score (1-3 points), the Root Causes score (1-3 points), and the Ecological Concerns Score (1-4). The guidelines for scoring are provided below.

Recovery Gap

Existing Condition Rating (1-7)

1 – Very low ecosystem function and habitat quality. Highly altered systems.
2 – Low ecosystem function and habitat quality.
3 – Low-to-moderate ecosystem function and habitat quality.
4 – Moderate ecosystem function and habitat quality.
5 – Moderate-to-high ecosystem function and habitat quality.
6 – High ecosystem function and habitat quality.
7 – Very high level of natural ecosystem function and habitat quality. Pristine, unaltered systems.

Achievable Condition Rating (1-7)

These ratings use the same categories as above but reflect the future potential recovery trajectory. This is a rating of what can realistically be achieved given past and on-going impacts and constraints of land use, infrastructure, social acceptance, and ownership. Ratings should reflect an "optimistic potential scenario" in order to not discount large potential changes.

Final Gap Score (0-6)

This is simply the achievable condition rating minus the existing condition rating. This represents the gap that can be filled between existing and target conditions through restoration measures.

Fish Use

3 – High existing or potential productivity area for spawning or rearing for multiple species
2 – Moderate existing or potential productivity area for one or more species
1 – Low existing or potential productivity area for one or two species

Root Causes

3 – Restoration of root causes and key physical processes that create and maintain habitat over time
2 – Partial restoration of root causes
1 – Primarily a structurally-focused restoration strategy that doesn't significantly address underlying causes

Ecological Concerns Score

4 – Addresses multiple high priority ecological concerns
3 – Addresses one high priority ecological concern
2 – Addresses one or more moderate priority ecological concerns
1 – Addresses only low priority ecological concerns

Cost Score

The cost score reflects the relative cost for the project based on techniques, access, and feasibility issues. This is a relative cost, not an absolute cost, so the scale of the project is NOT factored into this score. The cost score ranges from 1 to 3, with 1 reflecting relatively lower cost projects. The following guidelines/examples can help to determine the cost score.

3 – High relative cost

- Uses high cost techniques (e.g. constructed banks, highly engineered log jams, extensive channel shaping, extensive infiltration galleries)
- Deep excavation or long distance hauling of spoils
- Entails construction of additional new flood control or bank erosion features (e.g. setback levees or buried rip-rap)
- Extensive planting or invasive weed control
- Limited, difficult, or remote access
- Intensive de-watering requirements

2 – Moderate relative cost

- Uses moderate cost techniques (e.g. typical log jam structures)
- Moderate excavation and hauling distance of spoils
- Typical planting or invasive weed control
- Moderate access conditions
- Standard or no de-watering requirements

1 – Low relative cost

- Uses low cost techniques (e.g. non-ballasted log placements)
- Minimal excavation and hauling distance of spoils

- Little to no planting or weed control
- Easy access conditions
- No de-watering required
- Availability of free materials or volunteer labor

Benefit-to-Cost Score

The benefit-to-cost score is simply the benefit score divided by the cost score. This is a relative value used to compare project benefits.

Feasibility Designation

The feasibility designation is the overall likely feasibility of being able to implement the project within a 10-year timeframe. This is based on landownership, as well as economic, regulatory, political, social, permitting, or other considerations that are known to impact the feasibility of conducting projects within a reasonable timeframe. The feasibility designation is not used as part of the project scoring because feasibility issues may change over time and it is desirable to evaluate project benefits independent of feasibility. The designations include the following:

High feasibility

- No known feasibility issues.
- One or two landowners; or landowner(s) has already indicated willingness

Moderate feasibility

- There are potential feasibility constraints that could affect the likelihood of project implementation within a 10-year timeframe
- Three to five landowners; or there is reason to believe landowner(s) would grant permission

Unlikely feasibility

- There are known feasibility constraints that would be expected to limit the ability to implement the project within a 10-year timeframe
- More than five landowners: or there is reason to believe landowner(s) would not grant permission

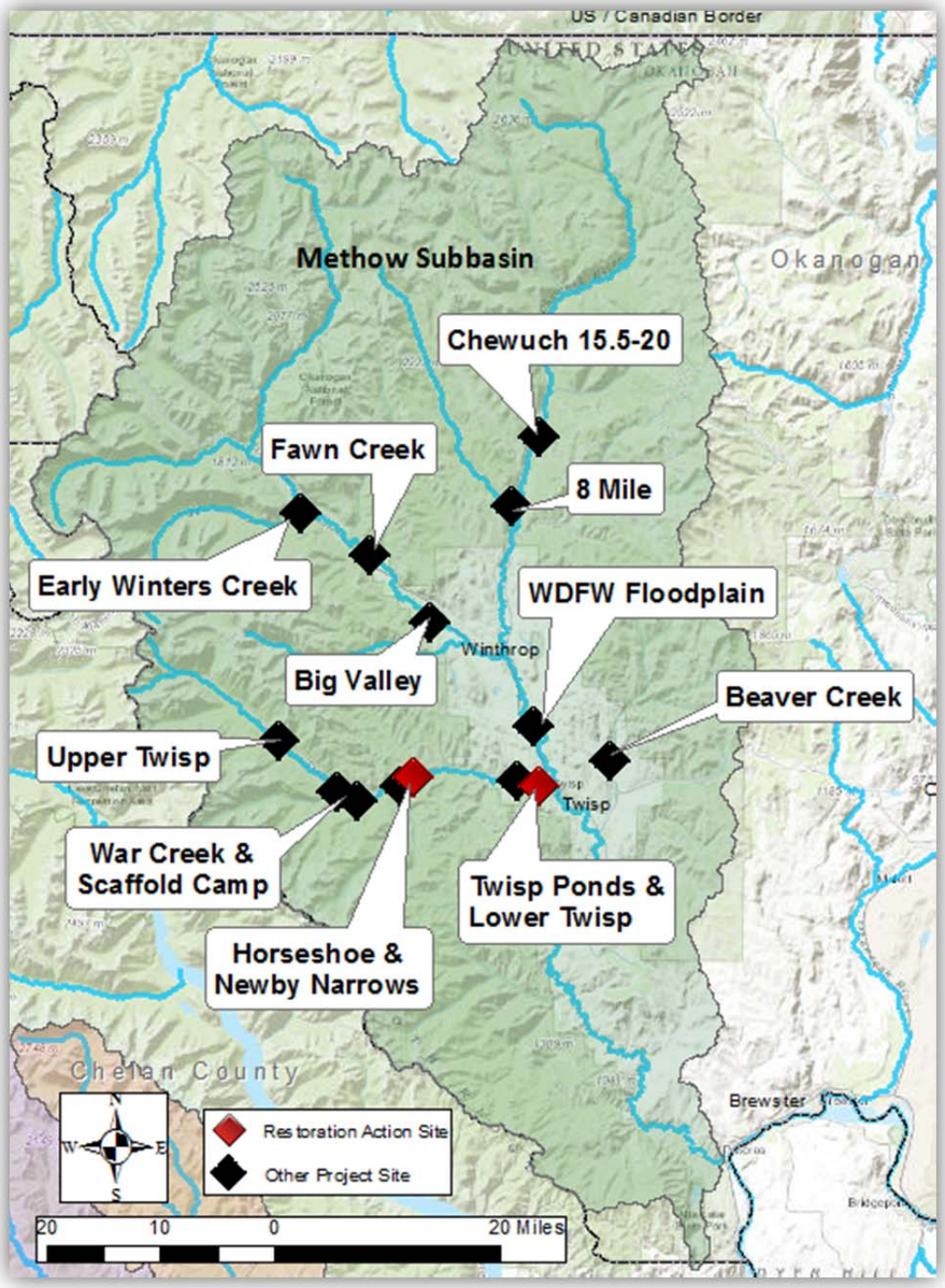
Sample Ranking Table

Project Information					Benefit Score							Cost Score	Cost Benefit	Feasability Designation
					Restoration Gap Analysis			Existing and Potential Fish Use	Root Causes	Ecological Concerns	Total Benefit Score			
Project Name	Sub Reach	Downstream RM	Upstream RM	Total Length (mi)	Existing Condition (1-7)	Achievable Target (1-7)	Final Gap Score Target - Existing (0-6)	Score (1-3)	Score (1-3)	Score (1-4)		Score (1-3)	Benefit to Cost Score	Feasability Designation
Project 1	1	0	1	1	2	6	4	2	2	4	**12**	2	**6**	Moderate
Project 2	2	1	2	1	4	5	1	2	3	2	**8**	1	**8**	High

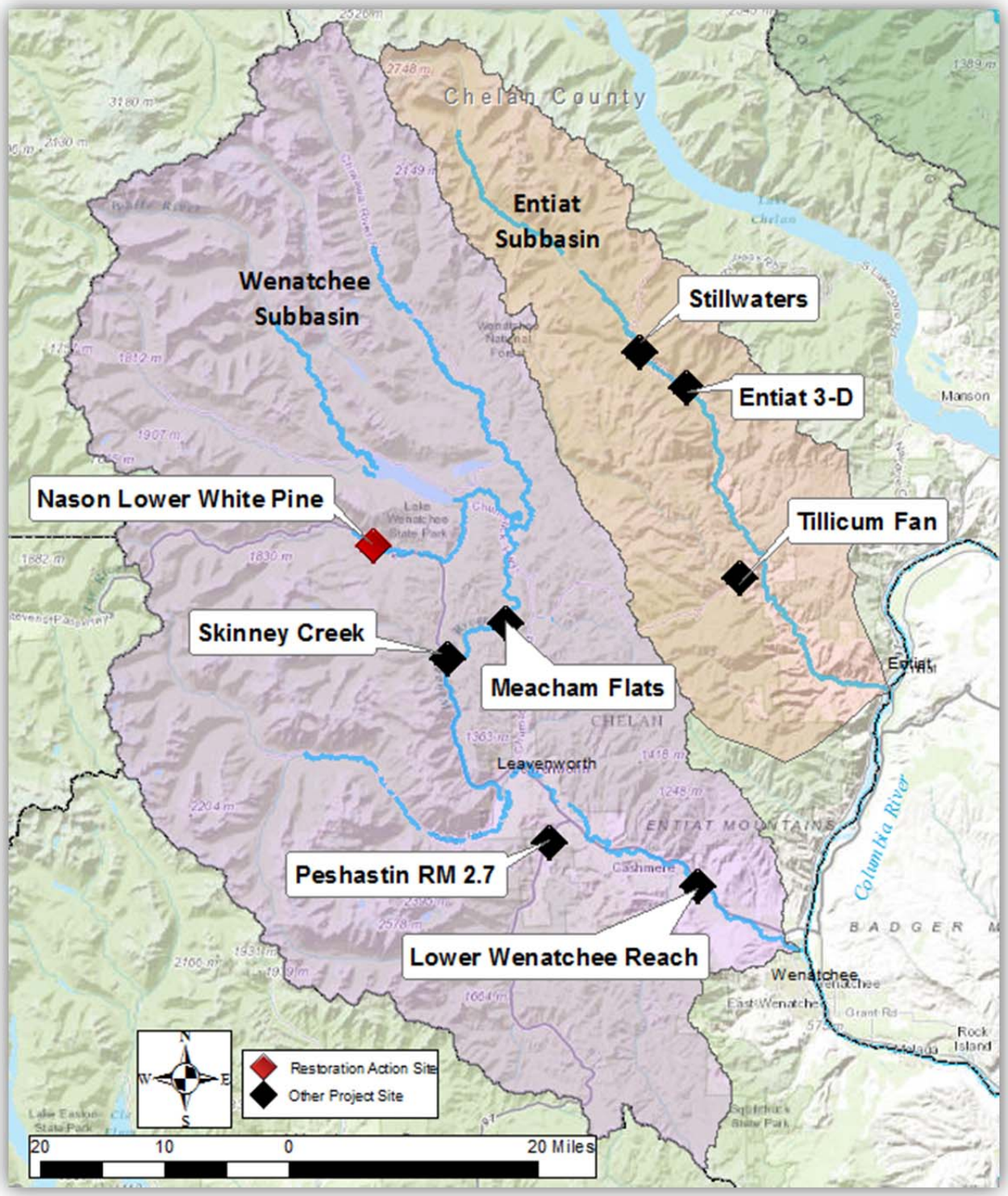
Project Details by Subbasin

(Maps and Tables)

Methow Subbasin Project Location Map



Entiat and Wenatchee Subbasins Project Location Map



Methow Subbasin Summary Table

Reach	Generic Project Name	Pisces WE Title	Contract	WE	WE Type	Status
Lower Twisp	Twisp Ponds Left Bank Project	CCR-36111/Mod. 1 Twisp Ponds Left Bank Riparian Restoration 2010-54	REL 88	BC	Restoration/Construction	Completed - 2016
		Twisp Ponds Left Bank Side Channel Construction 2010-54	REL 88	AB	Restoration/Construction	Completed - 2016
		Twisp Ponds Left Bank Side Channel Construction Management 2010-54	REL 88	AA	Design/Engineering	Completed - 2016
		Twisp Ponds Left Bank Side Channel Design 2010-54	REL 88	Z	Design/Engineering	Completed - 2016
	Lower Twisp Large Wood Enhancement Project	Lower Twisp Large Wood Enhancement Project Construction 2015-127	REL 88	AL	Restoration/Construction	Delayed - 2016
		Lower Twisp Large Wood Enhancement Project Construction Oversight 2015-127	REL 88	AK	Design/Engineering	Delayed - 2016
Middle Twisp (Upper and Lower Twisp)	Newby Narrows Project	CCR-36111/Mod. 1 Newby Narrows Design Phase 4 2015-153	REL 88	AS	Design/Engineering	Completed - 2016
		Newby Narrows Fish Habitat Enhancement Project Construction 2015-153	REL 88	AJ	Restoration/Construction	Partial Completion - 2016
		Newby Narrows Fish Habitat Enhancement Project Construction Oversight 2015-153	REL 88	AI	Design/Engineering	Partial Completion - 2016
	Twisp Horseshoe Side Channel Project	CCR-36111/Mod. 1 Twisp River - Horseshoe PHASE 2 Restoration Engineering 2010-39	REL 88	BA	Design/Engineering	Extended to CY17
		Twisp Horseshoe Side Channel Construction (RM 11.5) 2010-39	REL 88	AE	Restoration/Construction	Delayed - 2016
		Twisp Horseshoe Side Channel Construction Management (RM 11.5) 2010-39	REL 88	AD	Design/Engineering	Delayed - 2016
		Twisp Horseshoe Side Channel Design (RM 11.5) 2010-39	REL 88	AC	Design/Engineering	Extended to CY17
	YN Reach Assessment	Upper Twisp River Habitat Assessment 2016-162	REL 119	F	Assessment	On-Going
Upper Twisp	Scaffold Camp Project	CCR-36111/Mod. 1 Twisp River - Scaffold Camp Restoration Engineering 2015-146	REL 88	AZ	Design/Engineering	Delayed - 2016
	Twisp River War Creek Bridge Project	CCR-36111/Mod. 1 Twisp River - War Creek Restoration Engineering 2015-148	REL 88	BB	Design/Engineering	Extended to CY17
Lower Chewuch	8 Mile Creek Barrier Project	8-Mile Creek Fish Barrier Removal Design 2015-141	REL 88	K	Design/Engineering	Completed - 2016
	Chewuch RM 15.5 to 20 Project	Chewuch RM 15.5-17 Fish Enhancement Project Engineering 2012-97	REL 88	M	Design/Engineering	Extended to CY17
		Chewuch RM17-20 Fish Enhancement Project Survey 2015-140	REL 88	L	Design/Engineering	Completed - 2016

Reach	Generic Project Name	Pisces WE Title	Contract	WE	WE Type	Status
Beaver Creek	YN Reach Assessment	CCR-36111/Mod. 1 Beaver Creek Reach Assessment 2015-154	REL 88	AR	Assessment	Extended to CY17
Big Valley	Big Valley Project	CCR-36111/Mod. 1 Big Valley South Construction Oversight 2012-101	REL 88	AW	Design/Engineering	Delayed - 2016
		CCR-36111/Mod. 1 Big Valley South Habitat Complexity 2012-101	REL 88	AX	Restoration/Construction	Delayed - 2016
		CCR-36111/Mod. 1 Big Valley South Structure Removal 2012-101	REL 88	AY	Restoration/Construction	Delayed - 2016
Middle Methow	M2 WDFW Floodplain Project	CCR-36111/Mod. 1 Methow River (M2) - WDFW Floodplain Groundwater Gallery Design 2016-155	REL 88	BE	Design/Engineering	Delayed - 2016
Upper Methow	Upper Methow Fawn Creek Project	CCR-36111/Mod. 1 Upper Methow Fawn Creek Design 2015-147	REL 88	BD	Design/Engineering	Extended to CY17
Early Winters	Early Winters Creek 20 Below Project	Early Winters Creek - Twenty Below Construction 2014-117	REL 88	AH	Restoration/Construction	Delayed - 2016
		Early Winters Creek - Twenty Below Construction Management 2014-117	REL 88	AG	Design/Engineering	Delayed - 2016
		Early Winters Creek - Twenty Below Engineering 2014-117	REL 88	AF	Design/Engineering	Extended to CY17
	Methow Basin EWD Instream Flow Project	CCR-36111/Mod. 1 Methow Basin EWD Instream Flow Project - Eng. Feasibility Assessment 2015-152	REL 88	AV	Design/Engineering	Delayed - 2016
		CCR-36111/Mod. 1 Methow Basin EWD Instream Flow Project - Water Rights Assessment 2015-152	REL 88	AU	Water Rights Transfer	Extended to CY17

