

Application Name: Middle Upper Grande Ronde Restoration Project

By: Grande Ronde Model WS Foundation

Offering Type: Upper Grande Ronde Initiative

Application Type: Restoration

OWEB Region: Eastern Oregon

County: Union

Coordinates: 45.131773,-118.36421

Applicant:

Jeff Oveson
1114 J Avenue
La Grande OR 97850-2073
(541) 663-0570
jeff@grmw.org

Payee:

Mary Estes
1114 J Avenue
La Grande OR 97850
(541) 663-0570
mary@grmw.org

Project Manager:

Allen Childs
10507 N. McAlister Rd.
Island City OR 97850
(541) 429-7940
allenchilds@ctuir.org

Budget Summary:

OWEB Amount Requested: \$0
Total Project Amount: \$0

Administrative Information

Abstract

Provide an abstract statement for the project in 250 words or less. Include the following information: 1) Identify the project location; 2) Briefly state the project need; 3) Describe the proposed work; 4) Identify project partners.

The CTUIR and USFS propose implementation of fish habitat and floodplain enhancement using the CTUIR's River Vision increase habitat suitability for native fish spawning and rearing, fluvial processes and ecological functions.

The Middle Upper Grande Ronde River Canyon Fish Habitat Enhancement Project is located in the Upper Grande Ronde Subbasin along the Grande Ronde River between RM 156 and RM 158. The Project reach is located on the Wallowa-Whitman National Forest within the Upper Grande Ronde River Atlas Biological Significant Reach UGR15. The Project area presents a large-scale and significant opportunity to expand, create, and enhance core spawning and rearing habitat for ESA listed spring-summer Chinook salmon and summer steelhead.

The Project is a continuation of habitat restoration actions previously conducted by the US Forest Service (primarily large wood additions). Strategies include: 1) identifying and prioritizing response reaches within project area for improved floodplain connection and side channel habitat creation; 2) Utilizing apex Engineered Log Jams (ELJs) to force split channel flow and increase habitat complexity and diversity, particularly in areas identified under strategy #1; and 3) Installation of channel spanning wood structures to increase depth and pool habitat and decrease velocity to mimic onsite examples exhibiting these key habitat conditions (e.g, ELJ's, natural wood, and beaver dams). Proposed large wood additions include previous and existing large wood sites as well as locations with potential for achieving depth, velocity, and floodplain/peripheral habitat connectivity objectives. Gravel augmentation and additional large wood installation will be evaluated in conjunction with future project phases (phases II-III) along an 8 mile planning reach.

Location Information

What is the ownership of the project site(s)?

Public land (any lands owned by the Federal government, the State of Oregon, a city, county, district or municipal or public corporation in Oregon)

What agency(ies) are involved?

U.S. Forest Service

Private (land owned by non-governmental entities)

This grant will take place in more than one county.

Permits

Other than the land-use form, do you need a permit, license or other regulatory approval of any of the proposed project activities?

Yes

No

For Details Go to Permit Page

Racial and Ethnic Impact Statement

Racial and Ethnic Impact Statement

The proposed grant project policies or programs could have a disproportionate or unique POSITIVE impact on the following minority persons. (indicate all that apply)

The proposed grant project policies or programs could have a disproportionate or unique NEGATIVE impact on the following minority persons. (indicate all that apply)

The proposed grant project policies or programs WILL HAVE NO disproportionate or unique impact on minority persons.

Women

Persons with Disabilities

African-Americans

Hispanics

Asians or Pacific Islanders

American Indians

Alaskan Natives

Please provide the rationale for the existence of policies or programs having a disproportionate or unique impact on minority persons.

In January of 2007, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Department of Natural Resources (DNR) adopted the following mission:

To protect, restore, and enhance the First Foods - water, salmon, deer, cous, and huckleberry - for the perpetual

cultural, economic, and sovereign benefit of the CTUIR. We will accomplish this utilizing traditional ecological and cultural knowledge and science to inform: 1) population and habitat management goals and actions; and 2) natural resource policies and regulatory mechanisms.

The First Foods are considered by the CTUIR DNR to constitute the minimum ecological products necessary to sustain CTUIR culture. The CTUIR DNR has a mission to protect First Foods and a long-term goal of restoring related foods in the order to provide a diverse table setting of native foods for the Tribal community. The mission was developed in response to long-standing and continuing community expressions of First Foods traditions, and community member requests that all First Foods be protected and restored for their respectful use now and in the future.

The River Vision outlines physical and biological processes encompassing 5 touchstones: Hydrology, Geomorphology, Connectivity, Riparian Vegetation, and Aquatic biota which together with the First Foods, provide an overall framework for guiding tribal programs in regards to protecting and restoring ecological processes and functions. Healthy watershed processes and functions are the fundamental elements that create diversity, resiliency, and the ability of our river systems to provide sustenance and natural resources to support our culture and heritage.

Please provide evidence of consultation with representative(s) of affected minority persons.

The Confederated Tribes of the Umatilla Indian Reservation is the sponsor of the Middle Upper Grande Ronde Fish Habitat Restoration Project.

Insurance Information

- Working with hazardous materials (not including materials used in the normal operation of equipment such as hydraulic fluid)
- Earth moving work around the footprint of a well
- Aerial application of chemicals
- Transporting individuals on the water
- Removal or alteration of structures that hold back water on land or instream including dams, levees, dikes, tidegates and other water control devices (this does not include temporary diversion dams used solely to divert water for irrigation)
- Applicant's staff or volunteers are working with kids related to this project (DAS Risk assessment tool not required, additional insurance is required)
- Applicant's staff are applying herbicides or pesticides (DAS Risk assessment tool not required, additional insurance is required)

Additional Information

This project affects Sage Grouse.

Problem Statement

Describe the watershed problem(s) that this restoration project seeks to address.

Fish habitat suitability has been significantly affected and suppressed by physical alterations of the river and its associated floodplain (splash dam logging, mining, and road construction) that have contributed to severely degraded habitat conditions. Problems include homogenous, high energy, plane bed riffle-run channel types with a lack of large pool habitat, channel complexity, peripheral habitat bed armoring and alteration of sediment sorting and coarsening of streambed gravel, altered groundwater and hyporheic function, and degradation of riparian and wetland plant communities.

Natural habitat recovery is limited by current environmental conditions that suppress development of diverse hydrologic and geomorphic processes, including an armored streambed, lack of mature riparian vegetation and associated complexity/wood loading, and lack of significant floodplain activation/connection.

Core habitat suitability limiting factors affecting juvenile summer and winter rearing and adult holding and migration include: water quality (temperature), channel and bed form and complexity (limited low velocity and large pool habitat), riparian conditions, and sediment.

In the Project reach, the upper Grande Ronde River historically would have had both unconfined and confined channel reaches with alternating pool-riffle and run bedforms. Beechie et al. (2006) empirically determined based on regional data that intermediate sized unconfined channels that transport their sediment primarily as bedload and retain wood long enough to establish erosion-resistant points were transitional, and generally favored island-braided patterns in forested mountain systems. Beechie et al. (2006) data also shows that island-braided channels are continually adjusting to intermittent perturbations which sustains a high degree of successional states, resiliency, and habitat diversity. In general, island-braided riverine systems provide abundant peripheral and transitional habitats, and complex channel structure and bedforms resulting in the highest degree of biological diversity that supports both aquatic and terrestrial species during varying life stages.

Channel degradation has occurred in response to floodplain constriction from constructed roads, levees, and railroads, as well historical log transport operations by splash damming through the project reach. The quantity and force of logs moving along the channel are known regionally to have coarsened stream beds and severely truncated pool-riffle sequences.

Railroad grades, road grades, and levees through the floodplain create artificial channel constrictions and disconnected floodplains that have resulted in a single-thread, enlarged, and incised channel. Constriction increases flow depths, flow velocities, and shear stresses during high water events. The outcome is a wider, more uniform plane-bed armored channel.

Existing riparian vegetation conditions include scattered patches of woody shrubs and immature trees, and large areas of herbaceous vegetation with shallow rooting depths. Beavers are uncommon and no longer play a major role in wood delivery to the channel or maintaining diverse off-channel habitats and riparian conditions.

The Oregon Department of Environmental Quality (ODEQ) has identified many stream segments within the Upper Grande Ronde Subbasin as water quality limited (ODEQ 2010). Oregon's 1998 303(d) List of Water Quality Limited Waterbodies identifies nine parameters of concern: algae, bacteria, dissolved oxygen, flow modification, habitat modification, nutrients, pH, sedimentation, and temperature. Water quality parameters of concern within the Project reach include: dissolved oxygen, flow modification, habitat modification, nutrients, pH, sedimentation, and temperature. Water quality parameters (and standards) of temperature (64°F/55°F, rearing/spawning), dissolved oxygen (98% sat), habitat modification (pool frequency), and flow modification (flows) directly relate to the beneficial use for fish life. (NPCC 2004).

How have past or current land management practices contributed to the problem?

Fish habitat has been adversely affected by historic land uses, including livestock overgrazing, road construction, logging, channelization, and utility right of ways. Current channel conditions are out of balance with the sediment supply and disconnected from the historic floodplain, resulting in channels with high stream energy, little to no spawning gravel, limited velocity refugia, and lack of pool habitat.

Prior to Euro-American settlement and associated disturbances, the upper Grande Ronde River developed under an intermittent disturbance regime where flows, sediment inputs, and large wood dynamically interacted to create successional states. Riparian vegetation likely included woody species such as cottonwood (*Populus*), willow (*Salix*), river birch (*Betula nigra*) and alder (*Alnus*) of varying ages (seral stages). The upland areas adjacent to the active floodplain likely supported mature Ponderosa pine (*Pinus ponderosa*) and Douglas fir (*Pseudotsuga menziesii*) trees readily delivered to the channel through lateral channel migration and avulsion.

Beavers were common and played a vital role in the local delivery of wood to the channel and maintaining and diversifying the off-channel habitats and riparian conditions. Necessary wood sizes and quantities would have accumulated during high-water events to form transient logjams (i.e., bar apex jams and flow deflection jams). These logjams could have persisted long enough to create erosion-resistant hard points capable of forcing flow divergence that result in split-flow channels and floodplain-type side channels.

The role of beaver in riverine ecosystems has been well documented along with the benefits they provide for fish and wildlife species. Much of the Grande Ronde River and tributaries have been subject to extensive anthropogenic alterations which have contributed to degraded instream and riparian conditions and decreased habitat suitability for beaver. The current beaver population in the basin is thought to be extremely low, though no formal population census has been completed. Currently, beaver colonies within the system are geographically limited with isolated colonies found in suitable locations, and sporadic small populations that appear to be transient groups which typically dwell in bank lodges. Loss of floodplain and wetland habitat from historic conditions and associated loss of hydrophytic shrubs and trees (a primary food source) results in local beaver selecting poor locations for dam construction.