Entiat Subbasin Summary Table

Reach	Generic Project Name	Pisces WE Title	Contract	WE	WE Type	Status
Upper Middle Entiat	Entiat 3-D Project	Entiat 3-D LWM Revisited Construction Management 2009-29	REL 88	AN	Design/Engineering	Delayed - 2016
		Entiat 3-D LWM Revisited Design Engineering 2009-29	REL 88	AM	Design/Engineering	Completed - 2016
		Entiat 3-D LWM Revisited Habitat Enhancement Project Construction 2009-29	REL 88	AO	Restoration/Construction	Delayed - 2016
	Entiat Stillwaters Project	Signal Peak Habitat Restoration Construction Management 2013-108	REL 88	T	Design/Engineering	Delayed - 2016
		Signal Peak Habitat Restoration Design Engineering 2013-108	REL 88	S	Design/Engineering	Completed - 2016
		Signal Peak Rip-Rap Enhancement Sites A & B Construction 2013-108	REL 88	V	Restoration/Construction	Delayed - 2016
		Signal Peak Side-Channel Construction 2013-108	REL 88	U	Restoration/Construction	Delayed - 2016
		Upper Burns Habitat Restoration Design Construction Management 2013-107	REL 88	X	Design/Engineering	Delayed - 2016
		Upper Burns Habitat Restoration Design Engineering 2013-107	REL 88	W	Design/Engineering	Completed - 2016
		Upper Burns Rip-Rap Enhancement Construction 2013-107	REL 88	Y	Restoration/Construction	Delayed - 2016
Mad River	Tillicum Fan Project	Tillicum Creek Fan Design 2016-161	REL 119	P	Design/Engineering	On-Going

Wenatchee Subbasin Summary Table

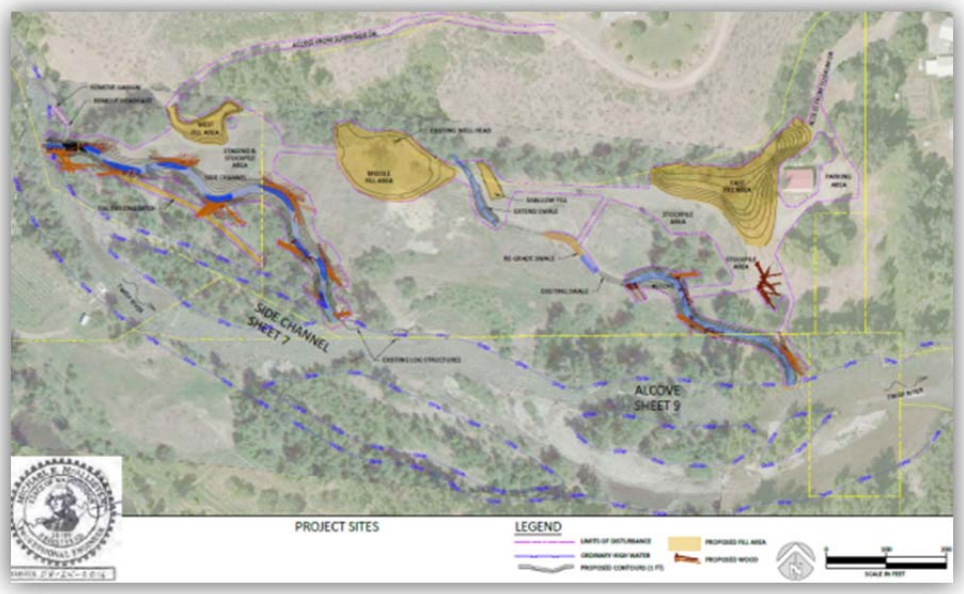
Reach	Generic Project Name	Pisces WE Title	Contract	WE	WE Type	Status
Nason Creek	Nason LWP Project	LWP Groups 2&3 Habitat Restoration Construction Oversight-2012-99	REL 88	Q	Design/Engineering	Completed - 2016
		LWP Groups 2&3 Habitat Restoration Construction-2012-99	REL 88	R	Restoration/Construction	Completed - 2016
		LWP Groups 2&3 Habitat Restoration Construction-2012-99 (CCR-36111/Mod. 1)	REL 88	BF	Restoration/Construction	Completed - 2016
Upper Wenatchee	Meacham Flats Project	Meacham Flats Habitat Restoration Construction 2015-127	REL 88	P	Restoration/Construction	Delayed - 2016
		Meacham Flats Habitat Restoration Construction Oversight - 2012-102	REL 88	O	Design/Engineering	Delayed - 2016
		Meacham Flats Habitat Restoration Engineering - 2012-102	REL 88	N	Design/Engineering	Completed - 2016
	Skinney Creek Project	CCR-36111/Mod. 1 Skinney Creek Design 2015-144	REL 88	AT	Design/Engineering	Extended to CY17
Lower Wenatchee	YN Reach Assessment	Lower Wenatchee Reach Assessment 2014-121	REL 88	J	Assessment	Completed - 2016
Peshastin Creek	Peshastin RM 2.7 Project	Peshastin 2.7 Design 2016-160	REL 119	G	Design/Engineering	On-Going

Methow Subbasin Details

Lower Twisp Assessment Unit

Twisp Ponds Left Bank Project (Completed Restoration Action)

Land Ownership: MSRF and Private



Detailed Map of Project Site:

For details about the location of differing project elements on the site please refer to Attachment 1 – Constructed Projects As-Builts.

Summary:

Based upon a restoration concept developed in 2012, the 2016 Twisp Ponds Left Bank Project reconnected the Twisp River to the left bank floodplain through augmenting a riprap/levee system constructed in the 1970s. The project created 1,200 linear feet of new side channel habitat with a mix of surface water connected and groundwater fed channel systems. Extensive restoration of native vegetation also occurred on the floodplain, which prior to 2012 was mostly denuded of woody vegetation. The project interfaces with main channel log structures installed in 2012 to create main channel habitat complexity. The project has been a successful collaboration between Yakama Nation Fisheries and the Methow Salmon Recovery Foundation.

Restoration Metrics:

40 linear feet of riprap/levee material was removed from the left bank of the Twisp River.
670 linear feet of perennial flow side channel was created.
9 large wood structures with associated scour pools were installed within the side channel.
600 linear feet of groundwater fed alcove channel was created with a downstream connection to the Twisp River.
5 acres of highly disturbed floodplain area were planted with native trees, shrubs, and herbaceous species.

Lower Twisp Large Wood Enhancement Project (Project Delayed)

Land Ownership: MSRF and Private

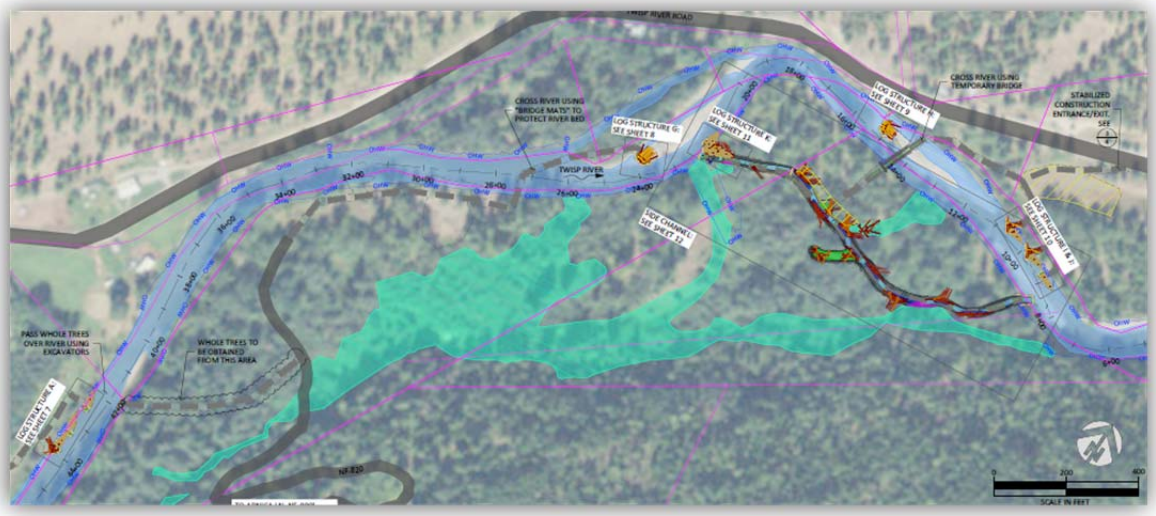
Summary:

In 2016 we decided to indefinitely postpone this project as a stand alone restoration action due to an engineer's concerns about boater safety, ballasting limitations, and private property access. Elements of the postponed project will be incorporated into future work being developed in the Lower Twisp Assessment Unit that involves more off-channel habitat restoration.

Middle Twisp Reach – (Lower and Upper Twisp Assessment Units)

Newby Narrows Project (Partially Completed Restoration Action)

Land Ownership: Yakama Nation and Private



Detailed Map of Project Site:

Because this project was only partially completed in 2016, we are not including more detailed as-built drawings with this report.

Summary:

In 2015 the Yakama Nation used outside funding to acquire the Newby Narrows properties (approximately 45 acres of riverfront and floodplain) upstream of the Little Bridge Creek confluence on the Twisp River. The 2015 Middle Twisp River Reach Assessment identified the Newby Narrows project site as a priority location to restore side channel habitats and increase main channel complexity.

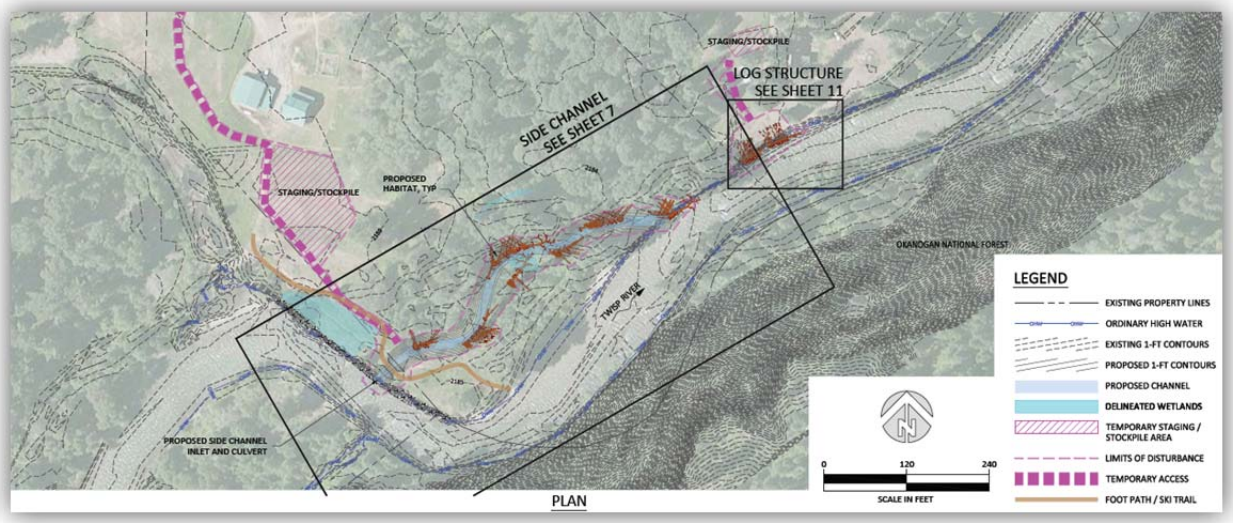
In 2016 we partially completed the restoration plan for the Newby Narrows area, successfully installing four bank buried large wood structures on the main stem of the Twisp River. We also installed the temporary bridge that provided access to the side channel restoration area, however a conflict with a neighboring landowner prevented us from completing the side channel restoration in 2016. In 2017 we plan to complete construction of the 1,200 foot long side channel and associated apex large wood structures during the July in-water work window.

Restoration Metrics:

4 main channel margin large wood structures installed consisting of 60 imported logs with roots and 5 whole trees salvaged from the nearby floodplain.

Horseshoe Side Channel Phase 1 (Engineering Only)

Land Ownership: Private



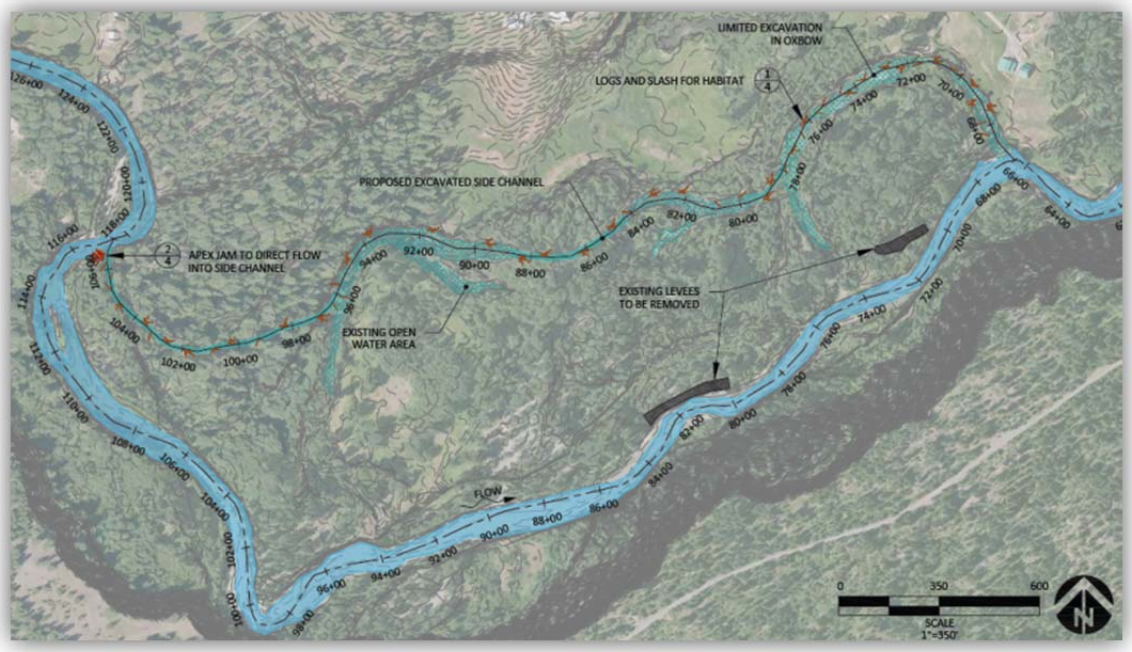
Summary:

In 2016 we completed the development of permitting drawings for the Horseshoe Side Channel Phase 1 project. This project occurs in close proximity to the Horseshoe Side Channel Phase 2 project area, but is on a separate implementation timeline due to not being influenced by USFS NEPA review timelines.

This project will restore approximately 600 feet of perennial flow surface water fed side channel behind a riprap/levee system created in the 1970s. Additionally, some large wood habitat structures will be created along the channel margin of the Twisp River to improve juvenile cover habitat. This project will be implemented in 2017.

Horseshoe Side Channel Phase 2 (Engineering Only)

Land Ownership: USFS, Private, and Methow Conservancy

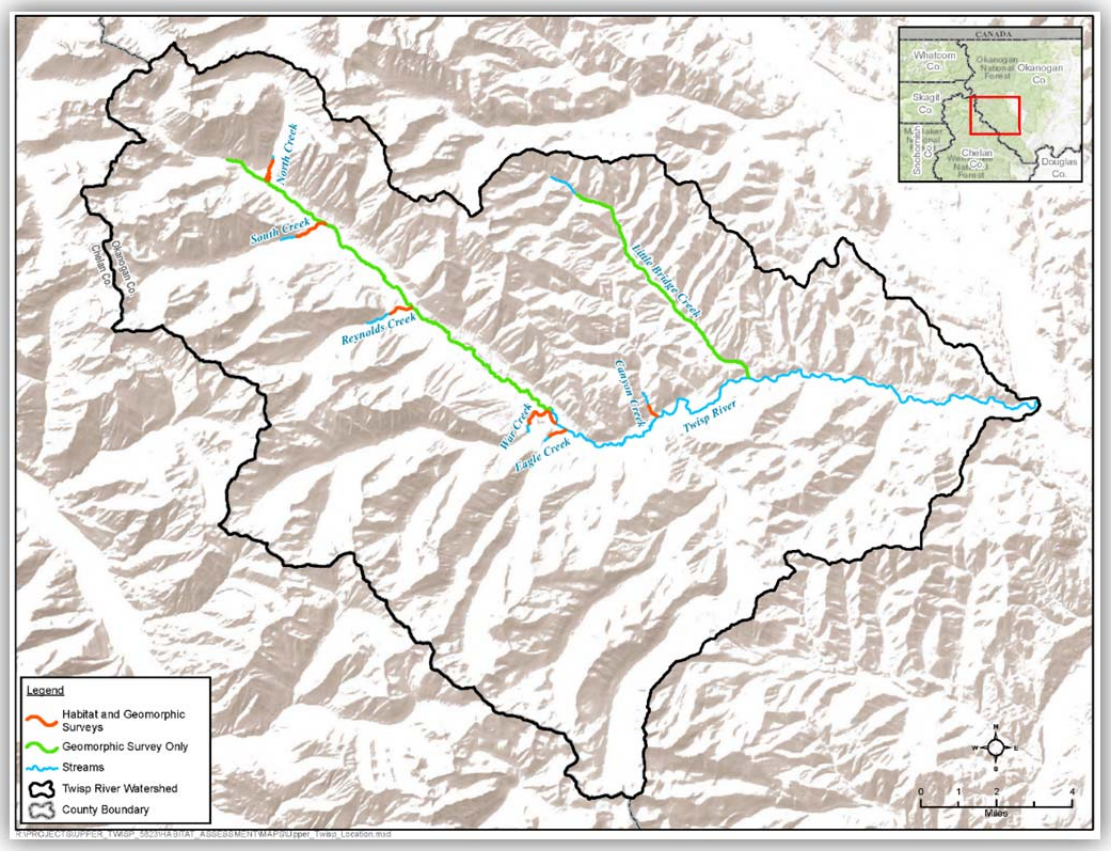


Summary:

Due to USFS NEPA review timelines, this project will not be implemented until 2020. However, the project was partially designed in 2016 to support a USFS NEPA analysis. The project seeks to reconnect a 3,000 foot long groundwater fed side channel complex that crosses USFS lands and adjacent private properties on the left floodplain of the Twisp River near river mile 11.8. The project will divert surface waters from the Twisp River on USFS lands into the upper end of the cut-off side channel complex to restore fish passage into the groundwater fed pools. Levee construction and wood removal in the 1970s caused rampant downcutting of the river channel in this section of the Twisp River, and this project seeks to restore the floodplain connectivity and enhance off-channel and wetland habitats through reactivation of the floodplain. Select excavation at the upstream end of the project area, coupled with intensive main channel wood treatments will help reconnect flood flows with the Horseshoe Side Channel floodplain and will dramatically increase the amount and quality of juvenile salmonid rearing habitat in the project reach.

Upper Twisp River Habitat Assessment (including Little Bridge Creek)

Land Ownership: USFS



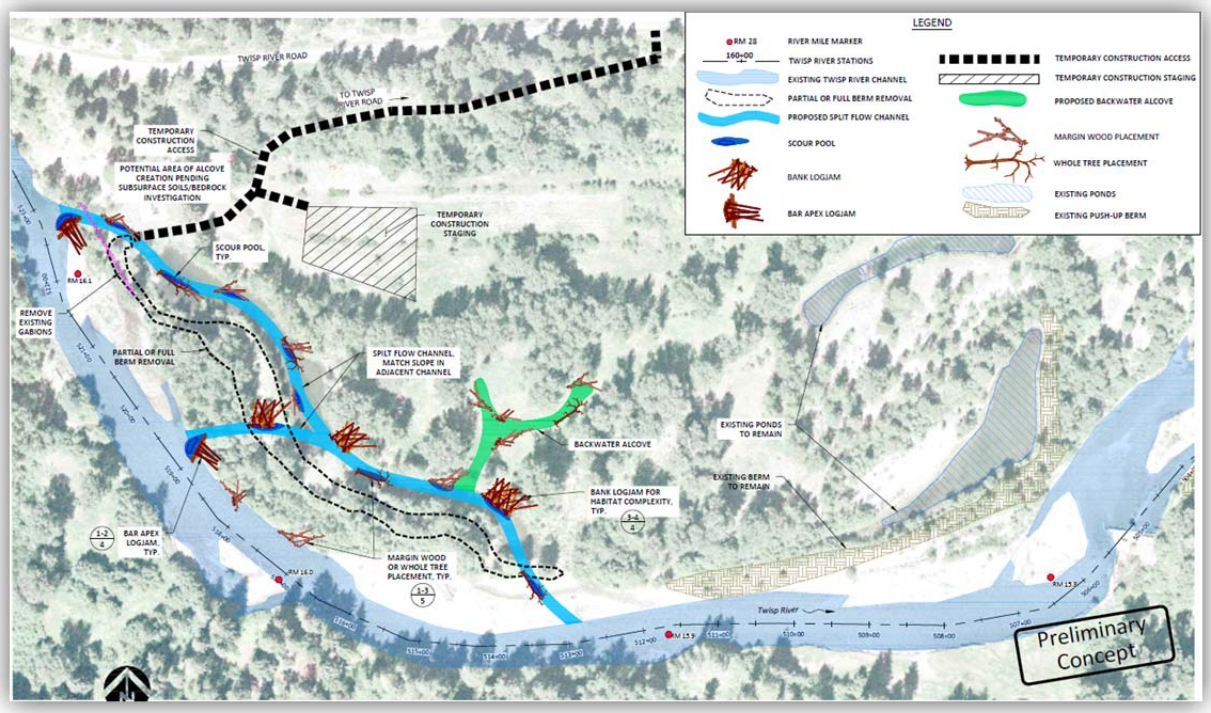
Summary:

In 2016 we partnered with the USFS to conduct a comprehensive evaluation of stream habitat conditions in the anadromous bearing portions of the Upper Twisp River Assessment Unit and several Twisp River tributaries, including Little Bridge Creek. During the reporting period this effort focused on collecting new habitat data using the USFS Level II Habitat Data protocol, while also compiling existing data collected by the Forest Service over the last three decades. This information will be used in partnership with USFS to run an Aquatic Landscape Evaluation and develop a watershed scale restoration strategy. The Upper Twisp River Habitat Assessment will continue in 2017 with reporting products due towards the end of that calendar year.

Upper Twisp Assessment Unit

Twisp River Scaffold Camp Project (Project Delayed)

Land Ownership: Private and USFS

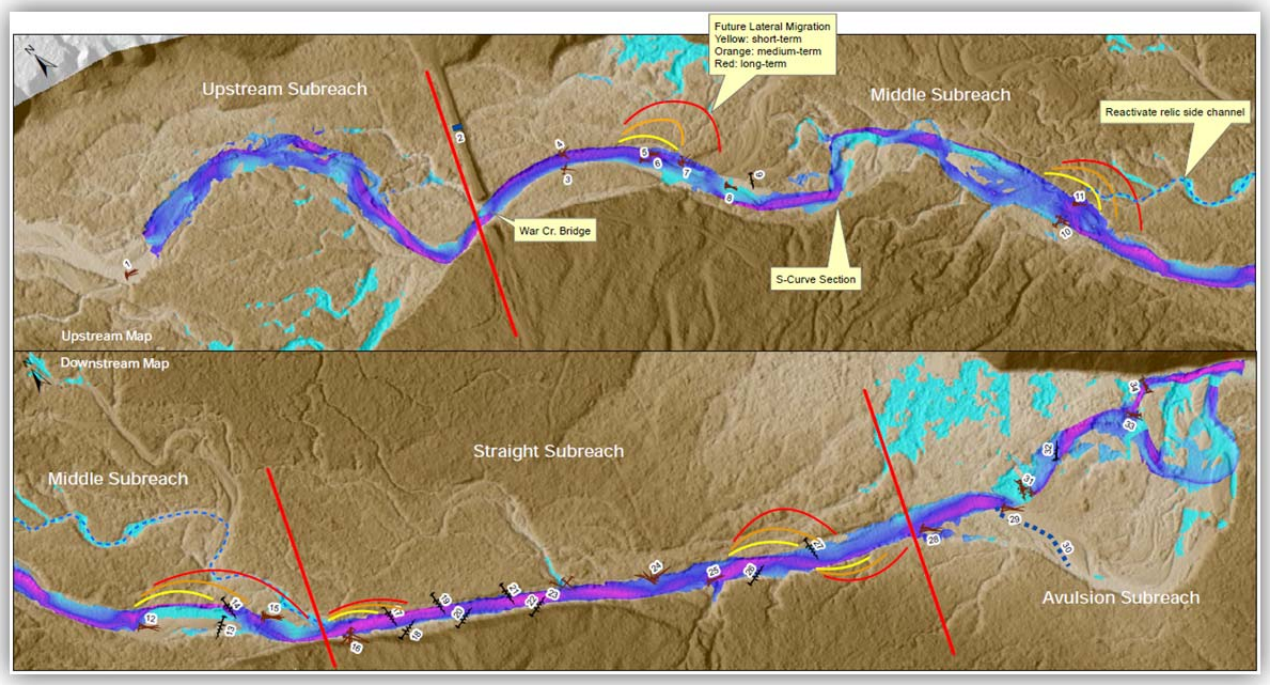


Summary:

The Twisp River Scaffold Camp project area was identified as a high priority restoration area in the 2015 Middle Twisp Reach Assessment. In 2016 we attempted to acquire a key property in the project area using Accord funding towards a private land sale, however this acquisition project fell through, so we were not able to progress with developing the Twisp River Scaffold Camp project. Additional acquisition activities are on-going in the lower section of the project area, but at this time all design work for habitat restoration actions in the Scaffold Camp project area are on hold.

Twisp River War Creek Project (Engineering Only)

Land Ownership: USFS



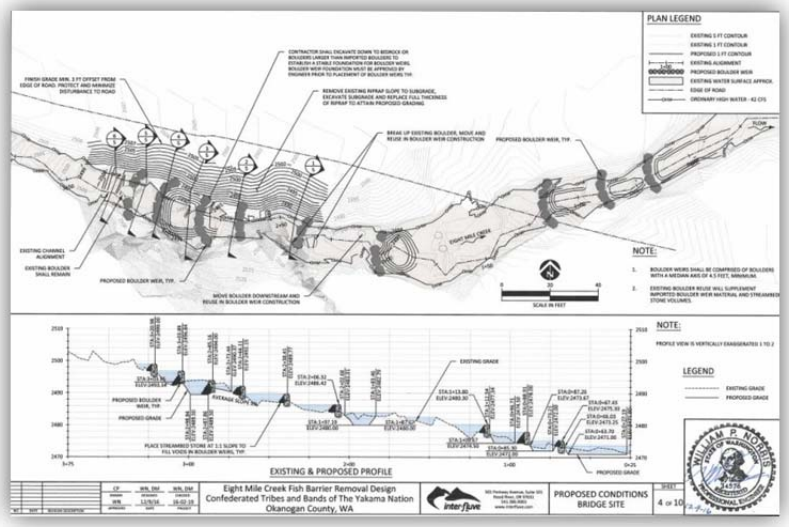
Summary:

The Twisp River War Creek Project area was identified as a high priority site for addressing ecological concerns in the 2015 Middle Twisp Reach Assessment. The road infrastructure associated with the USFS War Creek Bridge and historic wood removal from the Twisp River have decreased side channel and wetland habitat conditions, instream structural complexity, and bed and channel form. In 2016, in coordination with the USFS, we completed topographic survey, hydraulic modeling, and other data collection activities to produce a concept design report and concept cartoons for USFS evaluation. In 2017 we will work with USFS to select proposed project elements for full design, and begin NEPA review of the project for implementation in 2020.

Lower Chewuch Assessment Unit

8 Mile Creek Barrier Project (Engineering Only)

Land Ownership: USFS



USFS NF-5130 road showing velocity barrier at the Bridge Site, 2015.

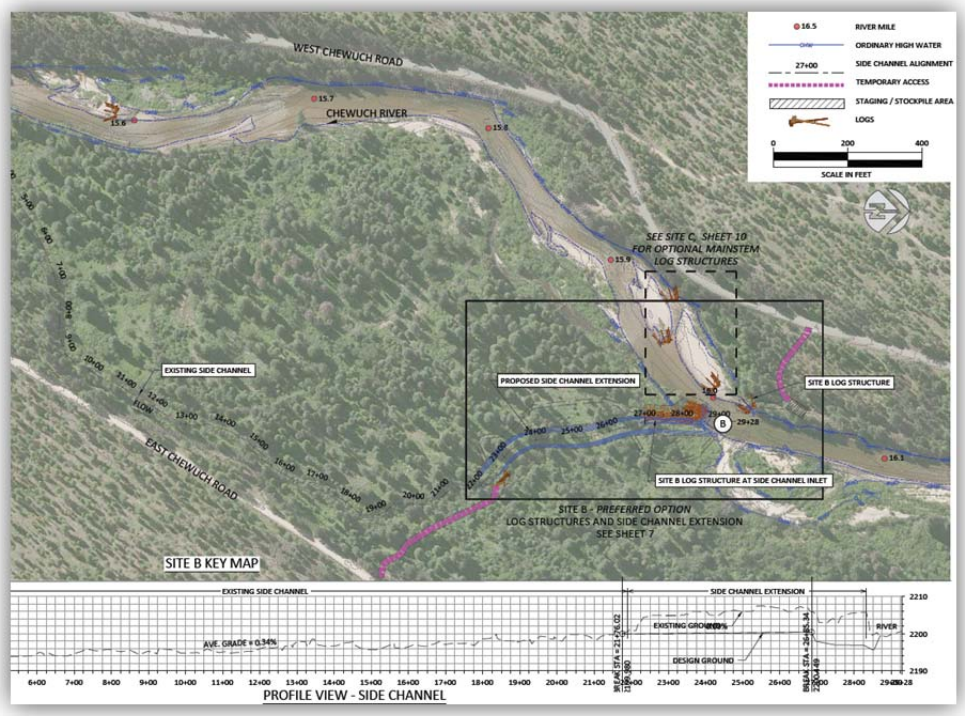
Summary:

In 2016 we developed a full construction plan for removal of a man made velocity barrier on Eightmile Creek, a tributary of the Chewuch River. Removal of the barrier will open up twelve new river miles of high quality rearing/spawning habitat for anadromous salmonids in the Methow Subbasin. Moving forward the USFS will take the lead in scoping and conducting NEPA for the proposed barrier removal. This project is expected to take place the summer of 2019.

USFS NF-5130 road showing velocity barrier at the Bridge Site, 2015.

Chewuch RM 15.5 to 20 Project (Engineering Only)

Land Ownership: USFS



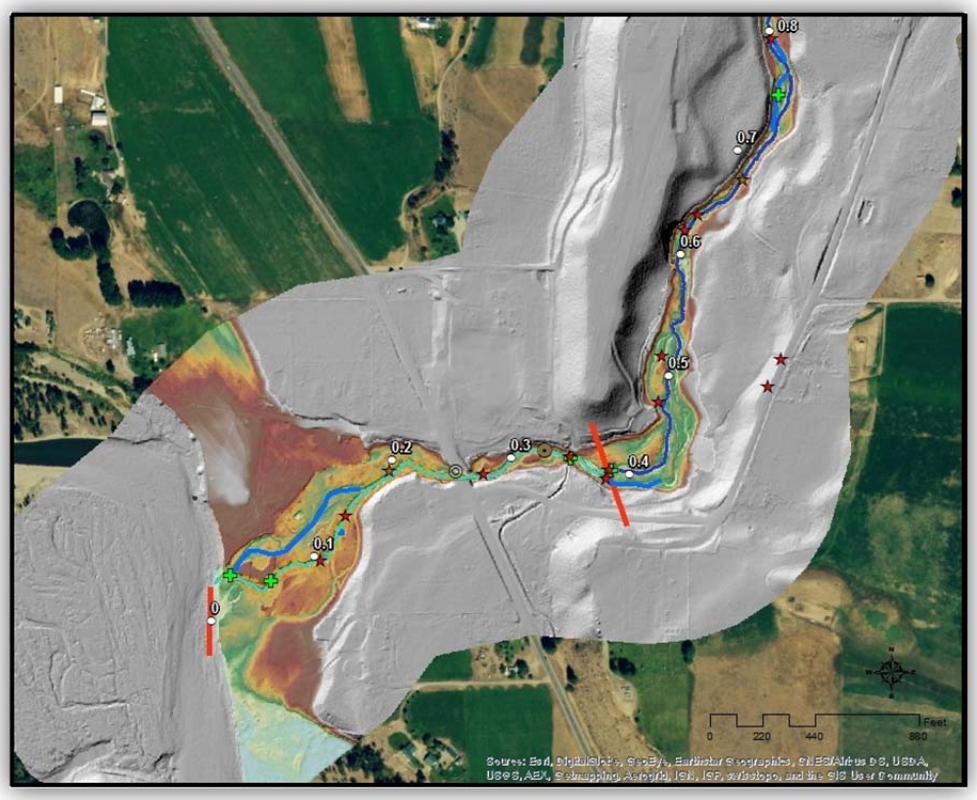
Summary:

In 2016 we completed the development of permitting and final construction drawings for the river mile 15.5 to 17 portion of this project area. We also produced surveys and concept reports for the river mile 17 to 20 section. The USFS initiated their NEPA process in 2016 for both portions of the project area, with a decision expected for the entire project area in spring of 2017. The river mile 15.5 to 17 portion of the project area will then be implemented in the summer/fall of 2017, and the rest of the work completed in the summer/fall of 2018. The river mile 15.5 to 17 portion of the project includes constructing 13 main channel log structures, and developing a side channel inlet to reconnect flows into a 2,800 foot long side channel. The river mile 17 to 20 includes many more large wood structure treatments along the main Chewuch River channel. The entire Chewuch RM 15.5 to 20 project occurs on USFS lands.