Does this project address one or both of the following:

Habitat needs for one or more Endangered Species Act-listed species and/or species of concern

Concerns identified on 303(d) listed streams

No

Proposed Solution

Goals and Objectives

Provide a goal statement for this restoration application.

The long-term rehabilitation vision (CTUIR's River Vision) for the Middle Upper reach of the Grande Ronde River is to improve physical and ecological processes by rehabilitating and restoring the project area to achieve immediate and long-term benefits to chinook, steelhead, and bull trout at all life stages.

The Project will involve a combination of helicopter and tracked or rubber tire excavator placement of large key member wood pieces with rootwads to increase complexity and floodplain connectivity for fish, both within the river channel and along the floodplain, as well as sort and store sediment. Sediment and bedload dynamics is currently unknown. Additions of channel spanning structures that slow water velocities will assist in evaluating the size and quantity of sediment through the project reach. Future project phases will evaluate and consider gravel augmentation at selected locations at or near large wood installation sites as well as potential to add additional wood material to the reach. Sediment sorting, storage, and potential future gravel augmentation could help in addressing the legacy effects of historical splash dam logging and impacts on suitable spawning and rearing habitat. The successful implementation of this project will enhance in-stream habitat for Endangered Species Act (ESA)-listed and non-ESA-listed native fish species. The successful completion of this project will improve:

- Floodplain connectivity (base flow, shallow groundwater capacity, and capability of functional connection and interaction with the floodplain through hyporheic flow);
- Channel morphology (channel form, sinuosity, complexity, geomorphic and hydrograph stability through the addition of large wood);
- Fish habitat (the quality and diversity of in-stream habitat for resident and anadromous fish in the Grande Ronde River);
- Restoration of natural channel processes through the addition of large wood to increase channel complexity and gravel augmentation in future phases to address channel substrate conditions.

Benefits to salmonids will be achieved through restoration and rehabilitation of the whole floodplain ecosystem. Targeting of present and specific limiting factors such as temperature, in-stream habitat conditions, and sediment loads will achieve immediate benefits to salmon. Long term benefits will be realized through a focus on restoring fluvial habitat-forming processes, floodplain and groundwater hyporheic connectivity, riparian and wetland plant communities, and instream complexity and diversity commensurate with the reach's natural potential.

List the objectives of this restoration application.

Project objectives are intended to be measurable and time bound. Specific, measurable metrics including large pool number and frequency, LWM numbers, channel profile, riparian condition, and substrate (d50) will be measured pre-project and reported to the Implementation Team. Longitudinal profiles, habitat surveys, pebble counts, riparian transects, channel and floodplain cross-sections, and temperature profiles/thermographs will be conducted pre-project and post-construction and will be continuously monitored. Project objectives include:

- Increase the number and quality of large pools (>20m², and >1m deep) in the main and/or side channels from

<2/mile to >20 mile.

- Increase the number and frequency of LWM in the main and/or side channels by installing 304 (18" DBH) key members and 844(8"-14" DBH) racking members.
- Increase habitat diversity, instream velocity breaks (a HEC-RAS model will be ran to determine velocities) , and cover through the addition of LWM (54 Engineered Log Jams).
- Create and enhance channel margin low water velocity areas in the main and/or side channels to improve juvenile rearing habitat.
- Expand on previously installed LWM structures to add lateral and vertical complexity to the channel planform and bed morphology (install 54 Engineered Log Jams) to increase hyporheic exchange.
- Re-invigorate self-sustaining native plant communities (multi-year/phase planting efforts) with diverse compositions and structures along channel margins disturbed areas, and across the floodplain, including patches associated with beaver colony activity.
- Increase riparian vegetation to support overall bank stability, particularly in locations where habitat structures have been installed and along banks with increased hydraulic roughness that are susceptible to erosion from loss of root mass.
- Increase diurnal buffering, decrease maximum daily temperatures, and allow access to cold water spring sources within the project area (temperatures within the project area are currently being monitored and will be monitored post-implementation).
- Create self-sustaining in-channel hydraulics that support varied bed forms including deep pools and a range of particle sizes with smaller median particle size favorable to salmonid spawning (pre-project data will be collected prior to implementation and sediment transport models will be evaluated).
- Support diverse geomorphic processes, features, and patterns of sediment movement, sorting and deposition within the active channel(s).
- Increase the quantity of suitable habitat for juvenile Chinook winter rearing, based on the depth and velocity HSI curves per Favrot and Jonasson, 2014 (pre-project data will be collected prior to implementation).
- Increase the quantity of suitable habitat for juvenile Chinook emigration.
- Increase the quantity of suitable habitat for juvenile Chinook summer rearing.
- Increase the quantity of suitable habitat for adult salmonid use including spawning and holding.

Project History

Continuation - Are you requesting funds to continue work on a project previously funded by OWEB where that work did not result in a completed project?

- Yes
 No

Resubmit - Have you submitted, but were not awarded an OWEB application for this project before?

- Yes
 No

Phased - Is proposed work in this application a phase of a comprehensive watershed restoration plan or project?

- Yes
 No

Plans and Salmon

Is the proposed restoration activity(ies) identified in a local assessment or other plan?

- Yes
 No

Provide name of local plan, Watershed assessment or other locally relevant document.

Bureau of Reclamation (Reclamation). 2014. Upper Grande Ronde River Tributary Assessment, Grande Ronde River Basin, Tributary Habitat Program, Oregon: Department of Interior, Bureau of Reclamation, Pacific Northwest Region, Boise, Idaho, 74 p.

ODFW, CTUIR, NPT, Washington Department of Fisheries, and Washington Department of Wildlife. 1990. Grande Ronde River Subbasin Salmon and Steelhead Production Plan. Columbia Basin System Planning. Northwest Power Planning Council. Columbia Basin Fish and Wildlife Authority.

Federal Columbia River Power System (FCRPS Biological Opinion (BiOp) (U.S. Bureau of Reclamation, Bonneville Power Association, US Army Corps of Engineers, 2004).

Northeast Oregon Snake River Recovery Plan (National Marine Fisheries Service, 2010); see p. 261 Re: increased sediment quantity; p. 258, riparian condition; p. 262, LWD recruitment and temperature; p. 260. side channel & wetland conditions, floodplain connection, anthropological barriers, in-stream structural complexity; p. 263. decreased water quantity.

NMFS [National Marine Fisheries Service]. 2014. Endangered Species Act Section 7(a) (2) Supplemental Biological Opinion. Consultation on Remand for Operation of the Federal Columbia River Power System. National Oceanic and Atmospheric Administration. NWR-2013-9562. Re: basin appropriate passage and limiting factors.

NMFS [National Marine Fisheries Service]. 2013. Draft Proposed ESA Recovery Plan for Snake River Spring/Summer Chinook salmon and Snake River Steelhead. National Marine Fisheries Service, Northwest Region. National Oceanic and Atmospheric Administration. Predecisional document, Accessed March 28, 2014. Re: limiting factors by species.

Will this project benefit salmon or steelhead?

- Yes
 No

- ✓ Snake River Basin - Steelhead
✓ Snake River Spring/Summer-run - Chinook Salmon

How will the resulting restoration project benefit salmon or steelhead or their habitat?

Summer and winter rearing habitat will increase in the main channel and side channels through (1) addition of large wood to provide cover and create pools, (2) creation of natural pool-riffle sequences and enhanced riparian vegetation to increase foraging opportunities for juvenile salmonids, (3) creation of additional side channel habitat by using historic side channel relic features within the reach that are currently disconnected, (4) creation of multiple locations of increased hyporheic exchange through increases in floodplain connectivity and the water table, construction of bar features, and alcove features providing thermal refugia with cooler temperatures in summer and warmer in the winter. As a whole, the design will increase the occurrence of low velocity refugia, increase the availability of open water habitat during the winter, and moderate winter temperatures to reduce anchor ice formation.

Juvenile emigration habitat will increase by adding the number and area of pools, creating additional side channels, alcoves, and off-channel habitat, and creating slow-water edge and cover habitat through the addition of large wood

structures. Habitat for immigrating and holding adults will improve by decreasing summer temperatures and enhancing the availability of thermal refugia, creating new pool habitat, enhancing main channel passage during low-flow conditions by restoring natural width to depth ratios, and increasing complexity through the addition of large wood. Spawning habitat will increase by decreasing temperatures, augmenting spawning gravel, and creating thermal refugia for adults (reducing pre-spawn mortality). Conditions for spawning, incubation, and emergence will improve by natural gravel sorting through large wood placement.

Does the project address a restoration action identified in a regional assessment or recovery plan?

Yes

No

Regional Assessments or Recovery Plans
Northwest Power and Conservation Council Grande Ronde Subbasin Plan
Oregon's Native Fish Conservation Policy
Oregon Conservation Strategy
The Oregon Plan for Salmon and Watersheds

For each plan chosen above, describe how your project is consistent with specific recovery/restoration actions cited in that plan.

The NPPC Grande Ronde Subbasin Plan identifies restoration priorities for threatened salmonid species (table 46, page 193). The Project will address habitat limiting factors (sediment, riparian conditions, water quality) and will improve floodplain processes and function, reduce sediment delivery, increase channel complexity, and improve riparian conditions.

The intent of the Native Fish Conservation Policy is to provide a basis for managing hatcheries, fisheries, habitat, predators, competitors, and pathogens in balance with sustainable production of naturally produced native fish. The policy has three areas of emphasis. The first is defensive to ensure the avoidance of serious depletion of native fish. The second is more proactive to restore and maintain native fish at levels providing ecological and societal benefits. The third ensures that, consistent with native fish conservation, opportunities for fisheries and other societal resource uses are not unnecessarily constrained. The Project goals and objectives are to support all three areas of emphasis and to ensure the conservation and recovery of native fish.

The goals of the Conservation Strategy are to maintain healthy fish and wildlife populations by maintaining and restoring functioning habitats, preventing declines of at-risk species, and reversing declines in these resources where possible. The goals and objectives of the Project are to improve and restore functioning habitats for ESA-listed salmonid species.

The mission of the Oregon Plan for Salmon and Watersheds is "Restoring our native fish populations and the aquatic systems that support them to productive and sustainable levels that will provide substantial environmental, cultural, and economic benefits." The Project, using the CTUIR's River Vision as a guideline, will benefit native fish populations and aquatic systems by improving channel, floodplain, and riparian processes and function.

Habitat Types

In which habitat type(s) are you proposing to work?

- ✓ *Instream Habitat: below the ordinary high water mark (includes in-channel habitat restoration, bank stabilization, flow, fish screening, and fish passage) -- Details will follow.*
- ✓ *Riparian Habitat: above the ordinary high-water mark of the stream and within the stream's floodplain. -- Details will follow.*
- Upland Habitat: above the floodplain and improves native habitat and watershed function.*
- ✓ *Wetland Habitat: land or areas covered, often intermittently, with shallow water or have soil saturated with moisture. -- Details will follow.*
- Estuarine Habitat: tidally influenced areas.*

Instream Habitat

Select all applicable Instream categories.