Beaver Creek Assessment Unit

Lower Beaver Creek Reach Assessment

Land Ownership: Private, MSRF, WDFW, USFS



Summary:

In the spring 2016 we initiated work on a reach assessment of the lower 11 miles of Beaver Creek in the Methow Subbasin. This assessment conducted habitat surveys, geomorphic surveys, LiDAR data collection, hydraulic modeling and project identification and prioritization to support expanding salmon recovery efforts throughout the basin. We anticipate completion of this project mid-summer 2017, including review by the RTT.

Upper Middle Methow Assessment Unit

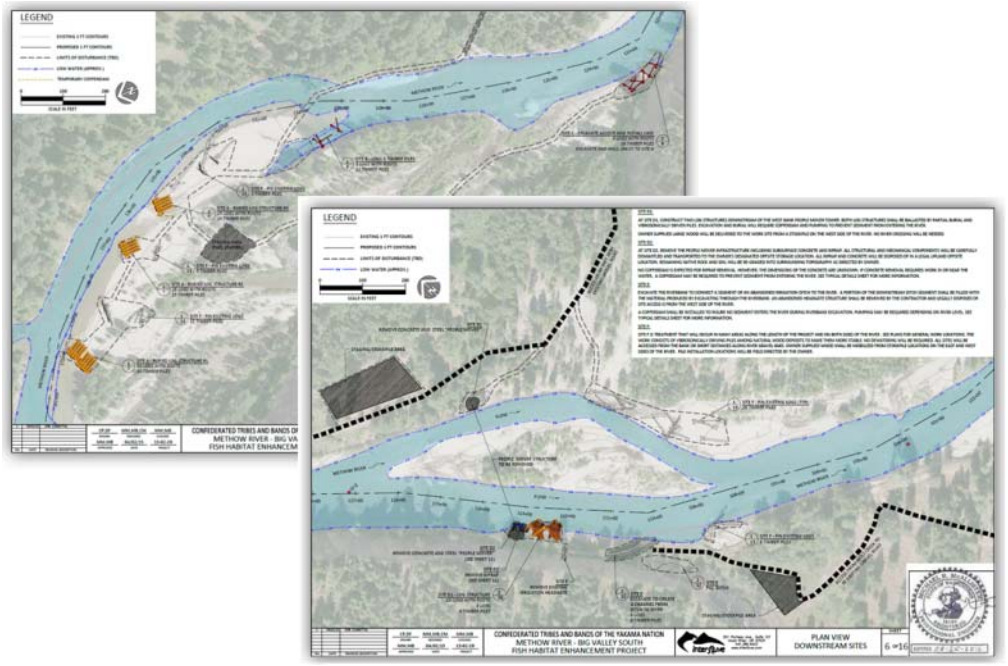
Big Valley Project (Project Delayed)

Land Ownership: WA DNR

Summary:

Engineering, design, and permitting phases of this project were completed in 2015, and the project was scheduled to be implemented in 2015 but was delayed due to a contracting issue with WA DNR. The same contracting issue prevented the project from occurring in 2016. The project is expected to be implemented in 2017.

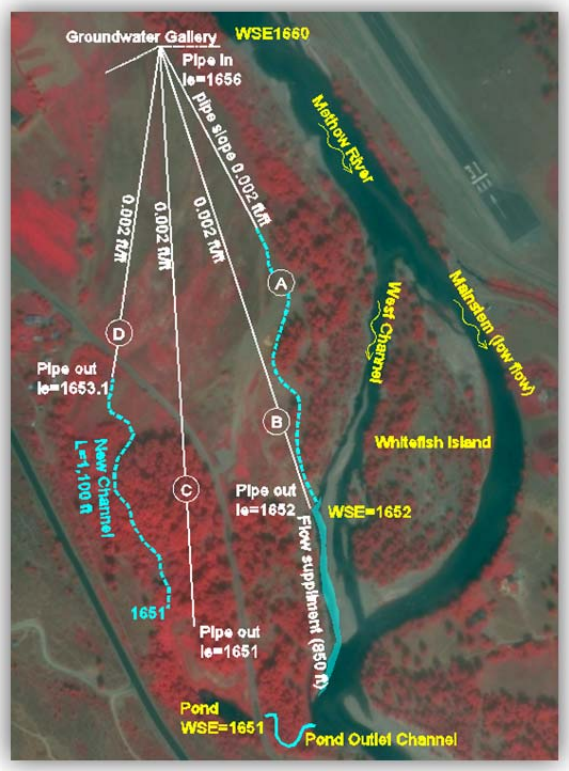
The project involves using log structures to promote lateral channel migration, sort bedload, create scour pools, and create cover habitat in the Methow River. The project also involves removing a non-functional mechanical cable car system that was originally intended to transport public trail users across the Methow River. Riprap and concrete footings associated with the non-functional cable car system will be removed from the river and floodplain. Extensive floodplain restoration including wetland creation and native plant restoration in denuded areas is included in the project.



Middle Methow Assessment Unit

M2 WDFW Floodplain Project (Project Delayed)

Land Ownership: WDFW, DNR



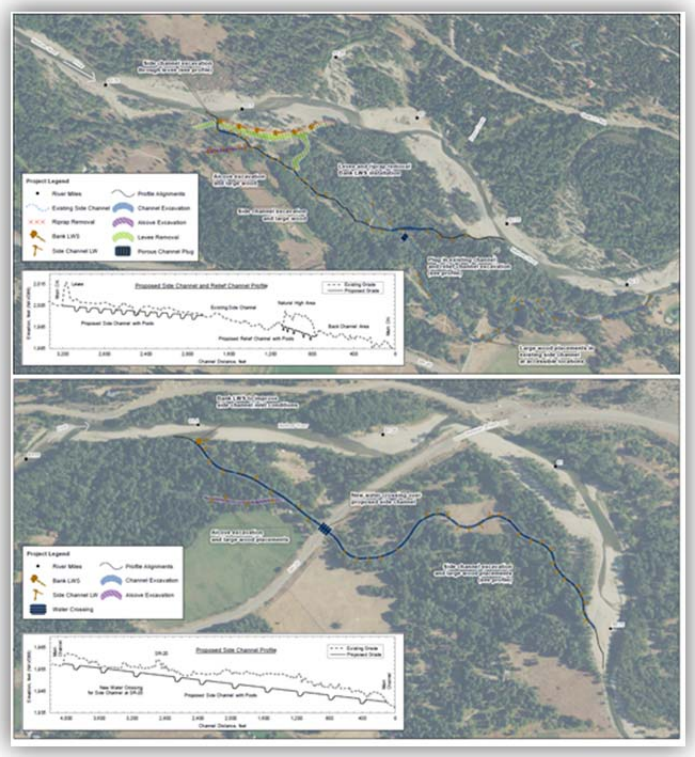
Summary:

The feasibility of constructing a groundwater infiltration gallery at the M2 WDFW Floodplain project site was analyzed using data produced by MSRF and Anchor QEA for the 2013 M2 WDFW Floodplain project sponsored by the US BOR and BPA. Initial results from the data review indicated that a groundwater infiltration gallery is likely feasible, however the previous project sponsor from the 2013 project has requested that we delay developing a project at this site until they've confirmed the likelihood of upstream landowners agreeing to participate in a second phase of the 2013 project. This project was delayed from further design and/or analysis until landowner permissions could be resolved.

Upper Methow Assessment Unit

Upper Methow Fawn Creek Project (Engineering Only)

Land Ownership: Private, MSRF, WDFW, DNR, Methow Conservancy



Summary:

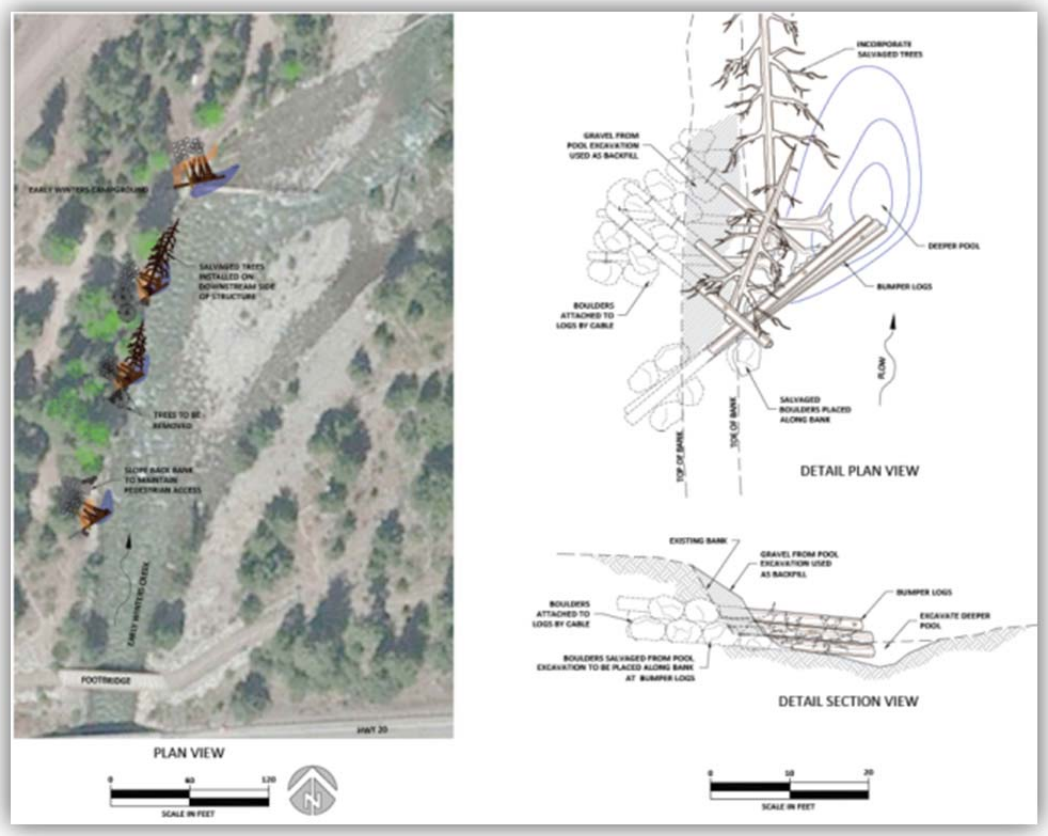
We completed topographic survey, cultural resource consultation for feasibility studies, project concept cartoons, and concept design reports for this project area in 2016. During that time, this project evolved into two distinct project opportunities; 1) the Fawn Creek area side channel project, and 2) the Weeman Bridge side channel project. Between both project sites at least twelve private landowners, as well as WSDOT, WA DNR, and WDFW lands exist. So far landowner outreach has indicated that adequate support exists to implement large scale restoration actions in this critical spring Chinook and steelhead spawning area.

Potential work in the Fawn Creek / Weeman area includes extensive side channel construction, levee augmentation and/or removal, road prism augmentation, and mainstem large wood treatments. We plan to continue designing permissible restoration actions in both project areas in 2017, as well as implement targeted property acquisitions that will allow the most biologically beneficial restoration work to proceed in the next three years.

Early Winters Creek Assessment Unit

Early Winters Creek 20 Below Project (Project Delayed)

Land Ownership: USFS



Summary:

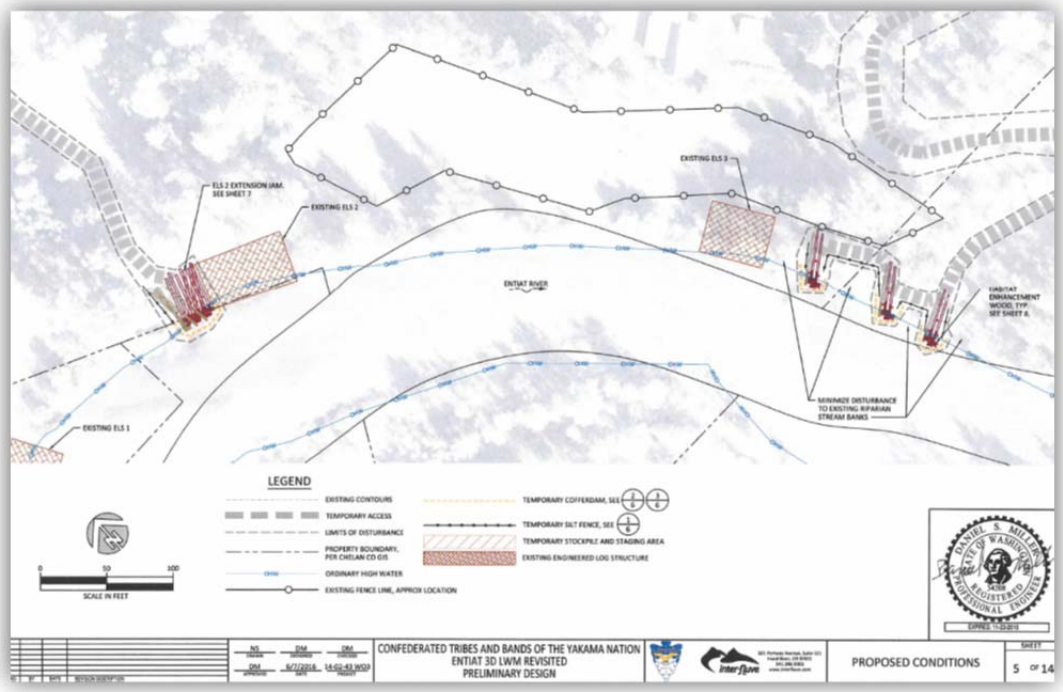
Engineering of this project took place in 2015 for implementation in 2016, however problems with the USFS ARBO II process delayed implementation until 2017. The project involves creating four large wood structures and associated scour pools along the left bank of Early Winters Creek near the USFS Early Winters Creek Campground. The updated Highway 20 bridge and a pedestrian bridge upstream of the camping area has focused scouring flows towards the left bank of the creek and caused accelerated erosion which this project seeks to treat.

Entiat Subbasin Details

Upper Middle Entiat Assessment Unit

Entiat 3-D Project (Project Delayed)

Land Ownership: Private



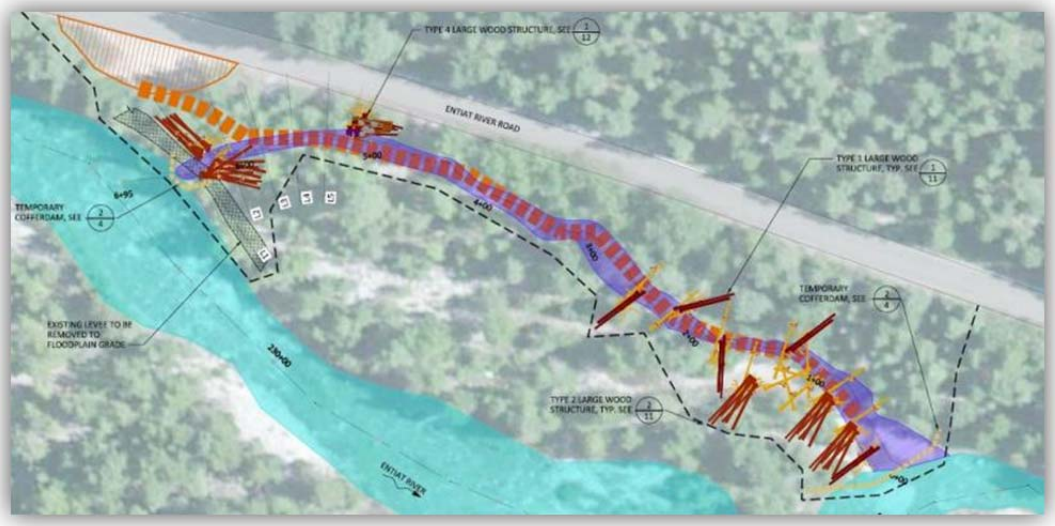
Summary:

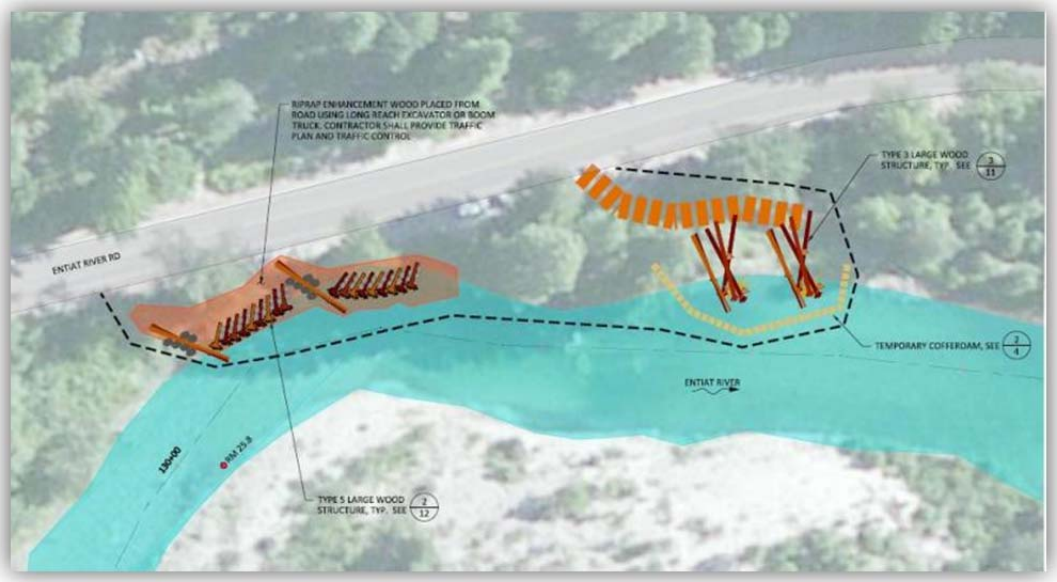
Engineering, design, and permitting phases of this project were completed in 2014 and 2015, and the project was scheduled to be implemented in 2015 and 2016, but was delayed in both years due to contracting issues with WA DNR. The project is expected to be implemented in 2017.