- Bank stabilization**
- Fish passage improvement**
- Fish screening project**
- Instream Flow**

✓ Instream habitat restoration

Select all the actions you propose to implement to address the problem.

- ✓ *Placement of materials in channel*

Does the proposed project follow:

- ✓ *ODFW Guidelines*
- ✓ *NOAA Guidelines*
- ✓ *Other*

Specify

BPA HIP III Guidelines

What types of instream habitat materials are you proposing to install? (select all that apply)

- ✓ *Large wood*

Number of structures.

54

Average number of logs per structure.

6

Average length of logs per structure (feet)

35

Average diameter of logs per structure (feet)

1.5

Provide additional information on the log structures, as relevant.

To address the lack of channel diversity, large wood will be placed by helicopter and by tracked or rubber tire-mounted excavators throughout the project reach to mimic natural historic conditions. Large wood features will be designed to force pools and maintain the multi-channel planform. Engineered Log Jam Structures (ELJS) will be constructed using the US Bureau of Reclamation's Pacific Northwest Region Resource & Technical Services Large Woody Material Risk Based Design Guidelines, 2014. Structures are designed to be passable to

fish, and are consistent with the adult and juvenile fish passage criteria provided in NOAA's Anadromous Salmonid Passage Facility Guidelines (2004) and consistent with the Aquatic Resources Biological Opinion for restoration actions on federal lands in Oregon and Washington.

Type I and II structures (new channel spanning structures and channel spanning structures built on existing, previously installed structures) are designed to promote and maintain bed scour to increase pool volume and pool tailouts; providing adult holding and spawning, and juvenile rearing habitat. Type I and II structures are designed to redistribute the energy of flow from the stream banks to the stream bed. The structures are designed to take advantage of upstream increases in the velocity head component of the energy gradeline, create positive upstream backwater and create convective accelerations that scour the stream channel bed thereby maintaining the constructed lateral pool feature. These pool features provide important low flow residual volume for adult holding habitat. When coupled with overhanging cover and the near bank complexity of the LWD elements, the resultant habitat unit provides significant site scale complexity for juvenile rearing. In addition to scour and pool maintenance, microhabitats are formed in pool tail-outs and substrate partitioning that enhances the distribution of available spawning areas. The Type I and II structures support the transition of the existing plane bed stream to a channel that exhibits increased bathymetric variation. The resulting vertical complexity of the stream bed supports an increased level of substrate partitioning, and variation in boundary layer hydraulics including upwelling and recirculation eddies.

Type III structures (sweepers) are designed to increase bank roughness, increase habitat diversity, hydraulic complexity, and velocity refugia on the margins of the active channel; providing cover and juvenile rearing habitat. These wood placements result in roughness elements that promote the accumulation and deposition of sediments and recruitment of organic debris. As these depositional surfaces form, natural processes (geomorphic disturbance, overflow events) will create a diverse surface which will have the appropriate elevation and substrate composition to promote the capture and germination of native riparian seeds and support the establishment of willows, alders and other riparian woody species.

The structures are designed to support and encourage lateral floodplain development on existing cobble bar surfaces. The Type III structures are intended to work with existing fluvial processes and provide longitudinal roughness that alters the wood and gravel transport budget. The introduction of in channel friction through the use of the Type III structures will reduce flood velocities and shear stresses. In channel roughness also provides low velocity margin habitat for juvenile salmonids through the complex interaction of the wood matrix from low flow discharges to bankfull discharge. Above bankfull discharge when the structures are overtopped, velocity refugia will continue to be provided though the subcritical flow environment extending between the structure and the bankline. Fish will likely also take advantage of the complex matrix of wood debris and interstitial space provided by the structure.

Type IV (Apex Jams) structures are designed to partition flow to increase habitat diversity and complexity, and promote the development of side channel habitat via the creation of a vegetated islands; providing adult holding and spawning, and juvenile rearing habitat Type IV structures are constructed within the confines of the active channel (within bankfull top width). The structures create local changes in the riverbed including scour pool creation in front of and along side of the structure and sediment deposition in the lee of the structure. The proposed Type IV placements will promote secondary flow paths and enhance the frequency and magnitude of flow moving through the secondary channels. Partitioning of the flow also diversifies habitat conditions available within the project reach and will increase the local juvenile carrying capacity of the river. Pools created and maintained by the large wood structures alter riverbed conditions and affect reach scale channel patterns. The proposed structures will create complex bedforms that result in a pool riffle channel unit sequence through the treatment reach. The structures diversify the habitat units by creating holding habitat in close proximity to available spawning areas.

The Type IV structures will create areas within the active channel that are protected from erosion. The hydraulic shadow in the lee of the structures will promote the establishment and development of riparian vegetation along constructed and depositional surfaces. The development of these riparian areas will promote the long-term

development of forested islands within the active channel. This doubles the channel margin habitat per linear length of river channel that is used year round by juveniles. Mature forested islands are seen as a positive step in improving ecological conditions in the project reach. As vegetation on the Type IV structures matures it will create localized shading of scour zones adjacent to the large wood structure and promote thermal stratification of these pools. Allochthonous organic inputs developed from established riparian vegetation will enhance aquatic invertebrate habitat and production

Type IV structures affect the hydraulics of the channel by modifying the available conveyance area of the channel cross section. Resultant hydraulic effects include increased depths (potential energy) along the head of the structure and contraction accelerated velocities along the sides. The structures placement within the channel creates a velocity and shear concentration zone further out in the channel. The structures will create pool habitat, enhance hydraulic complexity and offer bank cover with the volume of interstitial spaces within the structure.

- Boulders*
- Combination log/boulder*
- Other materials: Materials that stabilize the streambed*

✓ *Channel reconfiguration and connectivity, including alcoves and side channel reconnection*

What type(s) of change are you proposing to the channel configuration and connectivity?

Engineered Log Jams (ELJs) are intended to restore habitat complexity and diversity by creating and enhancing scour pools, by maintaining and improving side channel and floodplain connection, by increasing hydraulic complexity, and velocity refugia on active channel margins, by promoting gravel deposition, and by recruiting naturally occurring large wood. Four types of ELJs will be constructed to meet specific physical and biological objectives.

Type IV (Apex Jams) structures are designed to partition flow to increase habitat diversity and complexity, and promote the development of side channel habitat via the creation of a vegetated islands; providing adult holding and spawning, and juvenile rearing habitat. The proposed Type IV placements will promote secondary flow paths and enhance the frequency and magnitude of flow moving through the secondary channels. Partitioning of the flow also diversifies habitat conditions available within the project reach and will increase the local juvenile carrying capacity of the river. Side channels and pools created and maintained by the large wood structures alter riverbed conditions and affect reach scale channel patterns. The proposed structures will create complex bedforms that result in a pool riffle channel unit sequence with enhanced floodplain connection through the treatment reach.

Acres off-channel or floodplain habitat connected

Number of pools created/added

- Spawning gravel placement*
- Beaver reintroduction*
- Non-native plant control*
- Nutrient enrichment*
- Animal species removal*

Is the primary purpose of the instream habitat restoration treatment(s) to address water quality limiting factors?

- Yes
 No

✓ High Temperature

Total miles of stream to be treated with all instream habitat restoration treatments
2

Stockpiling logs

Riparian Habitat

Select all applicable Riparian categories.

- Riparian road activities
 Fencing and other materials for habitat protection

✓ Vegetation establishment or management

Select all the actions you propose to implement to address the problem.

✓ Planting

For Details Go to Plant Page

- Non-native plant control
 Prescribed burnings, stand thinning, stand conversions, silviculture
 Juniper treatment

- Livestock management
 Debris and Structure Removal

Is an objective of the riparian treatment(s) to address water quality limiting factors?

- Yes
 No

- ✓ Sediment
✓ High Temperature
✓ Dissolved Oxygen

Total riparian acres to be treated:
29

Total riparian streambank miles to be treated
2

Are you proposing to treat one or both sides of streambank?

- One side
 Both sides

Left side of bank (miles)

2

Right side of bank (miles)
2

Stream miles
2

Wetland Habitat

Are you working in artificial or historic wetland habitat? (select one or both)

- Artificial wetland
- Historic wetland

Select all applicable Wetland categories.

- Wetland road activities
- Channel modification including creation
- Vegetation establishment or management
- Fencing and other materials for habitat protection
- Structure removal/modification/installation

Select all the actions you propose to implement to address the problem.

- Dike, Levee, or berm modification including removal
- Tidegate modification/removal
- Wetland culvert modification/removal
- Installation of structures to control water level/elevation
- Tile removal
- Large wood

Number of structures
54

Average logs per structure
6

Average length of logs per structure (feet)
35

Average diameter of logs per structure (feet)
1.5

Provide additional information on the log structures, as relevant.

To address the lack of channel diversity, large wood will be placed by helicopter and by tracked or rubber tire-mounted excavators throughout the project reach to mimic natural historic conditions. Large wood features will be designed to force pools and maintain the multi-channel planform. Engineered Log Jam Structures (ELJS) will be constructed using the US Bureau of Reclamation's Pacific Northwest Region Resource & Technical Services Large Woody Material Risk Based Design Guidelines, 2014. Structures are designed to be passable to fish, and are consistent with the adult and juvenile fish passage criteria provided in NOAA's Anadromous Salmonid Passage Facility Guidelines (2004) and consistent with the Aquatic Resources Biological Opinion for restoration actions on federal lands in Oregon and Washington.

Type I and II structures (new channel spanning structures and channel spanning structures built on existing,

previously installed structures) are designed to promote and maintain bed scour to increase pool volume and pool tailouts; providing adult holding and spawning, and juvenile rearing habitat. Type I and II structures are designed to redistribute the energy of flow from the stream banks to the stream bed. The structures are designed to take advantage of upstream increases in the velocity head component of the energy gradeline, create positive upstream backwater and create convective accelerations that scour the stream channel bed thereby maintaining the constructed lateral pool feature. These pool features provide important low flow residual volume for adult holding habitat. When coupled with overhanging cover and the near bank complexity of the LWD elements, the resultant habitat unit provides significant site scale complexity for juvenile rearing. In addition to scour and pool maintenance, microhabitats are formed in pool tail-outs and substrate partitioning that enhances the distribution of available spawning areas. The Type I and II structures support the transition of the existing plane bed stream to a channel that exhibits increased bathymetric variation. The resulting vertical complexity of the stream bed supports an increased level of substrate partitioning, and variation in boundary layer hydraulics including upwelling and recirculation eddies.

Type III structures (sweepers) are designed to increase bank roughness, increase habitat diversity, hydraulic complexity, and velocity refugia on the margins of the active channel; providing cover and juvenile rearing habitat. These wood placements result in roughness elements that promote the accumulation and deposition of sediments and recruitment of organic debris. As these depositional surfaces form, natural processes (geomorphic disturbance, overflow events) will create a diverse surface which will have the appropriate elevation and substrate composition to promote the capture and germination of native riparian seeds and support the establishment of willows, alders and other riparian woody species.