The project is a continuation of a project that was completed during FY 2012. The 3-D LWM Revisited project entails adding logs to the upstream side of existing log structure #2 by approximately 20ft. Additionally three smaller structures will be installed in gaps in the riparian canopy just below existing structure #3. Lastly, fabric encapsulated soil lifts (FESL) will be created along the face of the structures to further add complexity and stability to the structures as well as provide a suitable base for planting benches during the fall of 2017.

Entiat Stillwaters Project (Project Delayed)

Land Ownership: USFS





Summary:

The Entiat Stillwaters Project consists of the Signal Peak and Upper Burns restoration sites on USFS lands. The project consists of side-channel restoration, large wood enhancements of a riprap bank, and creation bank buried log structures on the river margins. Design work for this project occurred during 2014 and 2015 for implementation scheduled in 2016, however the project was delayed due to a delay in USFS NEPA process. The project will be implemented in 2017.

Mad River Assessment Unit

Tillicum Fan Project (Engineering Only)

Land Ownership: USFS

Summary:

Tillicum Fan is located off of FS-5800 in the Wenatchee National Forest at the confluence of Tillicum Creek and the Mad River (tributary to the Entiat River). The site is the location of an old homestead and currently used as a seasonal sheep grazing site. Tillicum Creek is highly incised and does not regularly come in contact with the floodplain. As recent as late summer/fall 2015, it has been used as a sheep grazing pasture and has some old plantings of alfalfa. The YN is partnering with the USFS to reengage the creek with the floodplain, plant with native riparian species, and discontinue use of sheep grazing in the area. In 2016 we collected survey data of the site and began creating restoration concepts in partnership with the Forest Service. Additional design work is planned to take place in 2017, with project implementation scheduled for 2018.

Wenatchee Subbasin Details

Nason Creek Assessment Unit

Nason Creek Lower White Pine Groups 2 & 3 Project (Completed Restoration Action)

Land Ownership: Private

Detailed Map of Project Site:

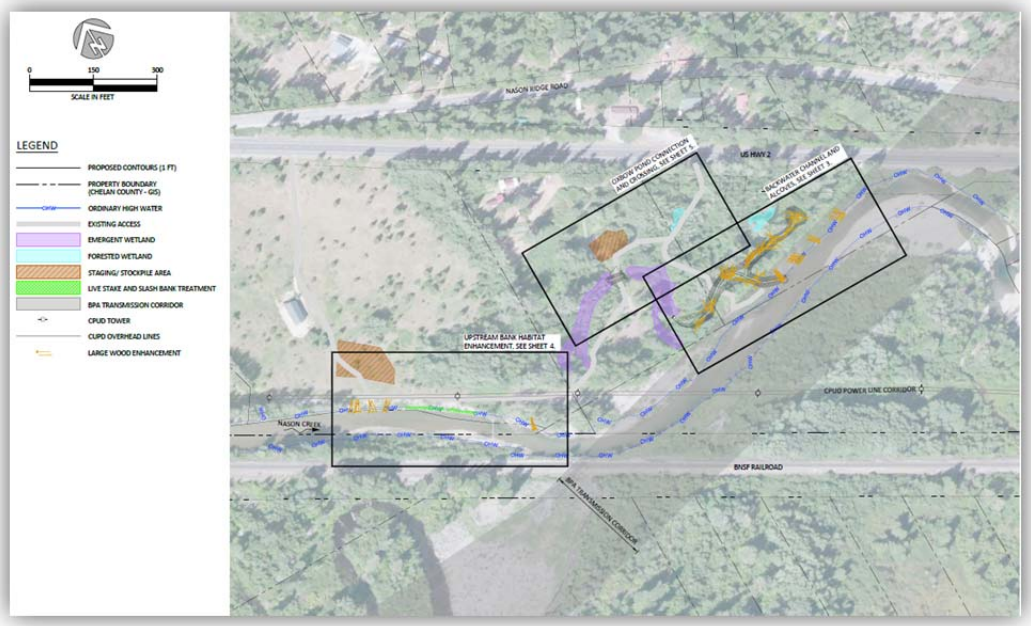
For details about the location of differing project elements on the site please refer to Attachment 1 – Constructed Projects As-Builts.

Summary:

This project consisted of creating a groundwater fed alcove backwater channel on river left of Nason Creek to restore juvenile salmonid rearing habitat. The backwater channel was connected to an existing oxbow pond and was enhanced with large wood cover and the creation of two wetland benches. In addition, multiple bank buried log structures were constructed along the left bank of the main channel of Nason Creek to increase instream complexity. During the project 200 cubic yards of trash were removed from the floodplain, and a live stake and slash bank treatment was constructed to improve riparian cover.

Restoration Metrics:

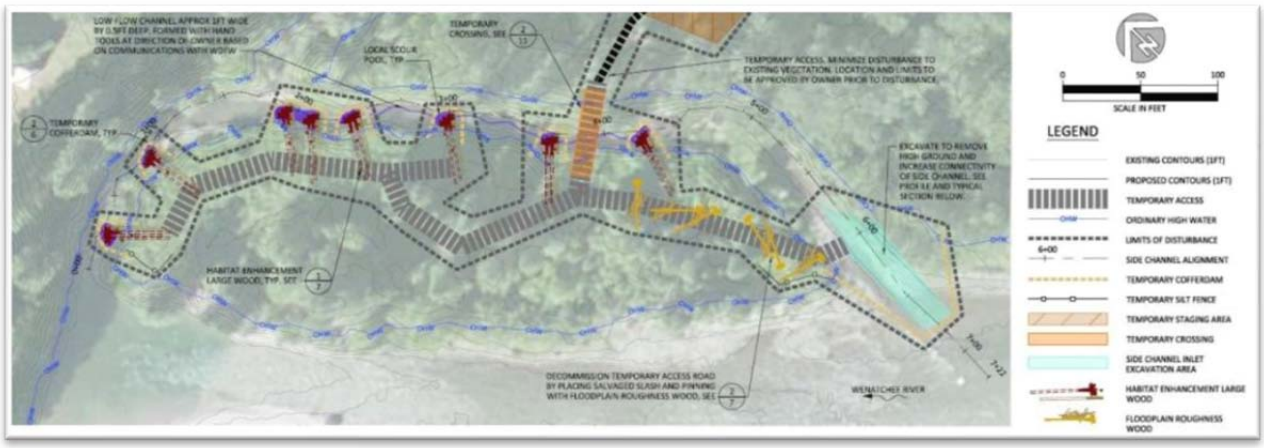
800 linear feet of perennial flow alcove side channel was created with woody material installation throughout.
8 large wood structures with associated scour pools were installed in Nason creek.
2 culverts were installed.
240 linear feet of live stake and slash bank treatment.
200 cubic yards of floodplain trash removed.



Upper Wenatchee Assessment Unit

Meacham Flats Project (Project Delayed)

Land Ownership: Private



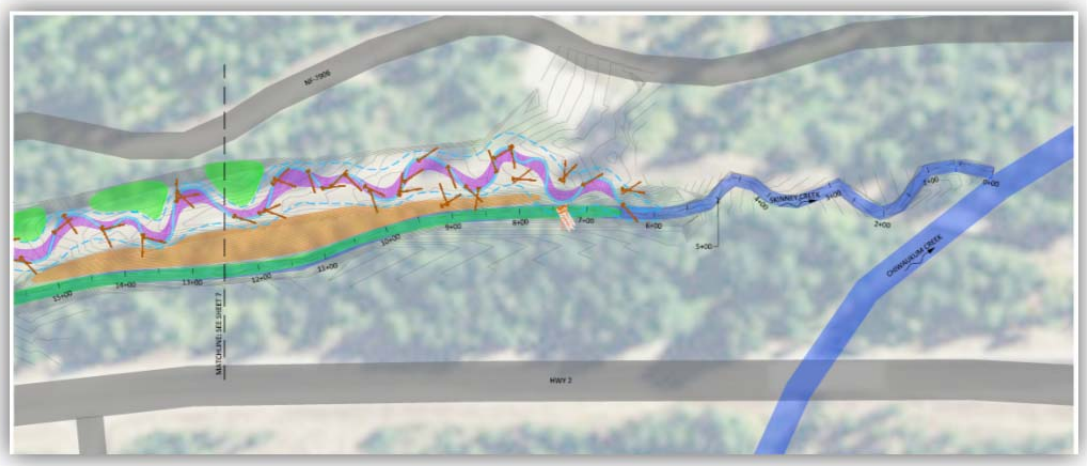
Summary:

This project was designed in 2015 for implementation in 2016, however delays in permitting with WA DNR postponed this project until 2017.

The project consists of improving the hydrology of an existing side channel on the left bank of the Wenatchee River through targeted excavation, and enhancing the side channel habitat with large wood structures.

Skinney Creek Project (Engineering Only)

Land Ownership: USFS

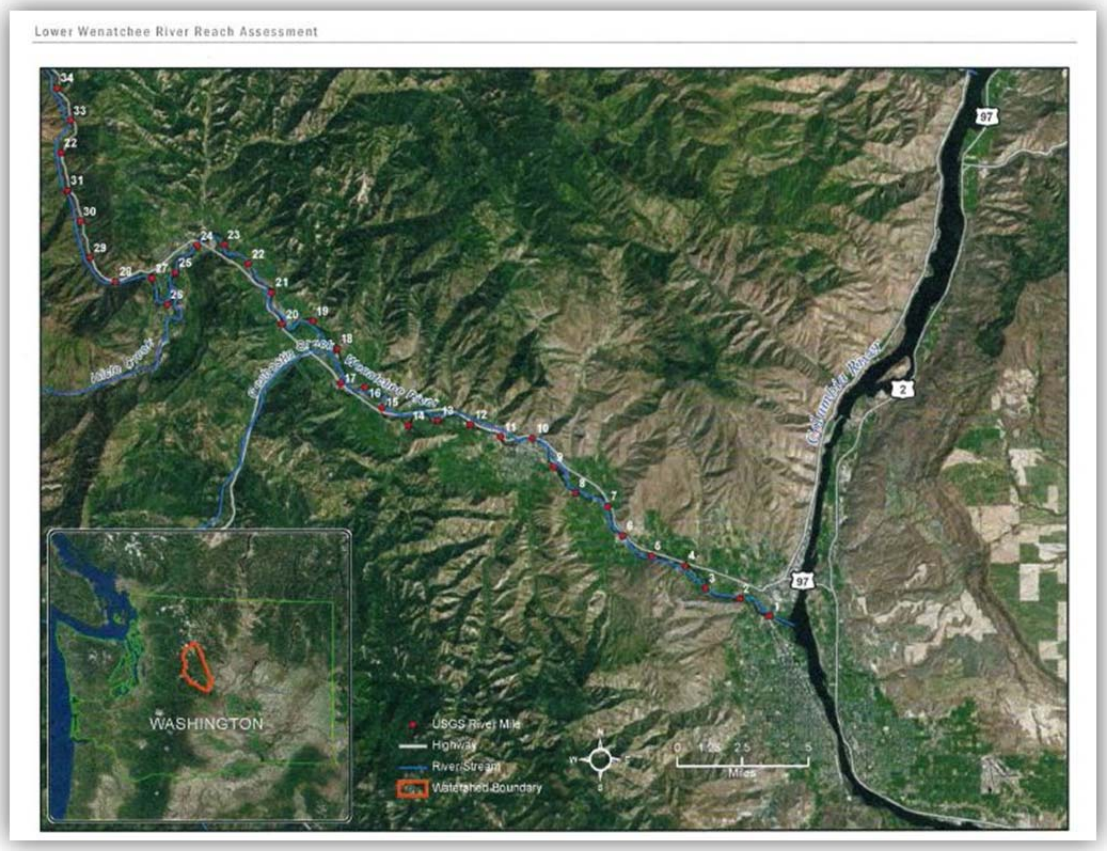


Summary:

In 2016 we produced multiple detailed concepts for restoration of a 1,800 linear foot section of Skinney Creek that is constrained by the old WSDOT Highway 2 road prism. The highway was moved to a new location three years ago and the land was granted back to the USFS. We are partnering with USFS to develop a restoration project for this site to be implemented in 2018. Further design work will occur in 2017. The design is focused on restoring the natural function of Skinney creek by improving connection to the floodplain, by reducing fine sediment inputs, and by improving riparian condition.

Lower Wenatchee Assessment Unit

Lower Wenatchee Reach Assessment



Land Ownership: Private, Local Government, WSDOT, WDFW, WA DNR

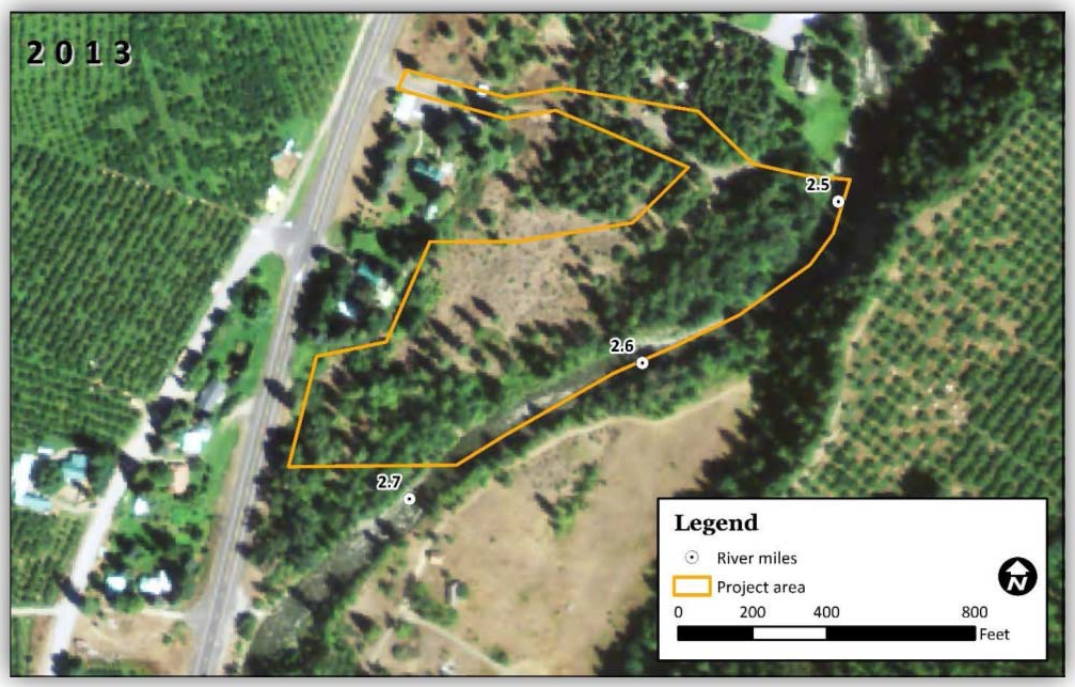
Summary:

In 2015 we conducted most of the field work to produce a new reach assessment for a ~26.5mi section of the Wenatchee River (Lower Wenatchee from Tumwater Canyon down to mouth of Wenatchee River). In 2016 the data was analyzed and report products were created. The Assessment identified 39 potential projects on the Lower Wenatchee River. We are now in the process of developing the highest priority projects for implementation in the next five years. RTT review of the Assessment is anticipated to occur in 2017.

Lower Wenatchee Assessment Unit

Peshastin Creek RM 2.7 Project (Engineering Only)

Land Ownership: Private



Summary:

Side channel restoration concepts were developed for this project area in 2016, however permitting delays postponed groundwater testing for this project site until 2017, so the projected restoration implementation has been delayed to 2018.

The project is located at river mile 2.7 on Peshastin creek. This project was initially identified through the Lower Peshastin Creek Tributary and Reach Assessment. Project designs are focused on improving side channel habitat to help juvenile rearing spring Chinook salmon and steelhead. More detailed designs will be developed in the fall of 2017 after pump tests have been completed.

Post-Implementation Monitoring

Objective

All projects constructed by the YN UCHRP are monitored for multiple years to ensure engineering and stability objectives are achieved. Monitoring is performed by qualified professional engineers using a monitoring plan written by the design team at the completion of construction. The following generalized Scope of Work details the typical monitoring tasks and timelines associated with our monitoring work.

Generic Monitoring Scope of Work

Create and Provide a Design Report

The Design Report summarizes project goals, field data collection, and technical design of the project including site survey, hydrology, hydraulics, grading, anchoring, and quantities/totals.

Produce a Monitoring Plan

The Monitoring Plan documents the post-construction conditions of the site and will outline future monitoring activities that will be completed. Documentation of post-construction conditions include a description of the completed project, preparation of as-built drawings, and results of initial post-construction monitoring. This information serves as a baseline for comparison to future monitoring data. The plan will also identify specific future monitoring activities and schedule.

Monitoring activities to be described in the plan may include photos, notes/sketches, measurements, ocular sediment data, and other activities depending on the project type and objectives. The monitoring schedule will describe the plan for regular scheduled monitoring as well as for monitoring in response to high water events. There will also be a discussion of site conditions that would trigger action items or interventions/adaptive management.

Monitoring

Monitoring efforts at the site focus on qualitative post-construction performance and an evolution of constructed features and associated physical habitats. The monitoring activities and the data collected include: repeat photographs from mapped locations, simple hand measurements and sketches of zones of erosion, scour and sediment deposition. Revegetation will be monitored and documented via photographs and sketches of zones of plant species complexity and vigor. Documentation will be a narrative description with representative photos and sketched graphics as needed to illustrate change.

Monitoring Phase 1- Site Investigation

Task 1 - Hydrologic history

River flows are recorded at USGS gages within each water shed the work was performed. A summary of maximum flows between monitoring events should be summarized in each report. Flows at the time of the monitoring effort should be summarized with a comparison to mean

daily discharge. Effort will be made to conduct monitoring at similar flows to provide comparable observation efficiencies and photos.

Task 2 - Photo Points

Locations are identified that will visually document individual features, overall condition and the associated physical habitat. Photo point locations are identified in the as-built reports. Photos are taken at those approximate locations for each subsequent monitoring year.

Notes should be taken of project feature, photo orientation and unique conditions or features the photographs are documenting. Efforts will be made to produce high resolution photos of similar magnification and framing to provide easy visual comparison of project changes for reports and presentations.

Task 3 -Field Sketches and Narrative

At each constructed feature, a field sketch and narrative of any changes from prior monitoring conditions will be completed. Photographs from prior monitoring events will be compared to field conditions to estimate changes. Sketches will be as detailed as possible based on observations and simple measurements and should include a plan and elevation sketch at each location. The as-built reports provide construction plans for use as base graphics for sketches of locations and extents of erosion, scour and deposition areas, accumulation of debris, adjacent river bed and bank conditions and their approximate dimensions relative to the constructed feature. Substrate sizes in scour and deposition zones will be estimated on the percent composition using the Wentworth scale metrics and noted on the sketch. Total number of woody material will be summarized to identify projects are gaining / loosing material.

Task 4 - Action triggers

If monitoring activities detect undesirable performance or change to the habitat work, a range of actions or responses may be initiated based on professional opinion.

- No action needed.
- For minor change in function, a flag may be placed in the monitoring report to watch and respond at a later time if the condition worsens.
- Moderate changes may require a recommendation for intervention based on professional opinion and work by YN to remedy the issue.
- Serious changes that would influence human safety or infrastructure may require design and contractor with heavy equipment to remedy the issue.

The findings, recommendation, and decision will be documented in each report year as it becomes necessary.

Task 5 - Revegetation areas

Identify deficiencies in the revegetation efforts for each site, which may include:

- plant species complexity,
- plant vigor, and
- invasive species

The degree of deficiency would be based upon percent of total area, or area of specific problem item. Noted deficiencies in vegetation reestablishment may prompt action to improve site recovery, reduce sediment mobilization and invasive species propagation.

Monitoring Phase 2 – Reporting

Task 6 - Monitoring Report

Following completion of each round of in the field monitoring, a report will be developed to present the assimilated monitoring notes and photos. The report will include a description of methods including any variation to the monitoring plan and reasons for variation, site conditions at the time of monitoring, and a summary of preceding flow conditions characterized by the record from the USGS gage with a focus on peak events that may have occurred prior to monitoring. The report will include a brief section for each monitored feature including representative photographs from each photo point, narrative describing the conditions of the habitat feature. Making notes of any changes to the structures or physical habitats between monitoring years.

Monitoring Schedule

Monitoring should begin the subsequent year following construction to establish changed conditions. Monitoring will typically be conducted in years 1, 2, 3, and 5 following the construction year. The as-built reports will be used for comparison for all future monitoring efforts and will allow for determination of the type and magnitude of change to features over time.

Phase 1 – July through August
Phase 2 – September through December

Monitoring Actions Performed During the Reporting Period

Sub-basin	Project	Construction Year	Year 1 Monitoring	Year 2 Monitoring	Year 3 Monitoring	Year 5 Monitoring
Entiat	Entiat 3-D Project	2012	2013	2014	2015	2017
Methow	Old Schoolhouse - Beaver Creek Project	2013	2014	2015	2016	2018
	Cheweuch 8 Mile Ranch Project	2012	2013	2014	2015	2017
	Chewuch RM 10 Project	2012	2013	2014	2015	2017
	Chewuch RM 11.75 to 13 Project (USFS portion)	2013	2014	2015	2016	2018
	Chewuch RM 11.75 to 13 Project (River Right Side Channel)	2015	2016	2017	2018	2020
	Chewuch RM 13 to 15.5 Project (WDFW and USFS)	2015	2016	2017	2018	2020
	Twisp Ponds Left Bank Project (ELJs)	2012	2013	2014	2015	2017
	Twisp Poorman Creek Road Project	2014	2015	2016	2017	2019
	Twisp RM 3 Project	2014	2015	2016	2017	2019
	M2 1890s Project	2014	2015	2016	2017	2019
	M2 LWD Project (Eagle Rocks)	2012	2013	2014	2015	2017
	M2 LWD Project (Sugar Dike)	2013	2014	2015	2016	2018
	M2 LWD Project (Two Channels)	2014	2015	2016	2017	2019
	Fender Mill Side Channel	2015	2016	2017	2018	2020
Wenatchee	YN Sunnyslope (ELJs)	2013	2014	2015	2016	2018
	Nason LWP Project (1st Bend)	2013	2014	2015	2016	2018
	Nason UWP Reach 3 & 4	2015	2016	2017	2018	2020
	Natapoc Project	2015	2016	2017	2018	2020
	Peshastin RM 0.8 Project	2013	2014	2015	2016	2018

Summary of Monitoring Findings During the Reporting Period

For most completed project sites no action triggers were identified through post implementation monitoring during the reporting period. Project performance from a structural/stability standpoint met design objectives for all projects monitored, except at the Chewuch River Right Side Channel Project.

This project was implemented in 2015 on WDFW lands near river mile 12 on the Chewuch River. In April 2016, seven months after project completion, a peak flow runoff event caused a large spruce tree from the opposite bank from the project site to fall perpendicular to the main Chewuch River channel, causing the top of the tree to become lodge against the upstream face of the constructed River Right bar apex log structure. Naturally recruited large wood and slash moving down the flooded Chewuch River then collected against the spruce tree, forming a channel spanning log jam.

During the flood, the Chewuch River responded to the lost hydraulic capacity of the main channel in two ways. First, it sent a large percentage of flood flow down the constructed side channel that would not have occurred otherwise. Second, the flows vertically scoured beneath the accumulating large wood, creating a roughly 10 foot deep pool below the structure. The high water flowing down the side channel shifted some habitat wood at 3 locations, causing scoured banks and pools to increase. At one of the sites the water moved 2 short pieces of habitat wood in such a way as to block the channel. It was recommended that 2 of the pieces of wood be pulled back to open up the channel in order to prevent a full blockage and sediment aggradation. The action of pulling the two pieces of LWD back took place using a man powered cable wench in November 2016.

Habitat value as a result of the project implementation in 2015 and the formation of the channel spanning log jam in 2016 is considered outstanding. It is now estimated that because of the hydraulic impacts of the channel spanning log jam, 30% of the low flow volume of the Chewuch River now runs down the restored side channel. At this time WDFW and our program have decided to continue monitoring the impacts and response of the channel spanning log jam to the habitat and structural stability of the River Right project. No further active interventions are proposed.

Lessons Learned

The YN UCHRP conducted multiple large scale salmon habitat restoration actions in the Upper Columbia Basin during the reporting period. Within these projects we continue to employ emerging and innovative restoration techniques focused on enhancing the effectiveness of the habitat improvements, decreasing disturbance impacts to adjacent non-target environments, and/or increasing the efficiency of the restoration work to decrease project costs or increase the speed at which projects can be completed. Here are some of the lessons we learned in the 2016 reporting period based on our innovative approaches to restoration:

- The natural event that created the channel spanning log structure at the Chewuch River Right project provided many positive lessons. First, it was rewarding to watch natural habitat forming processes interact with a well designed, process orientated side channel restoration project that proved to be resilient to large hydraulic changes in the reach, especially considering that the construction phases had only been completed several months before the large flooding impact. Due to a geomorphically balanced side channel design, complete with adequate wood roughness, the habitats within the project site and the main river channel were actually enhanced by this event. While intentionally constructing a channel spanning structure at this site was deemed likely to be too high of risk, the structure's natural occurrence has given us the opportunity to see what bold, channel spanning wood restoration can accomplish in terms of restoring fish habitat in systems similar to the lower Chewuch reach.
- Due to the large and unanticipated hydraulic impact of the channel spanning log structure at the Chewuch River Right project, we experienced high vegetation mortality in the riparian area of the new side channel. In many places planted trees and shrubs were ripped away by scouring flows as the log jam forced more water into the side channel. Based on this occurrence, we have evaluated whether planting nearer to flooding susceptible stream banks immediately after construction, and before the first high water event, is truly a desirable planting technique for long term site restoration. Our current thinking is to continue planting all disturbed areas to prevent erosion and dissuade invasive plant establishment, unless there are details of likely and predictable hydraulic patterns that indicate new plantings will be negatively impacted during high water events. In the case of the Chewuch River Right project, we would not have planted the site any differently after construction because we had no means to predict the hydraulic impacts of naturally recruited large wood structure on the main river channel.
- For the Newby Narrows project on the Twisp River, we successfully employed the use of a 90 foot spanning temporary bridge to reduce the amount of wet river crossings needed to complete the side channel restoration actions. While the side channel restoration was delayed due to other reasons, the bridge was put in place, and fully removed in a matter of six work days, while only requiring two one-way wet wadings by a tracked excavator. This bridge would have allowed us to drive

hundreds of dump truck loads across the Twisp River without impacting floodplain wetlands and side channels, and without impacting the aquatic habitat in the main river channel during the 30 day construction period. Up until now, most bridges that could be installed remotely without crane assistance were limited to roughly a 60 foot crossing span.

Yakama Nation

Upper Columbia Habitat Restoration Project

ANNUAL REPORT

JANUARY 1ST, 2016 THROUGH DECEMBER 31ST, 2016

BPA Project #2009-003-00
Master Agreement #56662 - Releases 58, 88, 111, and 119

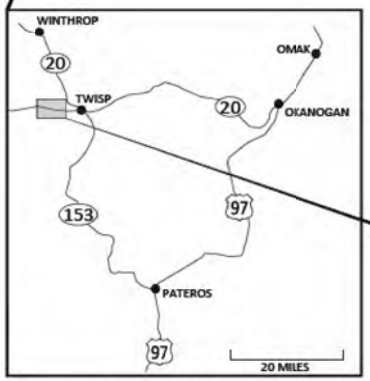
Attachment 1 – Completed Projects As-Builts

- **Twisp Ponds Left Bank Side Channel**
- **Nason Creek Lower White Pine Groups 2 & 3**

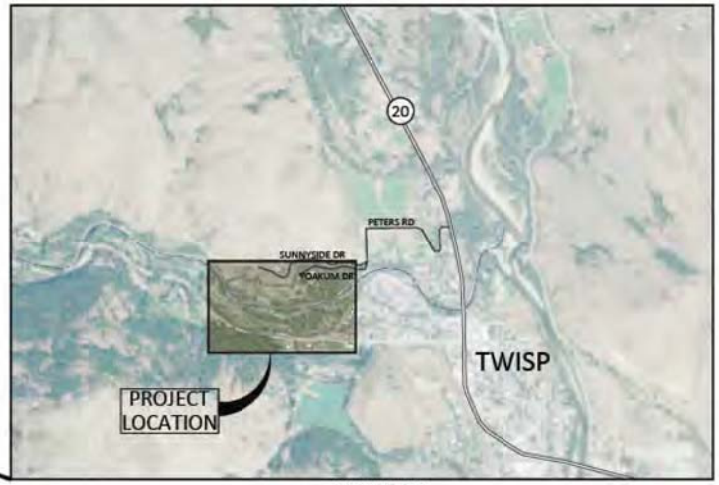
* note that because the Newby Narrows Project was not completed in 2016, we have not yet created an as-built plan set for this project site. We anticipate providing the as-builts in the 2017 report.