The structures are designed to support and encourage lateral floodplain development on existing cobble bar surfaces. The Type III structures are intended to work with existing fluvial processes and provide longitudinal roughness that alters the wood and gravel transport budget. The introduction of in channel friction through the use of the Type III structures will reduce flood velocities and shear stresses. In channel roughness also provides low velocity margin habitat for juvenile salmonids through the complex interaction of the wood matrix from low flow discharges to bankfull discharge. Above bankfull discharge when the structures are overtopped, velocity refugia will continue to be provided though the subcritical flow environment extending between the structure and the bankline. Fish will likely also take advantage of the complex matrix of wood debris and interstitial space provided by the structure.

Type IV (Apex Jams) structures are designed to partition flow to increase habitat diversity and complexity, and promote the development of side channel habitat via the creation of a vegetated islands; providing adult holding and spawning, and juvenile rearing habitat Type IV structures are constructed within the confines of the active channel (within bankfull top width). The structures create local changes in the riverbed including scour pool creation in front of and along side of the structure and sediment deposition in the lee of the structure. The proposed Type IV placements will promote secondary flow paths and enhance the frequency and magnitude of flow moving through the secondary channels. Partitioning of the flow also diversifies habitat conditions available within the project reach and will increase the local juvenile carrying capacity of the river. Pools created and maintained by the large wood structures alter riverbed conditions and affect reach scale channel patterns. The proposed structures will create complex bedforms that result in a pool riffle channel unit sequence through the treatment reach. The structures diversify the habitat units by creating holding habitat in close proximity to available spawning areas.

The Type IV structures will create areas within the active channel that are protected from erosion. The hydraulic shadow in the lee of the structures will promote the establishment and development of riparian vegetation along constructed and depositional surfaces. The development of these riparian areas will promote the long-term development of forested islands within the active channel. This doubles the channel margin habitat per linear length of river channel that is used year round by juveniles. Mature forested islands are seen as a positive step in improving ecological conditions in the project reach. As vegetation on the Type IV structures matures it will create localized shading of scour zones adjacent to the large wood structure and promote thermal stratification of these pools. Allochthonous organic inputs developed from established riparian vegetation will enhance aquatic

invertebrate habitat and production

Type IV structures affect the hydraulics of the channel by modifying the available conveyance area of the channel cross section. Resultant hydraulic effects include increased depths (potential energy) along the head of the structure and contraction accelerated velocities along the sides. The structures placement within the channel creates a velocity and shear concentration zone further out in the channel. The structures will create pool habitat, enhance hydraulic complexity and offer bank cover with the volume of interstitial spaces within the structure.

Nonstructural removal and placement protection

Total wetland acres to be treated:

29

Wrap-Up

Outcomes

Explain how the proposed restoration activities address the watershed problem described in the Problem Statement and Goals and Objectives.

Engineered Large Wood Structures (ELWS) are intended to restore habitat complexity and diversity by creating and enhancing scour pools, by maintaining and improving side channel and floodplain connection, by increasing hydraulic complexity, and velocity refugia on active channel margins, by promoting gravel deposition, and by recruiting naturally occurring large wood.

Benefits to salmonids will be achieved through restoration and rehabilitation of the whole floodplain system. Targeting of present and specific limiting factors such as temperature will achieve immediate benefits to salmon. Long term benefits will be realized through a focus on restoring fluvial and habitat-forming processes, floodplain, groundwater, and hyporheic connectivity, riparian and wetland plant communities, and instream complexity and diversity commensurate with the reach's natural potential. These habitat-forming processes are driven by the natural episodic disturbance regime that historically occurred prior to direct and in-direct human modifications. Intermittent disturbances, such as floods, sediment delivery, wood accumulations, beaver activity, and associated channel dynamics foster and maintain a spatial mosaic and diverse range of aquatic and terrestrial habitats within a healthy riverine corridor.

Describe the steps you will take to minimize adverse impacts to the site and adjacent lands during and after project implementation .

To minimize soil disturbance, compaction, and damage to riparian vegetation, large wood will be transported and installed using helicopters. Adverse impacts to the site and adjacent land during and after project implementation will be minimized by following the mandatory conservation measures included in HIP III including:

- 1) Erosion control
- 2) Emergency erosion controls
- 3) Contaminants
- 4) Site layout and flagging.
- 5) Temporary access roads and paths.
- 6) Temporary stream crossings
- 7) Staging, storage, and stockpile areas
- 8) Equipment
- 9) Dust abatement
- 10) Spill prevention, control, and countermeasures
- 11) Invasive species control
- 11) Fish salvage
- 12) Site restoration
- 13) Revegetation

Does this proposed project include outreach activities?

- Yes
 No

Describe these activities, as well as any related products, and explain how the proposed activities relate to the project's objectives.

Project partners (US Forest Service and CTUIR) will share information with the public, potential funders, local

elected officials, and others to build their knowledge base, gain overall participation, and encourage the sharing of innovative ideas. Post-project tours will be conducted with members of the public, funding agencies, stakeholders, and school groups to inform interested parties of the benefits to the overall health of the watershed.

Design

Were design alternatives considered?

- Yes
 No

Select the appropriate level of design for your project.

- No design is required.
 10-30%: Conceptual design (evaluation of alternatives, concept-level plans, design criteria for project elements, rough cost estimates).
 30-85%: Preliminary design (selection of the preferred alternative, draft plans, draft design report, preliminary cost estimates).
 85-100%: Final design (final design report, plans, and specifications, contracting and bidding documents, monitoring plan, final cost estimate).

If work remains on the project's design, describe the work that remains to be done and when you expect to have it completed. If no design is required put "N/A"

Hydraulic modeling and large wood structure design are currently in progress and are expected to be mostly complete (85%) by February, 2018. Environmental compliance (section 106, U.S. Forest Service Environmental Assessment, HIP III, DSL/Army Corps permitting) are expected to be complete by spring, 2018. Construction documents, contract solicitation, and contract award are expected to be complete by June, 2018.

Project Management

List the key individuals, their roles, and qualifications relevant to project and post project implementation. At a minimum include the following: project management, project design, project implementation, and project inspection.

Role	Name	Affiliation	Qualifications	Email	Phone
Project Sponsor	Allen Childs	Confederated Tribes of the Umatilla Indian Reservation	Project management, design, implementation, and inspection experience	allenchilds@ctuir.org	(541) 429-7940
Project Sponsor	Jake Kimbro	Confederated Tribes of the Umatilla Indian Reservation	Project management, design, implementation, and inspection experience	jakekimbro@ctuir.org	(541) 429-7941
Fish & Wildlife Program Engineer (RRT)	Sean Welch, P.E.	Bonneville Power Administration	Project management, design, implementation, and inspection experience	spwelch@bpa.gov	(503) 230-7691
Project Partner	Bill Gamble	U.S. Forest Service	Natural resource management experience	bgamble@fs.fed.us	(541) 962-8582
Project Partner	Aric Johnson	U.S. Forest Service	Natural resource management experience	ajjohnson@fs.fed.us	(541) 962-8517
Project Sponsor	Ian Wilson	Confederated Tribes of the Umatilla Indian Reservation	Project management, design, implementation, and inspection experience	ianwilson@ctuir.org	(541) 429-7944
Project Partner	Sarah Brandy	U.S. Forest Service	Natural resource management experience	sbrandy@fs.fed.us	(541) 962-8590

List the major project elements and time schedule for each, including post project implementation.

Element	Start Date	End Date
Large wood harvest	3/2018	6/2018
Mobilization, access roads, staging	6/2018	7/2018
Sec. 106 permitting	3/2015	10/2017
NEPA Environmental Assessment	3/2016	10/2017
Construct LWD in existing channel	6/2018	10/2018
Clean-up and demobilize	8/2018	8/2018
Planting	9/2018	12/2018
HIP III Permit	9/2017	4/2018
Construction Contract Solicitation	5/2018	5/2018

Element	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
Large wood harvest																
Mobilization, access roads, staging																
Sec. 106 permitting																
NEPA Environmental Assessment																
Construct LWD in existing channel																
Clean-up and demobilize																
Planting																
HIP III Permit																
Construction Contract Solicitation																

Optional Monitoring

OPTIONAL: Restoration Project Monitoring

- ✓ *Salmonid Monitoring*
- ✓ *Non-salmonid biological monitoring*
- ✓ *Water (quantity) flow monitoring*
- ✓ *Water quality monitoring*
- Rangeland monitoring*
- ✓ *Onsite*
- ✓ *Downstream*
- ✓ *Upstream*
- Upslope*
- ✓ *Effectiveness monitoring will be conducted for this project*

Budget

Item	Unit Type	Unit Number	Unit Cost	OWEB Funds	External Cash	External In-Kind	Total Costs
Salaries, Wages and Benefits							
			\$0	\$0	\$0	\$0	\$0
Category Sub-total				\$0	\$0	\$0	\$0
Contracted Services							
			\$0	\$0	\$0	\$0	\$0
Category Sub-total				\$0	\$0	\$0	\$0
Travel							
			\$0	\$0	\$0	\$0	\$0
Category Sub-total				\$0	\$0	\$0	\$0
Materials and Supplies							
			\$0	\$0	\$0	\$0	\$0
Category Sub-total				\$0	\$0	\$0	\$0
Equipment and Software							
			\$0	\$0	\$0	\$0	\$0
Category Sub-total				\$0	\$0	\$0	\$0
Other							
			\$0	\$0	\$0	\$0	\$0
Category Sub-total				\$0	\$0	\$0	\$0
Modified Total Direct Cost Amounts				\$0	\$0	\$0	\$0
Indirect Costs							
Federally Accepted 'de minimus' Indirect Cost Rate (up to 10%)	1.9996%					Indirect Cost Total: \$0	
Total				\$0	\$0	\$0	\$0

If the budget includes unusually high costs and/or rates, provide justification for those costs and/or rates.

If the budget identifies a contingency amount for specific line item(s) within the Contracted Services and Materials and Supplies budget categories, explain the specific reasons a contingency is needed for each line item. Contingencies are line-item specific and cannot be used for other costs.

Funding and Match

No Fund Sources have been identified for this application.

Do match funding sources have any restrictions on how funds are used, timelines or other limitations that would impact the portion of the project proposed for OWEB funding?

Yes

No

Do you need state OWEB dollars (not Federal) to match the requirements of any other federal funding you will be using to complete this project?

Yes

No

Does the non-OWEB funding include NOAA/PCSRF funds?