LOWER TWISP RIVER
TWISP PONDS LEFT BANK
AS-BUILT AND MONITORING PLAN

OKANOGAN COUNTY, WASHINGTON



VICINITY MAP

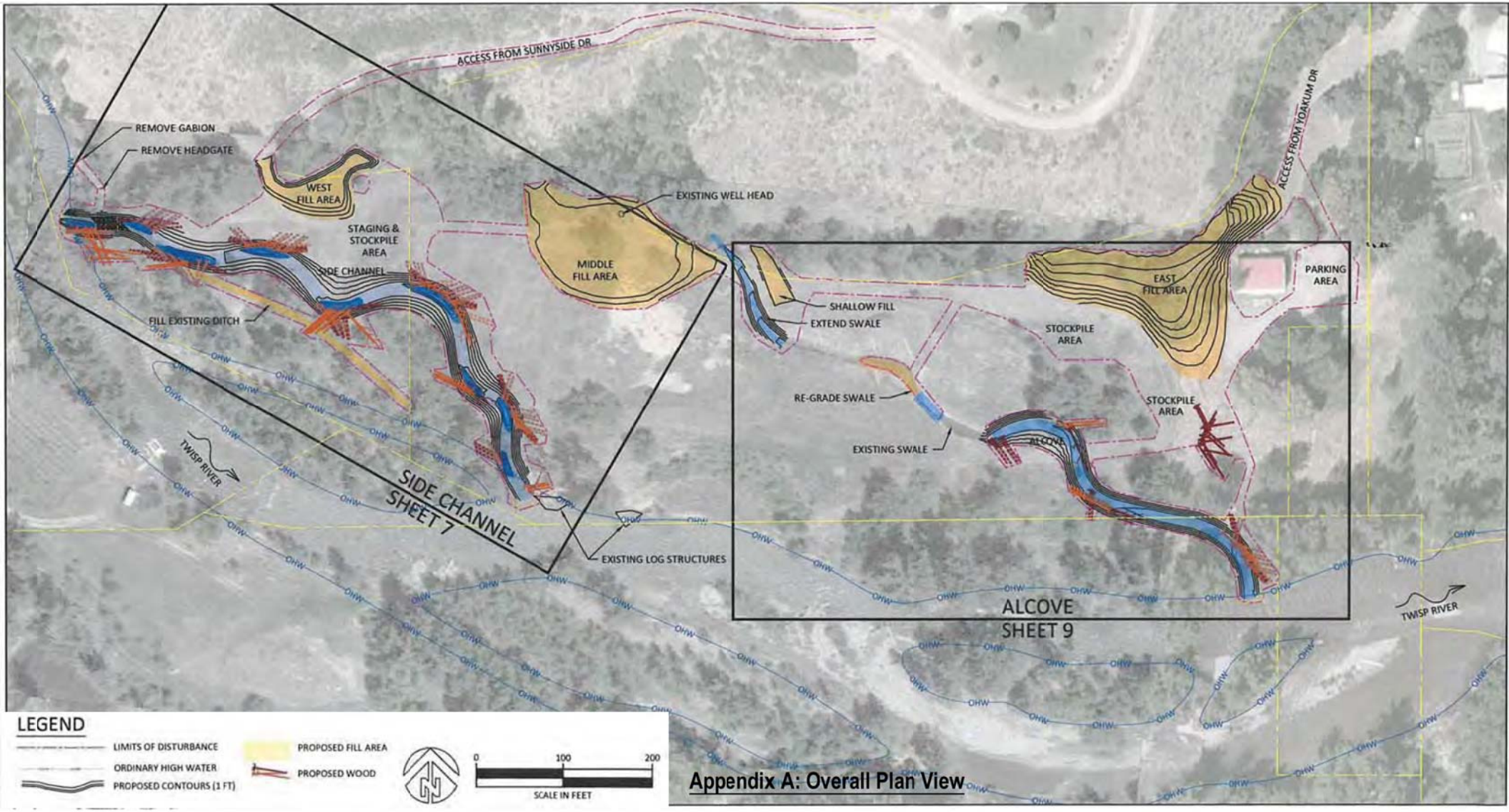


SITE MAP

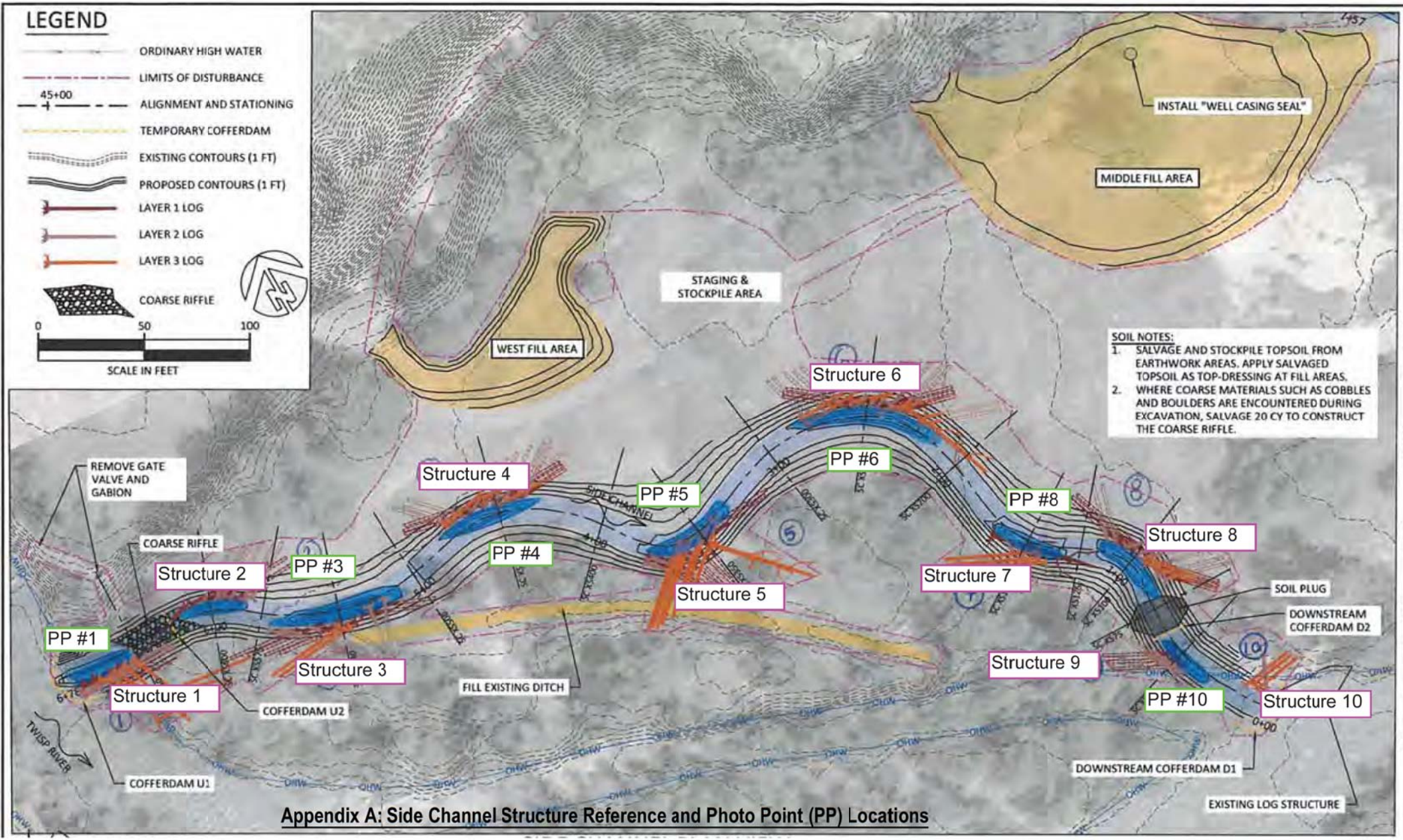
COORDINATES:
LATITUDE 48° 22' 15.75" N
LONGITUDE 120° 9' 44.51" W

SECTIONS 11-12, TOWNSHIP 33N, RANGE 21E

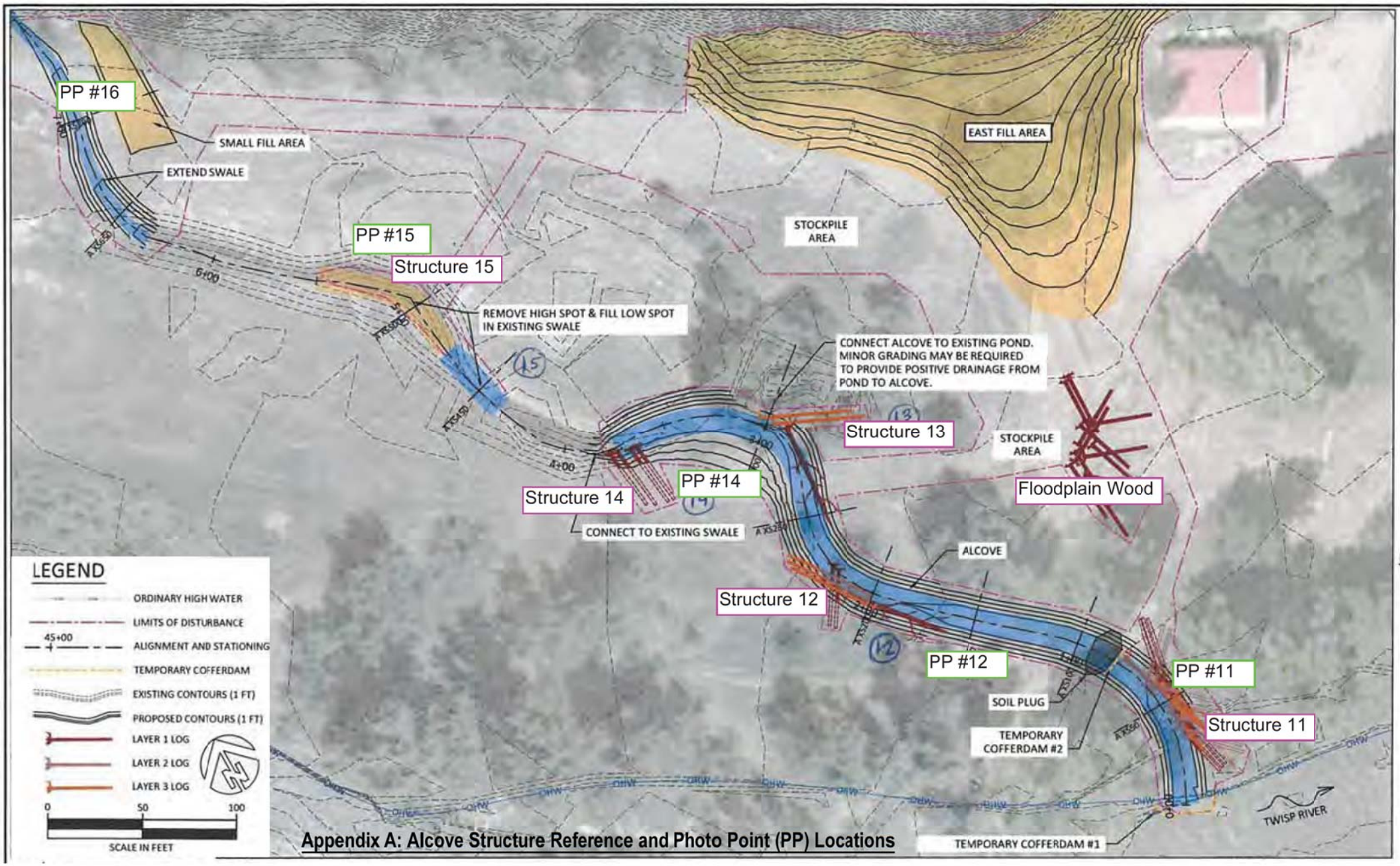
WATERBODY: LOWER TWISP RIVER
TRIBUTARY OF: METHOW RIVER



Appendix A: Overall Plan View

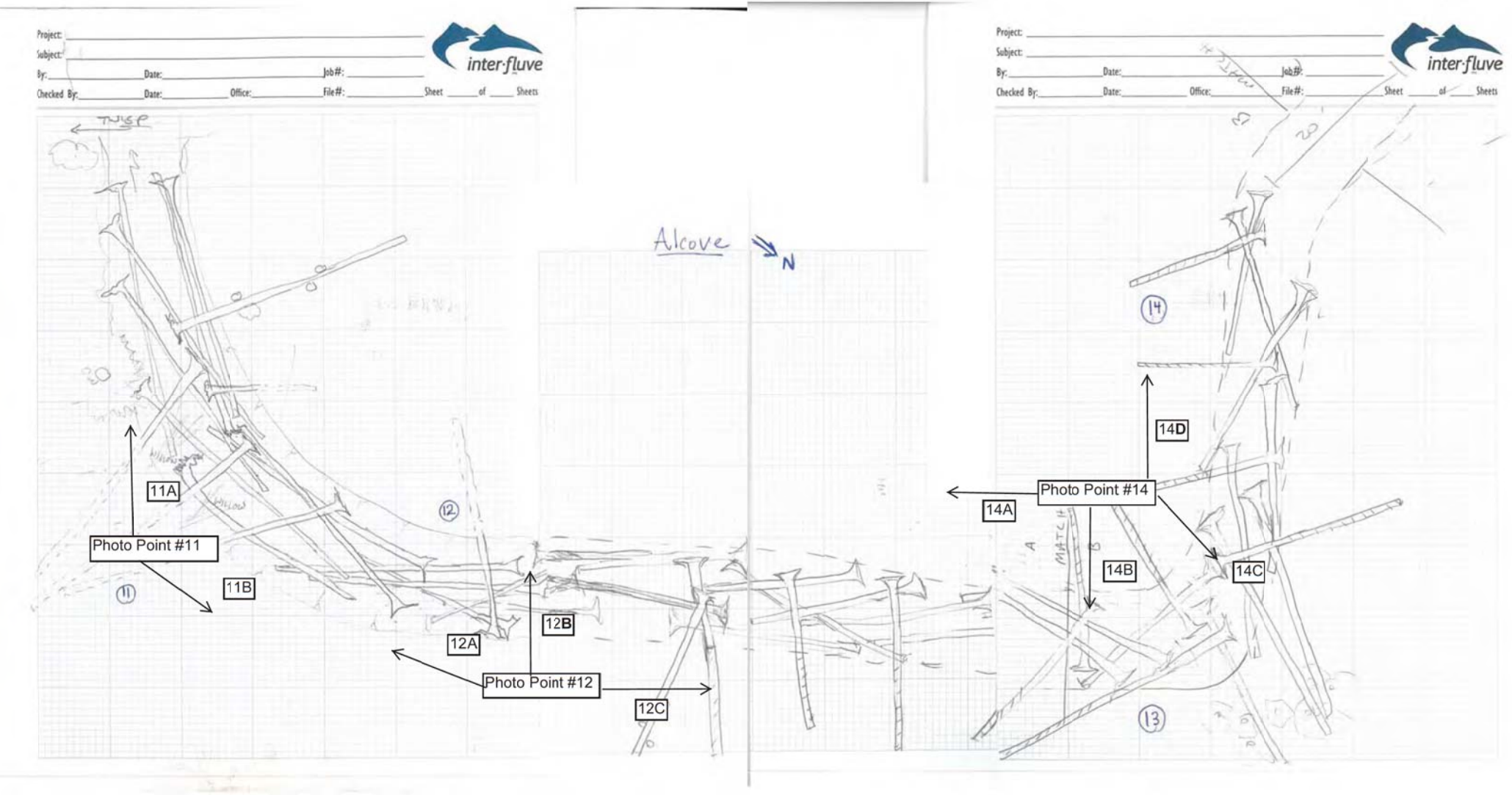


Appendix A: Side Channel Structure Reference and Photo Point (PP) Locations



Appendix A: Alcove Structure Reference and Photo Point (PP) Locations

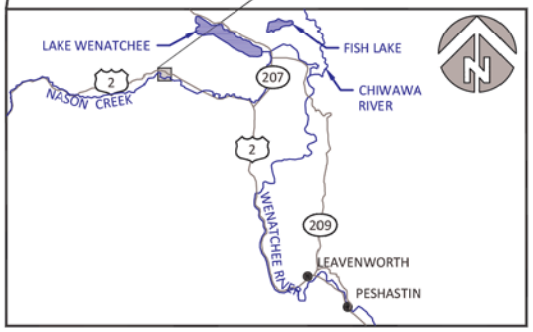
As-Built Drawings for the Alcove Wood- Structures #11, #12, #13 and #14



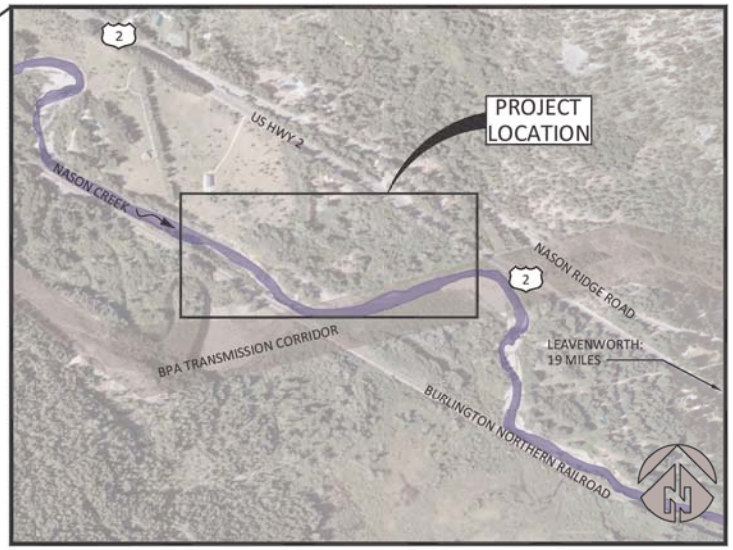
NASON CREEK - LOWER WHITE PINE GROUPS 2 & 3
FISH HABITAT ENHANCEMENT PROJECT
AS-BUILT AND MONITORING PLAN

Chelan County, WA
December, 2016

STATE OF WASHINGTON
NOT TO SCALE



VICINITY MAP
NOT TO SCALE



SITE MAP
NOT TO SCALE

COORDINATES:
LATITUDE: 47°46'25.47"N
LONGITUDE: 120°49'13.69"W

SECTION 2, TOWNSHIP 26N, RANGE 16E

WATERBODY: NASON CREEK
TRIBUTARY OF: WENATCHEE RIVER

SHEET INDEX

NO.	BY	DATE	REVISION DESCRIPTION

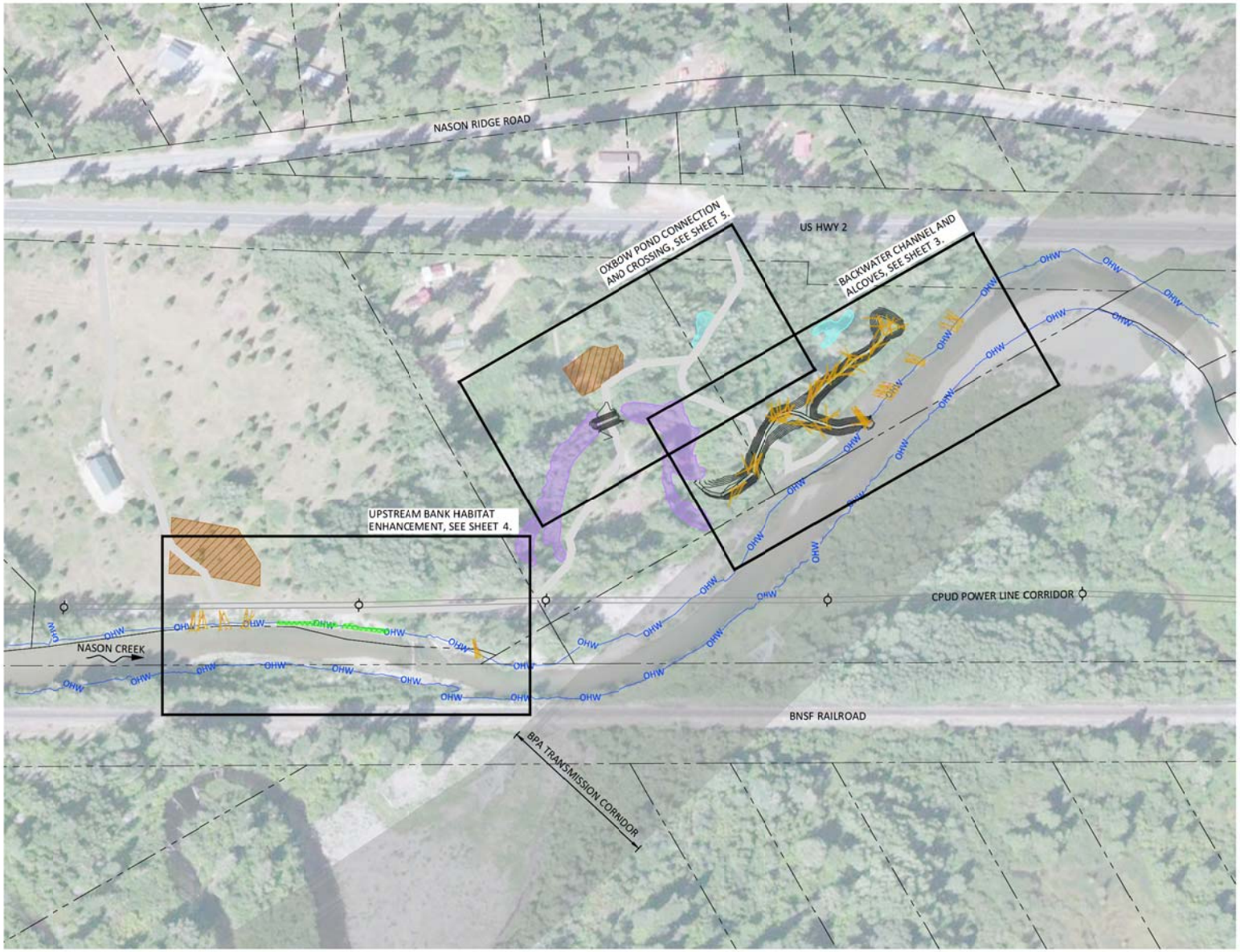
NS	MC, LH, GJ	MC, DM
DRAWN	DESIGNED	CHECKED
MC	11/4/2016	150233
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
NASON CREEK LOWER WHITE PINE GROUPS 2 & 3
FISH HABITAT ENHANCEMENT PROJECT