Yes

No

Uploads

Project Design: [MUGR Final Proposal Small 11062017.pdf - Design Drawings](#)

Project Design: [MUGRR Budget 11062017.pdf - MUGRR Budget](#)

Project Design: [UGRRCanyonRestorationProjectGRMWProspectus.pdf - Funding Proposal](#)

Map: [MUGRR Wetland Map.pdf - MUGRR Wetland Map](#)

Map: [MUGRR Phase I Overview Map.pdf - MUGRR Overview Map](#)

Map: [MUGRR Helicopter Wood Access Map.pdf - Helicopter wood access map](#)

Plant Page

Planting Questions

Relationship to other conservation programs

This project will use OWEB funds to increase the planting density on CREP acres.

Planting Activities

Describe the current condition of the site(s) to be planted.

The existing riparian corridor has been greatly altered from natural historic conditions. The corridor has been disrupted, segmented and manipulated. What was once likely a complex riparian corridor dominated by beaver complexes is now a simplified riparian community with scattered shrubs and trees. Anthropogenic effects including livestock grazing, beaver extirpation, and the construction the road prizm have led to the current state of degradation and over simplification of the riparian corridor. Root density and associated bank strength, species densities and composition, and riparian cover have been greatly impacted.

Describe how you will prepare the site(s) prior to planting and how those activities are appropriate considering the site conditions described in the previous question.

Proposed revegetation efforts will initially be focused on stabilizing disturbed sites and access roads, and eventually developing a robust and diverse riparian environment enveloping the entire restoration reach. The revegetation plan will be implemented over multiple years and subsequent phases. The establishment of healthy, self-sustaining native vegetative communities throughout the project site is important for re-establishing beaver colonies, and ultimately improving floodplain, channel, and riparian conditions. Revegetation immediately after grading provides key initial site stabilization and energy dissipation as the plants begin to provide food web support. Such communities promote short-term and long-term bank stabilization; shade for cooler water; protective cover for fish; habitat for terrestrial and aquatic wildlife (birds, mammals, amphibians and macroinvertebrates); and woody debris recruitment in the future. A robust riparian plant community also provides greater protective cover, food sources, habitat complexity and diversity, and migration continuity for the larger ecosystem.

The species of plants planned of the project area vary in relation to the stream bankfull elevation, with more hydrophytic plants closer to the stream and more drought-tolerant species at higher elevations. The proposed vegetation consists of plant species native to the area that are typically found at similar sites within the region. Where possible and appropriate based on plant condition, clumps of existing shrubs and small whole trees may be salvaged and transplanted during construction. Willows that cannot be salvaged as whole plants can provide whips to be used as live stakes. Revegetation activities will occur immediately following earth moving activities at disturbed sites. Seeding with native seed along access roads and disturbed sites will also be completed following construction to facilitate vegetative recovery.

Fill out the table below. Identify the vegetation communities you plan on planting in, the acres each vegetation community encompasses, and the density of your planting.

Vegetation Community	Acres	Density
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Freshwater Forested/Shrub Wetland	29	200
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Fill out the table below for each vegetation community listed in the table above, provide the common and scientific names of up to five plants that will be planted, the form(tree, shrub, grass), type of plant (bare root, cutting, etc) and the planting timing.

Vegetation Community	Plants: Common Name	Plants: Scientific Name	Form	Type	Year	Month
Freshwater Forested/Shrub Wetland	Willow spp.	Salix	Tree	Cutting	2018	October

Plant Stewardship

After the plantings are installed, will you conduct plant stewardship (“free to grow”)?

- Yes
- No

Are you requesting OWEB funds for plant stewardship activities?

- Yes
- No

Explain how you plan to carry out activities to help the plantings survive and grow over time.

Plantskydd will be applied to susceptible plants every 3 months until plants grow above browse heights, and elk fence enclosures will be built around concentrated planting units.

Measures of Planting Success

Use the table below to explain how you will document and determine success for the plantings.

Vegetation Community	Parameter	Percentages
Freshwater Forested/Shrub Wetland	Percent Survival	80

If, in the course of the 3-5 years following planting, the success rate falls below your standard, what is your plan?

Planting areas falling below the 80% survival threshold will be replanted. If planting areas are determined to be falling below the threshold due to deer and elk herbivory, ungulate enclosures will be constructed around damaged units. Plantskydd application timing will also be increased to prevent further damage. If units fall below the threshold due to a lack of moisture, the units will be replanted and watered throughout the growing season.

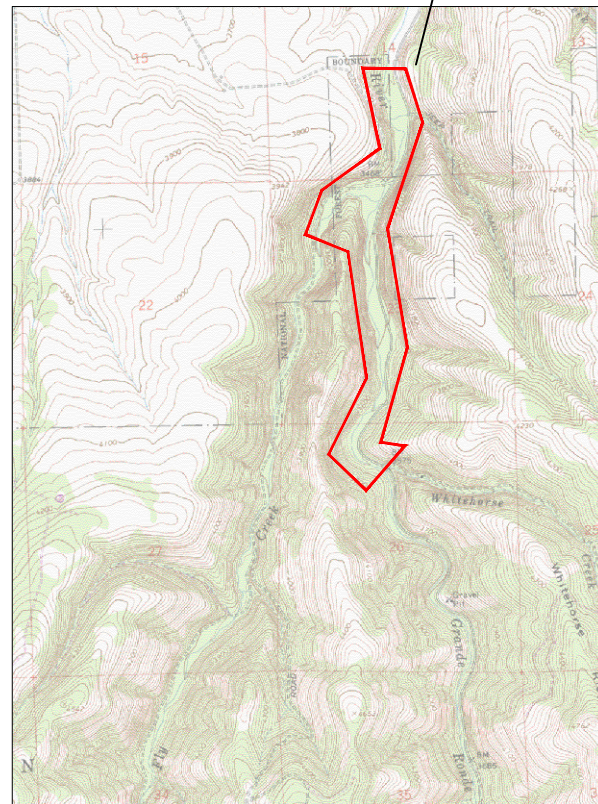
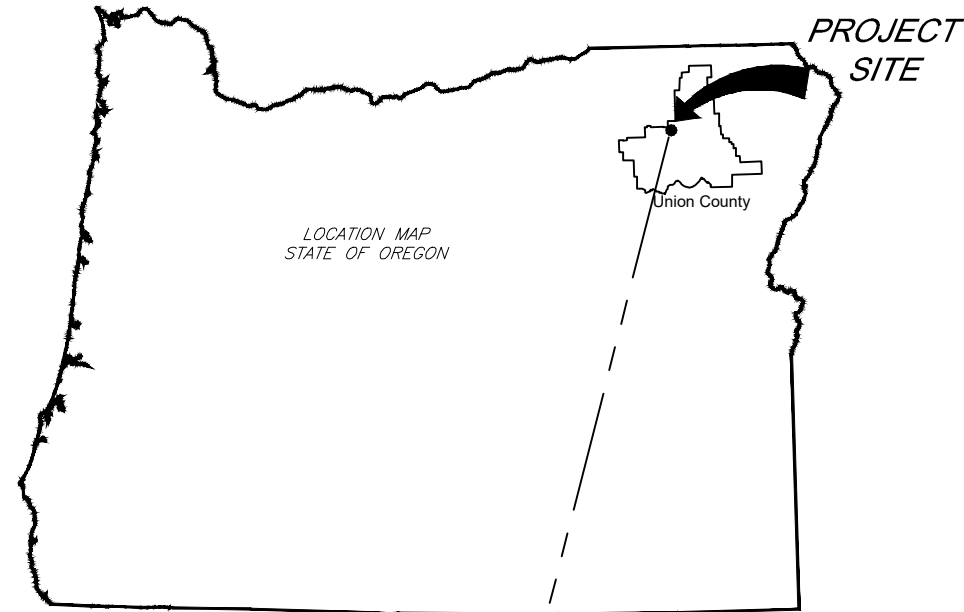
Permit Page

Project Activity Requiring a Permit or License	Name of Permit or License	Entity Issuing Permit or License	Status
Fill/Removal	DSL/Army Corps Joint Permit Application (JPA)	Oregon Department of State Lands/ U.S. Army Corps	In Progress
River, Stream, Floodplain, and Wetland restoration	HIP III	NOAA/USFWS	In Progress
Restoration activities on Forest Service land	NEPA Environmental Assessment	U.S. Forest Service	In Progress
Ground disturbing activities	Section 106 SHPO Concurrence	Oregon State Historical Preservation Office (SHPO)	In Progress

GRANDE RONDE SUBBASIN FISH HABITAT ENHANCEMENT

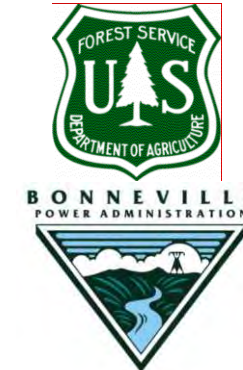
MIDDLE UPPER GRANDE RONDE RIVER STREAM & FLOODPLAIN RESTORATION PROJECT

Construction Drawings



PROJECT LOCATION MAP

Township 4 South, Range 35 $\frac{1}{2}$ East
SECTIONS: 14, 23, 26, & 35
Township 5 South, Range 35 $\frac{1}{2}$ East
Sections 1, 2, & 13
Township 5 South, Rang 36 East
Section 18
0450935 N, 1182247 W
USGS Quadrangle: Little Beaver Creek, OR 45118-83
Project Area Elevation
3,431 to 4022 Feet Above Mean Sea Level
UNION COUNTY, OREGON



PROJECT DESCRIPTION

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Grande Ronde Basin Fish Habitat Program and U.S. Forest Service, Wallowa-Whitman National Forest, LaGrande Ranger District seek to enhance and restore fish habitat and floodplain process and function to benefit fishery resources along an 8 mile reach in the Middle Upper Grande Ronde River in the Upper Grande Ronde River Basin. Targeted fish populations include ESA listed Snake River spring-summer Chinook salmon and summer steelhead. Additional species of interest include bull trout, Pacific lamprey, freshwater mussels, and resident native fish. The project area is a Tier 1, high priority reach (UGR15) that provides critical spawning and rearing habitat for targeted fish populations. Proposed actions include helicopter installation of large wood structures including channel spanning log jams, sweeper log structures apex log jams, and floodplain/side channel and margin cover habitat and roughness. Targeted life requisites for adult spawning and juvenile summer and winter rearing include: habitat complexity and diversity, pools, decreased width:depth ratio, sediment sorting, storage and decreased streambed embeddedment and sub-pavement, increased cold water refuge and hyporheic exchange.

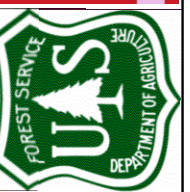
The project will be constructed in 3 phases with Phase 1 scheduled for construction in during summer 2018. Phases 2 and 3 will be scheduled in future years pending funding and large wood material availability. In-water work would be completed during the ODFW In-Water Work Window, July 1 - July 31. The Project was designed in accordance with BPA Habitat Improvement Program, Programmatic Biological Opinion (HIP III).

INDEX OF DRAWING SHEETS

1. COVER, LOCATION, & SHEET INDEX
2. PROJECT OVERVIEW
3. GENERAL NOTES
4. PROJECT QUANTITIES
5. HIP III CONSERVATION MEASURES (1)
6. HIP III CONSERVATION MEASURES (2)
7. PROPOSED CONDITIONS Station 0+00 to 30+00
8. PROPOSED CONDITIONS Station 30+00 to 58+00
9. PROPOSED CONDITIONS Station 58+00 to 93+00
10. PROPOSED CONDITIONS Station 93+00 to 102+00
11. TYPICAL TYPE I ELJ
12. TYPICAL TYPE II ELJ
13. TYPICAL TYPE III ELJ
14. TYPICAL TYPE IV ELJ

Date	Oct 2017
Designed	A. Childs S. Welch
Drawn	A. Childs
Checked	
Approved	
Title	








MIDDLE UPPER GRANDE RONDE
 Fish Habitat & Floodplain Restoration
 Union County, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Wallowa Whitman National Forest

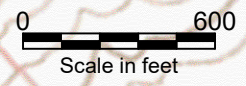


COVER

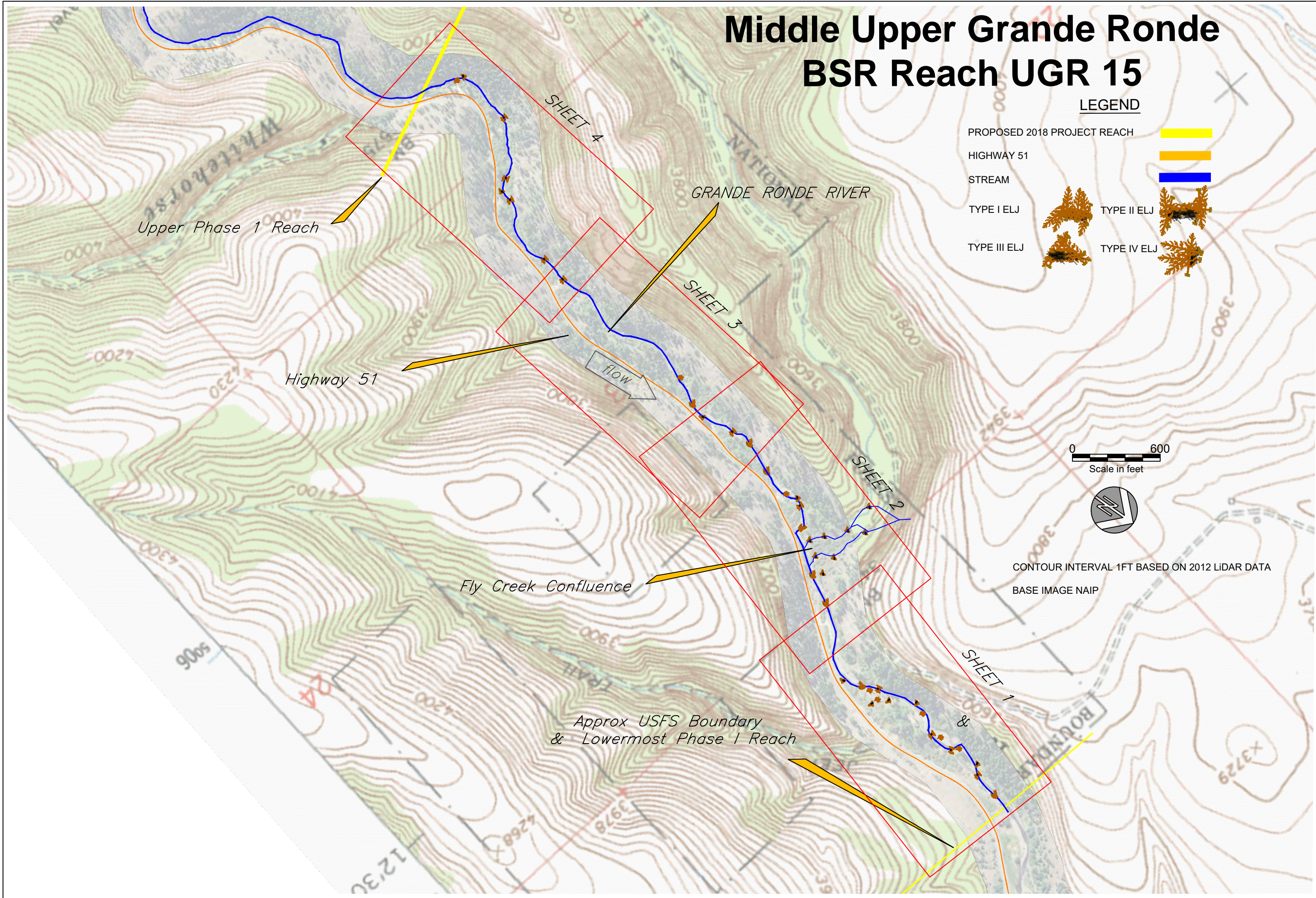
Middle Upper Grande Ronde BSR Reach UGR 15

LEGEND

- PROPOSED 2018 PROJECT REACH 
- HIGHWAY 51 
- STREAM 
- TYPE I ELJ 
- TYPE II ELJ 
- TYPE III ELJ 
- TYPE IV ELJ 



CONTOUR INTERVAL 1FT BASED ON 2012 LIDAR DATA
BASE IMAGE NAIP



Date	Designed	Drawn	Checked	Approved	Title
Oct 2017	A. Childs S. Welch	A. Childs			
Oct 2017					

MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
Union COUNTY, OREGON
Confederated Tribes of the Umatilla Indian Reservation &
Wallowa Whitman National Forest



OVERVIEW

GENERAL CONTRACTOR REQUIREMENTS

Contractor shall attend a Mandatory Pre-Bid Site Meeting

Work shown on these plans will be performed for the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), herein referred to as "Contracting Agency." Contact information for Contracting Agency's representative is included on these construction drawings. Contracting Agency's representative (or other persons assigned by Contracting Agency to act as Contracting Agency's representative) are herein referred to as the "Contracting Officer."

The Contractor shall conduct stream enhancement construction in accordance with the plans stamped "Approved for Construction." These plans will be provided to the Contractor by the Contracting Agency prior to construction. Work shall not be done without the current set of approved construction plans.

The enhancement designs depicted herein are approximate and are intended to express the overall design intent of the project. These designs may need to be adjusted in the field during construction in order to meet the specific site conditions and intended function. Adjustments are to be authorized by the Contracting Officer.

The Contractor shall pursue work in a continuous and diligent manner to ensure timely completion of the project per construction subcontract.

The Contractor shall be responsible for the general safety during construction, and all work shall conform to pertinent safety regulations and codes. The Contractor shall be solely and completely responsible for compliance with all applicable provisions of OSHA and OAR Chapter 437, in the construction practices for all employees directly engaged in the construction of this project.

All material and workmanship furnished on or for this project must meet the minimum requirements of project permits, approving agencies, specifications as set forth herein, or whichever is more restrictive.

Contractor shall be responsible for obtaining, at Contractor's expense, all construction permits as required by local, state and federal agencies. Contractor shall provide all material, labor, and equipment required to comply with all applicable permit conditions and requirements.

Prior to commencement of work, Contractor shall provide the Contracting Agency with a detailed construction schedule and work plan for approval. The Contractor shall not begin any construction work until the construction schedule and work plan is approved by the Contracting Officer.

Contractor shall confirm the access point, route(s), and locations of temporary staging and storage areas with the Contracting Officer prior to transporting materials and equipment to the project site.

Project design drawings and specifications represent the construction documents. Any deviations from these drawings and associated specifications without written approval from the Contracting Officer may result in this project not meeting specifications and may affect the terms and conditions of the construction contract.

All existing conditions are to be verified in the field prior to construction and any adjustments to the drawings shall be made as directed by the Contracting Officer.

Excavation, grading, and trenching shall be the responsibility of the contractor performing the work. The design drawings are not intended to provide means or methods of construction.

All excess materials and excavation to be placed at location identified by the Contracting Officer with coordination with the contractor.

Existing Data & Coordinate System

Elevations and distances shown are in feet and decimals.

Horizontal datum is US State Plane Coordinate System, Oregon North Zone, NAD 83, International Feet. The vertical datum is NAVD 88, feet.

Topographic mapping along Rock Creek is based on surveys performed with ground survey equipment. Topographic mapping outside of the stream banks is based on ground survey and LIDAR imaging. The geometry of the stream at the time of construction could be different than shown on these plans due to channel evolution.

HIP III Conservation Measures

The Contractor will comply with the General Aquatic Conservation Measures and Terms & Conditions contained in Bonneville Power Administrations (BPA) Habitat Improvement Program (HIP) III that requires the utmost care is taken when construction activity is taking place in or near the waterway. See Terms and Conditions sheets

All work within the actively flowing Rock Creek channel shall occur only within designated in-water work window (July 1 – October 15)

Anytime work occurs within the actively flowing channel, the Contractor shall monitor in-stream turbidity once per hour at a location 100 feet downstream of the construction activity using turbidity monitoring equipment provided by the Contracting Officer.

In-stream turbidity shall be limited to levels listed in permits and specifications, and the Contractor shall modify work procedures if necessary comply with specifications. The Contracting Officer will assist the Contractor during initial measurements to ensure testing equipment is used correctly. The Contractor will be responsible for all measurements and maintain a log that documents date, time, and turbidity level of all measurements taken.

The Contractor shall install and maintain appropriate sediment control devices throughout the project site, including the construction staging area and stockpile area. Temporary construction and permanent erosion control measures shall be designed, constructed and maintained in accordance with all applicable local, state and federal regulations.

Discharges entering active streams on site shall satisfy all state and federal standards and project permit requirements for contaminants and turbidity.

Dewatering of work areas shall be performed to the extent that at LWM structures standing water is no deeper than the diameter of the log(s) on the lowest layer of the structure so that the Contracting Officer can easily verify the finished channel bed elevation.

Discharge from dewatering activities shall be routed to floodplain areas to allow the removal of fine sediments or other contaminant prior to reentering Rock Creek. All pumps used in the active channel for dewatering activities shall have screened intakes that meet ODFW and NOAA Fisheries juvenile fish screening criteria.

Fish Rescue

Fish exclusion shall be conducted in the project area prior to any dewatering activities or construction within or directly connected to the existing channel of Rock Creek. Fish exclusion shall be conducted by the Contracting Agency.

The Contractor shall notify the Contracting Officer a minimum of 5 working days in advance of in-channel work and work area isolation to coordinate fish removal. The Contracting Agency will be responsible for all fish removal and handling.

Site and Resource Protection

Protect all trees and land areas marked for protection. Construction shall minimize disturbance and damage to riparian vegetation and maximize reuse of existing vegetation in the project area.