501 Portway Avenue, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

COVER, SHEET INDEX AND VICINITY MAP

SHEET 1 OF 5



0 150 300

SCALE IN FEET

LEGEND

- PROPOSED CONTOURS (1 FT)
- PROPERTY BOUNDARY (CHELAN COUNTY - GIS)
- OHW — ORDINARY HIGH WATER
- EXISTING ACCESS
- EMERGENT WETLAND
- FORESTED WETLAND
- STAGING/ STOCKPILE AREA
- LIVE STAKE AND SLASH BANK TREATMENT
- BPA TRANSMISSION CORRIDOR
- CPUD TOWER
- CUPD OVERHEAD LINES
- LARGE WOOD ENHANCEMENT

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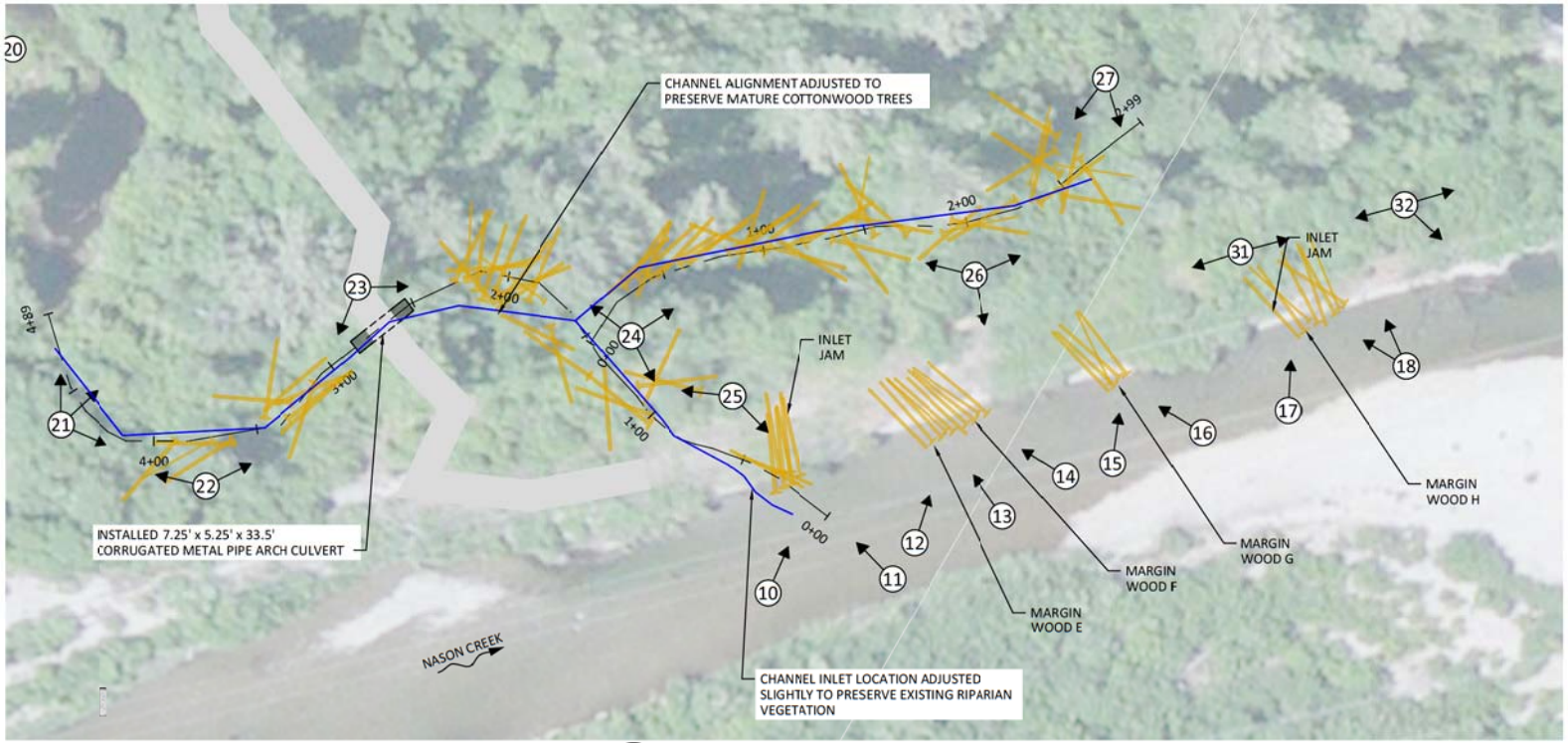
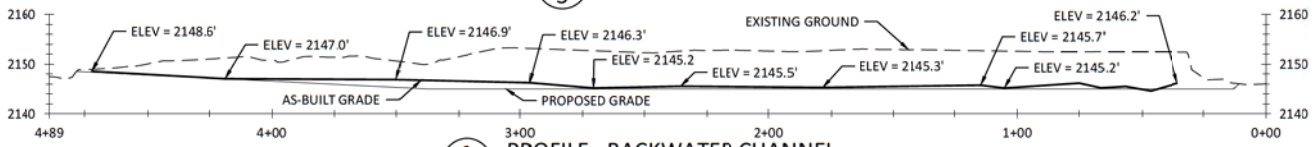
SITE MAP

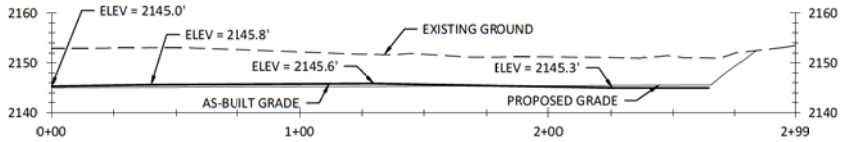
SHEET 2 OF 5



1/3 PLAN - BACKWATER CHANNEL AND ALCOVES
1" = 50'



2/3 PROFILE - BACKWATER CHANNEL
HORIZONTAL SCALE: 1" = 50' VERTICAL SCALE 1"= 25'



3/3 PROFILE - BACKWATER ALCOVE
HORIZONTAL SCALE: 1" = 50' VERTICAL SCALE 1"= 25'

0 60 120
SCALE IN FEET

LEGEND

- EXISTING PRE-PROJECT CONTOURS (LIDAR, 1 FT)
- EXISTING ACCESS
- 1+00 PROPOSED ALIGNMENT
- AS-BUILT ALIGNMENT
- LARGE WOOD, APPROXIMATE CONFIGURATION
- 10 PHOTO MONITORING POINT

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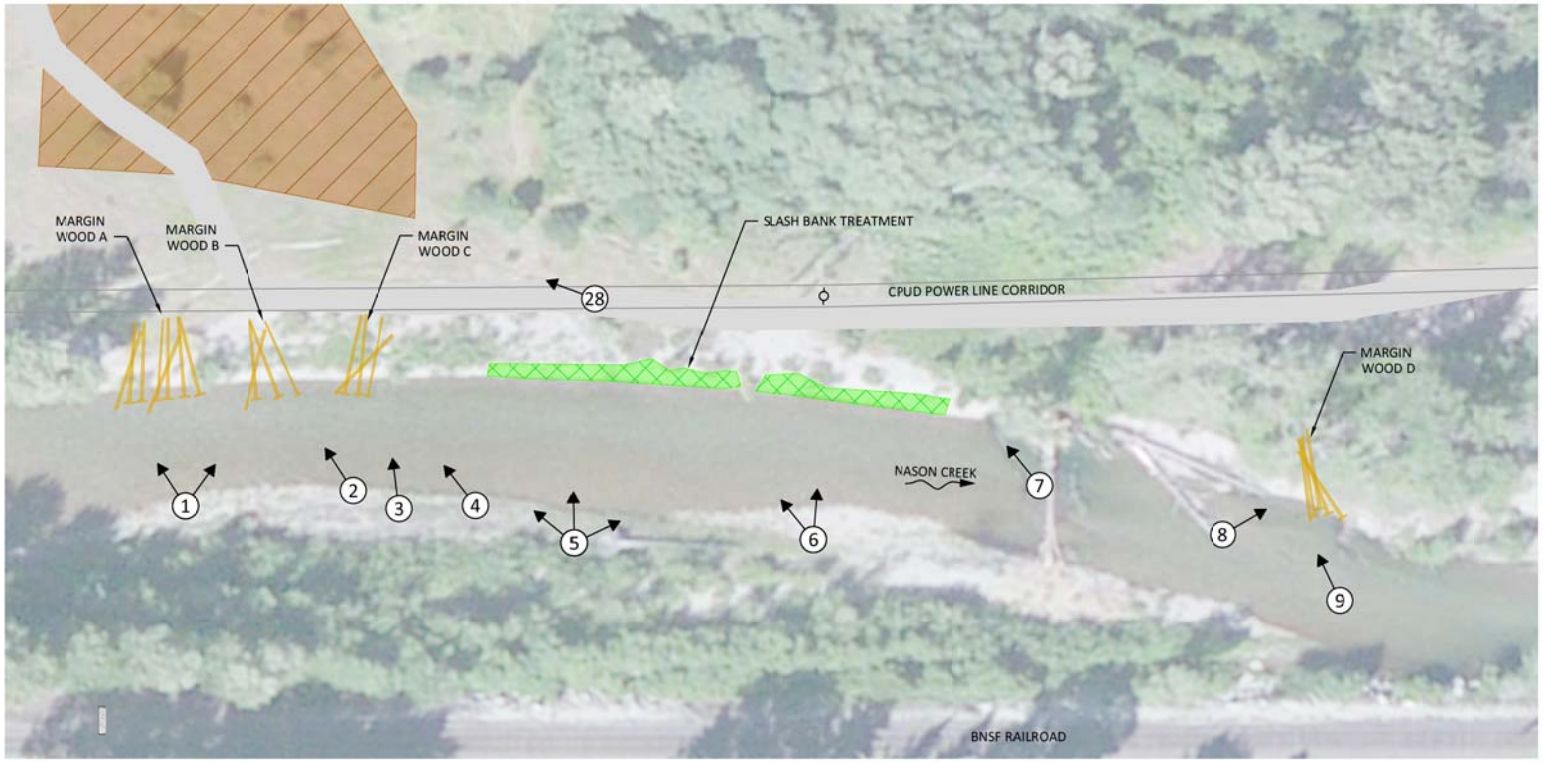
AS-BUILT BACKWATER CHANNEL & ALCOVES AND PHOTO MONITORING POINTS

SHEET 3 OF 5

\\WALLYTerra\Client Files\VL\LowerWhitePineGroups2&3_150233\Drawings\F1_LWP_GRP2-3_AsBuilt.dwg - MCOX - 12/7/16



PLAN VIEW

0 60 120

SCALE IN FEET

LEGEND

- EXISTING CONTOURS (LIDAR, 1 FT)
- EXISTING ACCESS
- STAGING/STOCKPILE AREA
- LIVE STAKE AND SLASH BANK TREATMENT
- CPUD TOWER
- CPUD OVERHEAD LINES
- LARGE WOOD, APPROXIMATE CONFIGURATION
- 5 PHOTO MONITORING POINT

NO.	BY	DATE	REVISION DESCRIPTION

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AS-BUILT UPSTREAM BANK ENHANCEMENT & PHOTO MONITORING POINTS

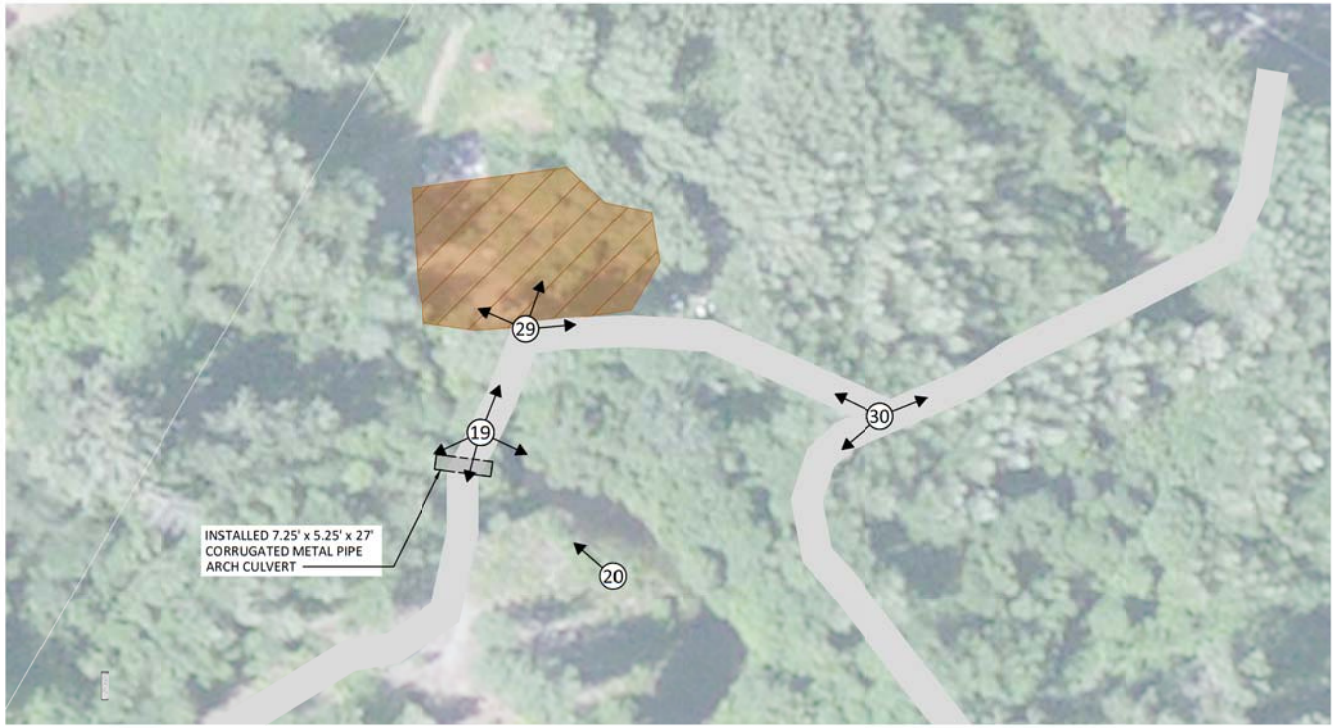
SHEET 4 OF 5

LEGEND

- EXISTING CONTOURS (LIDAR, 1FT)
- EXISTING ACCESS
- STAGING/STOCKPILE AREA
- 30 → PHOTO MONITORING POINT

0 60 120

SCALE IN FEET



PLAN VIEW

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OXBOW POND CONNECTION
AND CROSSING PHOTO
MONITORING POINTS

SHEET 5 OF 5

\\WALLYTerra\Client Files\L-L\LowerWhitePineGroups2&3_150233\Drawings\IFI_LWP_GRP2-3_AsBuilt.dwg - MCox - 12/7/16