Existing shrubs and sod along channel construction alignment and work areas in the floodplain will be salvaged and reinstalled following channel construction along streambanks.

Cultural Resources Inadvertent Discovery

If construction work comes into contact with any of the following cultural resources:
-Native American cultural artifacts (flakes, arrowheads, stone tools, bone tools, pottery, etc.)
-Historic era artifacts (building foundations, homesteads, mining camps, etc)
Human skeletal remains and bone fragments
Ground disturbing construction in the area must immediately discontinue. Do not touch or move the objects and maintain the confidentiality of the site. Follow procedures listed in the BPA Inadvertent Discovery Procedure and await further direction from BPA's Cultural Resource Staff.

Utilities

The CTUIR makes no representation as to the existence or non-existence of utilities. It is the responsibility of Contractor to comply with the provisions of ORS 757.541 to 757.571. Contractor will be liable for any damage resulting from disruption of service caused by construction activities. The telephone number for utility locates is 1-800-424-5555.

Date	Oct 2017
Designed	A. Childs, S. Welch
Drawn	A. Childs
Checked	
Approved	
Title	

MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
 Union COUNTY, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Wallowa Whitman National Forest



NOTES

SUMMARY OF QUANTITIES		
Project Feature	Quantity	Unit
Large Wood Habitat Features		
TYPE I ELJ (Channel Spanning wood structure)		
# Structures	10	each
Key member w/RW, (18" dbh+, 45'+ L	80	each
Racking Logs/tops, 8-14" dbh, 20-30' L	160	each
TYPE II ELJ (Similar to Type I, constructed on existing ELJ)		
# Structures	14	each
Key member w/RW, (18" dbh+, 45'+ L	84	each
Racking Logs/tops, 8-14" dbh, 20-30' L	224	each
TYPE III ELJ (Sweeper Log)		
# Structures	20	each
Key member w/RW, (18" dbh+, 45'+ L	100	each
Racking Logs/tops, 8-14" dbh, 20-30' L	200	each
TYPE IV ELJ (Apex)		
# Structures	10	each
Key member w/RW, (18" dbh+, 45'+ L	40	each
Racking Logs/tops, 8-14" dbh, 20-30' L	60	each
Channel & Floodplain Large Wood Augmentation		
Small-Medium Whole Trees/Logs 6-14" DBH, 20-30" L	200	each
SUMMARY		
Total large Wood Structures	54	each
Total Key Member Pieces of Wood, 18"+ DBH, 45' L	304	
Total Racking Material (Logs/Treetops, 8-14" DBH, 20-30' L	644	
Total Channel & FP Augmentation Logs, 8-14" DBH, 20-30' L	200	

Date Oct. 2017
 Designed A. Childs S. Welch
 Drawn A. Childs
 Checked _____
 Approved _____
 Title _____

MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
 Union COUNTY, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Wallowa Whitman National Forest



NOTES
&
QUANTITIES

HIP 3 GENERAL AQUATIC CONSERVATION MEASURES APPLICABLE TO ALL ACTIONS

THE ACTIVITIES COVERED UNDER THE HIP III ARE INTENDED TO PROTECT AND RESTORE FISH AND WILDLIFE HABITAT WITH LONG-TERM BENEFITS TO ESA-LISTED SPECIES. TO MINIMIZE THESE SHORT-TERM ADVERSE EFFECTS AND MAKE THEM PREDICTABLE FOR THE PURPOSES OF PROGRAMMATIC ANALYSIS, BPA WILL INCLUDE IN ALL PROJECTS IMPLEMENTED UNDER THIS HIP III PROPOSED ACTION THE FOLLOWING GENERAL CONSERVATION MEASURES (DEVELOPED IN COORDINATION WITH USFWS AND NMFS).

PROJECT DESIGN AND SITE PREPARATION.

1) STATE AND FEDERAL PERMITS. ALL APPLICABLE REGULATORY PERMITS AND OFFICIAL PROJECT AUTHORIZATIONS WILL BE OBTAINED BEFORE PROJECT IMPLEMENTATION. THESE PERMITS AND AUTHORIZATIONS INCLUDE, BUT ARE NOT LIMITED TO, NATIONAL ENVIRONMENTAL POLICY ACT, NATIONAL HISTORIC PRESERVATION ACT, AND THE APPROPRIATE STATE AGENCY REMOVAL AND FILL PERMIT, USACE CLEAN WATER ACT (CWA) 404 PERMITS, AND CWA SECTION 401 WATER QUALITY CERTIFICATIONS.

2) TIMING OF IN-WATER WORK. APPROPRIATE STATE (OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW), WASHINGTON DEPARTMENT OF FISH AND WILDLIFE (WDFW), IDAHO DEPARTMENT OF FISH AND GAME (IDFG), AND MONTANA FISH WILDLIFE AND PARKS (MFWP)) GUIDELINES FOR TIMING OF IN-WATER WORK WINDOWS (IWW) WILL BE FOLLOWED.

A) BULL TROUT - WHILE UTILIZING THE APPROPRIATE STATE DESIGNATED IN-WATER WORK PERIOD WILL LESSEN THE RISK TO BULL TROUT, THIS ALONE MAY NOT BE SUFFICIENT TO ADEQUATELY PROTECT LOCAL BULL TROUT POPULATIONS. THIS IS ESPECIALLY TRUE IF WORK IS OCCURRING IN SPAWNING AND REARING AREAS BECAUSE EGGS, ALEVIN, AND FRY ARE IN THE SUBSTRATE OR CLOSELY ASSOCIATED HABITATS NEARLY YEAR ROUND. SOME AREAS MAY NOT HAVE DESIGNATED IN-WATER WORK WINDOWS FOR BULL TROUT OR IF THEY DO, THEY MAY CONFLICT WITH WORK WINDOWS FOR SALMON AND STEELHEAD. IF THIS IS THE CASE, OR IF PROPOSED WORK IS TO OCCUR WITHIN BULL TROUT SPAWNING AND REARING HABITATS, PROJECT PROPONENTS WILL CONTACT THE APPROPRIATE USFWS FIELD OFFICE TO INSURE THAT ALL REASONABLE IMPLEMENTATION MEASURES ARE CONSIDERED AND AN APPROPRIATE IN-WATER WORK WINDOW IS BEING USED TO MINIMIZE PROJECT EFFECTS.

B) LAMPREY - THE PROJECT SPONSOR AND/OR THEIR CONTRACTORS WILL AVOID WORKING IN STREAM OR RIVER CHANNELS THAT CONTAIN PACIFIC LAMPREY FROM MARCH 1 TO JULY 1 IN LOW TO MID ELEVATION REACHES (<5,000 FEET). IN HIGH ELEVATION REACHES (>5,000 FEET), THE PROJECT SPONSOR WILL AVOID WORKING IN STREAM OR RIVER CHANNELS FROM MARCH 1 TO AUGUST 1. IF EITHER TIMEFRAME IS INCOMPATIBLE WITH OTHER OBJECTIVES, THE AREA WILL BE SURVEYED FOR NESTS AND LAMPREY PRESENCE, AND AVOIDED IF POSSIBLE. IF LAMPREYS ARE KNOWN TO EXIST, THE PROJECT SPONSOR WILL UTILIZE DEWATERING AND SALVAGE PROCEDURES OUTLINED IN US FISH AND WILDLIFE SERVICE BEST MANAGEMENT PRACTICES TO MINIMIZE ADVERSE EFFECTS TO PACIFIC LAMPREY (2010).

C) EXCEPTIONS TO ODFW, WDFW, MFWP, OR IDFG IN-WATER WORK WINDOWS WILL BE REQUESTED THROUGH THE VARIANCE PROCESS (PAGE 2).

3) CONTAMINANTS. THE PROJECT SPONSOR WILL COMPLETE A SITE ASSESSMENT WITH THE FOLLOWING ELEMENTS TO IDENTIFY THE TYPE, QUANTITY, AND EXTENT OF ANY POTENTIAL CONTAMINATION FOR ANY ACTION THAT INVOLVES EXCAVATION OF MORE THAN 20 CUBIC YARDS OF MATERIAL:

- A) A REVIEW OF AVAILABLE RECORDS, SUCH AS FORMER SITE USE, BUILDING PLANS, AND RECORDS OF ANY PRIOR CONTAMINATION EVENTS;
- B) A SITE VISIT TO INSPECT THE AREAS USED FOR VARIOUS INDUSTRIAL PROCESSES AND THE CONDITION OF THE PROPERTY;
- C) INTERVIEWS WITH KNOWLEDGEABLE PEOPLE, SUCH AS SITE OWNERS, OPERATORS, AND OCCUPANTS, NEIGHBORS, OR LOCAL GOVERNMENT OFFICIALS; AND
- D) A SUMMARY, STORED WITH THE PROJECT FILE THAT INCLUDES AN ASSESSMENT OF THE LIKELIHOOD THAT CONTAMINANTS ARE PRESENT AT THE SITE, BASED ON ITEMS 4(A) THROUGH 4(C).

4) SITE LAYOUT AND FLAGGING. PRIOR TO CONSTRUCTION, THE ACTION AREA WILL BE CLEARLY FLAGGED TO IDENTIFY THE FOLLOWING:

- A) SENSITIVE RESOURCE AREAS, SUCH AS AREAS BELOW ORDINARY HIGH WATER, SPAWNING AREAS, SPRINGS, AND WETLANDS;
- B) EQUIPMENT ENTRY AND EXIT POINTS;
- C) ROAD AND STREAM CROSSING ALIGNMENTS;
- D) STAGING, STORAGE, AND STOCKPILE AREAS; AND
- E) NO-SPRAY AREAS AND BUFFERS.

5) TEMPORARY ACCESS ROADS AND PATHS.

A) EXISTING ACCESS ROADS AND PATHS WILL BE PREFERENTIALLY USED WHENEVER REASONABLE, AND THE NUMBER AND LENGTH OF TEMPORARY ACCESS ROADS AND PATHS THROUGH RIPARIAN AREAS AND FLOODPLAINS WILL BE MINIMIZED TO LESSEN SOIL DISTURBANCE AND COMPACTION, AND IMPACTS TO VEGETATION.

B) TEMPORARY ACCESS ROADS AND PATHS WILL NOT BE BUILT ON SLOPES WHERE GRADE, SOIL, OR OTHER FEATURES SUGGEST A LIKELIHOOD OF EXCESSIVE EROSION OR FAILURE. IF SLOPES ARE STEEPER THAN 30%, THEN THE ROAD WILL BE DESIGNED BY A CIVIL ENGINEER WITH EXPERIENCE IN STEEP ROAD DESIGN.

C) THE REMOVAL OF RIPARIAN VEGETATION DURING CONSTRUCTION OF TEMPORARY ACCESS ROADS WILL BE MINIMIZED. WHEN TEMPORARY VEGETATION REMOVAL IS REQUIRED, VEGETATION WILL BE CUT AT GROUND LEVEL (NOT GRUBBED).

D) AT PROJECT COMPLETION, ALL TEMPORARY ACCESS ROADS AND PATHS WILL BE OBLITERATED, AND THE SOIL WILL BE STABILIZED AND REVEGETATED. ROAD AND PATH OBLITERATION REFERS TO THE MOST COMPREHENSIVE DEGREE OF DECOMMISSIONING AND INVOLVES DECOMPACTIONING THE SURFACE AND DITCH, PULLING THE FILL MATERIAL ONTO THE RUNNING SURFACE, AND RESHAPING TO MATCH THE ORIGINAL CONTOUR.

E) TEMPORARY ROADS AND PATHS IN WET AREAS OR AREAS PRONE TO FLOODING WILL BE OBLITERATED BY THE END OF THE IN-WATER WORK WINDOW.

6) TEMPORARY STREAM CROSSINGS.

A) EXISTING STREAM CROSSINGS WILL BE PREFERENTIALLY USED WHENEVER REASONABLE, AND THE NUMBER OF TEMPORARY STREAM CROSSINGS WILL BE MINIMIZED.

B) TEMPORARY BRIDGES AND CULVERTS WILL BE INSTALLED TO ALLOW FOR EQUIPMENT AND VEHICLE CROSSING OVER PERENNIAL STREAMS DURING CONSTRUCTION. TREATED WOOD SHALL NOT BE USED ON TEMPORARY BRIDGE CROSSINGS OR IN LOCATIONS IN CONTACT WITH OR OVER WATER.

C) EQUIPMENT AND VEHICLES WILL CROSS THE STREAM IN THE WET ONLY WHERE:

- I. THE STREAMBED IS BEDROCK; OR
- II. MATS OR OFF-SITE LOGS ARE PLACED IN THE STREAM AND USED AS A CROSSING.

D) VEHICLES AND MACHINERY WILL CROSS STREAMS AT RIGHT ANGLES TO THE MAIN CHANNEL WHEREVER POSSIBLE.

E) THE LOCATION OF THE TEMPORARY CROSSING WILL AVOID AREAS THAT MAY INCREASE THE RISK OF CHANNEL RE-ROUTING OR AVULSION.

F) POTENTIAL SPAWNING HABITAT (I.E., POOL TAILOUTS) AND POOLS WILL BE AVOIDED TO THE MAXIMUM EXTENT POSSIBLE.

G) NO STREAM CROSSINGS WILL OCCUR AT ACTIVE SPAWNING SITES, WHEN HOLDING ADULT LISTED FISH ARE PRESENT, OR WHEN EGGS OR ALEVINS ARE IN THE GRAVEL. THE APPROPRIATE STATE FISH AND WILDLIFE AGENCY WILL BE CONTACTED FOR SPECIFIC TIMING INFORMATION.

H) AFTER PROJECT COMPLETION, TEMPORARY STREAM CROSSINGS WILL BE OBLITERATED AND THE STREAM CHANNEL AND BANKS RESTORED.

7) STAGING, STORAGE, AND STOCKPILE AREAS.

A) STAGING AREAS (USED FOR CONSTRUCTION EQUIPMENT STORAGE, VEHICLE STORAGE, FUELING, SERVICING, AND HAZARDOUS MATERIAL STORAGE) WILL BE 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND, OR ON AN ADJACENT, ESTABLISHED ROAD AREA IN A LOCATION AND MANNER THAT WILL PRECLUDE EROSION INTO OR CONTAMINATION OF THE STREAM OR FLOODPLAIN.

B) NATURAL MATERIALS USED FOR IMPLEMENTATION OF AQUATIC RESTORATION, SUCH AS LARGE WOOD, GRAVEL, AND BOULDERS, MAY BE STAGED WITHIN THE 100-YEAR FLOODPLAIN.

C) ANY LARGE WOOD, TOPSOIL, AND NATIVE CHANNEL MATERIAL DISPLACED BY CONSTRUCTION WILL BE STOCKPILED FOR USE DURING SITE RESTORATION AT A SPECIFICALLY IDENTIFIED AND FLAGGED AREA.

D) ANY MATERIAL NOT USED IN RESTORATION, AND NOT NATIVE TO THE FLOODPLAIN, WILL BE REMOVED TO A LOCATION OUTSIDE OF THE 100-YEAR FLOODPLAIN FOR DISPOSAL.

8) EQUIPMENT. MECHANIZED EQUIPMENT AND VEHICLES WILL BE SELECTED, OPERATED, AND MAINTAINED IN A MANNER THAT MINIMIZES ADVERSE EFFECTS ON THE ENVIRONMENT (E.G., MINIMALLY-SIZED, LOW PRESSURE TIRES; MINIMAL HARD-TURN PATHS FOR TRACKED VEHICLES; TEMPORARY MATS OR PLATES WITHIN WET AREAS OR ON SENSITIVE SOILS). ALL VEHICLES AND OTHER MECHANIZED EQUIPMENT WILL BE:

- A) STORED, FUELED, AND MAINTAINED IN A VEHICLE STAGING AREA PLACED 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND OR ON AN ADJACENT, ESTABLISHED ROAD AREA;
- B) REFUELED IN A VEHICLE STAGING AREA PLACED 150 FEET OR MORE FROM A NATURAL WATERBODY OR WETLAND, OR IN AN ISOLATED HARD ZONE, SUCH AS A PAVED PARKING LOT OR ADJACENT, ESTABLISHED ROAD (THIS MEASURE APPLIES ONLY TO GAS-POWERED EQUIPMENT WITH TANKS LARGER THAN 5 GALLONS);
- C) BIODEGRADABLE LUBRICANTS AND FLUIDS SHALL BE USED ON EQUIPMENT OPERATING IN AND ADJACENT TO THE STREAM CHANNEL AND LIVE WATER.
- D) INSPECTED DAILY FOR FLUID LEAKS BEFORE LEAVING THE VEHICLE STAGING AREA FOR OPERATION WITHIN 150 FEET OF ANY NATURAL WATER BODY OR WETLAND; AND
- E) THOROUGHLY CLEANED BEFORE OPERATION BELOW ORDINARY HIGH WATER, AND AS OFTEN AS NECESSARY DURING OPERATION, TO REMAIN GREASE FREE.

9) EROSION CONTROL. EROSION CONTROL MEASURES WILL BE PREPARED AND CARRIED OUT, COMMENSURATE IN SCOPE WITH THE ACTION, THAT MAY INCLUDE THE FOLLOWING:

- A) TEMPORARY EROSION CONTROLS.
 - I. TEMPORARY EROSION CONTROLS WILL BE IN PLACE BEFORE ANY SIGNIFICANT ALTERATION OF THE ACTION SITE AND APPROPRIATELY INSTALLED DOWNSLOPE OF PROJECT ACTIVITY WITHIN THE RIPARIAN BUFFER AREA UNTIL SITE REHABILITATION IS COMPLETE.
 - II. IF THERE IS A POTENTIAL FOR ERODED SEDIMENT TO ENTER THE STREAM, SEDIMENT BARRIERS WILL BE INSTALLED AND MAINTAINED FOR THE DURATION OF PROJECT IMPLEMENTATION.
 - III. TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE FIBER WATTLES, SILT FENCES, JUTE MATTING, WOOD FIBER MULCH AND SOIL BINDER, OR GEOTEXTILES AND GEOSYNTHETIC FABRIC.

IV. SOIL STABILIZATION UTILIZING WOOD FIBER MULCH AND TACKIFIER (HYDRO-APPLIED) MAY BE USED TO REDUCE EROSION OF BARE SOIL IF THE MATERIALS ARE NOXIOUS WEED FREE AND NONTOXIC TO AQUATIC AND TERRESTRIAL ANIMALS, SOIL MICROORGANISMS, AND VEGETATION.

V. SEDIMENT WILL BE REMOVED FROM EROSION CONTROLS ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE CONTROL.

VI. ONCE THE SITE IS STABILIZED AFTER CONSTRUCTION, TEMPORARY EROSION CONTROL MEASURES WILL BE REMOVED.

B) EMERGENCY EROSION CONTROLS. THE FOLLOWING MATERIALS FOR EMERGENCY EROSION CONTROL WILL BE AVAILABLE AT THE WORK SITE:

- I. A SUPPLY OF SEDIMENT CONTROL MATERIALS; AND
- II. AN OIL-ABSORBING FLOATING BOOM WHENEVER SURFACE WATER IS PRESENT.

10) DUST ABATEMENT. THE PROJECT SPONSOR WILL DETERMINE THE APPROPRIATE DUST CONTROL MEASURES BY CONSIDERING SOIL TYPE, EQUIPMENT USAGE, PREVAILING WIND DIRECTION, AND THE EFFECTS CAUSED BY OTHER EROSION AND SEDIMENT CONTROL MEASURES. IN ADDITION, THE FOLLOWING CRITERIA WILL BE FOLLOWED:

- A) WORK WILL BE SEQUENCED AND SCHEDULED TO REDUCE EXPOSED BARE SOIL SUBJECT TO WIND EROSION.
- B) DUST-ABATEMENT ADDITIVES AND STABILIZATION CHEMICALS (TYPICALLY MAGNESIUM CHLORIDE, CALCIUM CHLORIDE SALTS, OR LIGNINSULFONATE) WILL NOT BE APPLIED WITHIN 25 FEET OF WATER OR A STREAM CHANNEL AND WILL BE APPLIED SO AS TO MINIMIZE THE LIKELIHOOD THAT THEY WILL ENTER STREAMS. APPLICATIONS OF LIGNINSULFONATE WILL BE LIMITED TO A MAXIMUM RATE OF 0.5 GALLONS PER SQUARE YARD OF ROAD SURFACE, ASSUMING A 50:50 (LIGNINSULFONATE TO WATER) SOLUTION.
- C) APPLICATION OF DUST ABATEMENT CHEMICALS WILL BE AVOIDED DURING OR JUST BEFORE WET WEATHER, AND AT STREAM CROSSINGS OR OTHER AREAS THAT COULD RESULT IN UNFILTERED DELIVERY OF THE DUST ABATEMENT MATERIALS TO A WATERBODY (TYPICALLY THESE WOULD BE AREAS WITHIN 25 FEET OF A WATERBODY OR STREAM CHANNEL; DISTANCES MAY BE GREATER WHERE VEGETATION IS SPARSE OR SLOPES ARE STEEP).
- D) SPILL CONTAINMENT EQUIPMENT WILL BE AVAILABLE DURING APPLICATION OF DUST ABATEMENT CHEMICALS.
- E) PETROLEUM-BASED PRODUCTS WILL NOT BE USED FOR DUST ABATEMENT.

11) SPILL PREVENTION, CONTROL, AND COUNTER MEASURES. THE USE OF MECHANIZED MACHINERY INCREASES THE RISK FOR ACCIDENTAL SPILLS OF FUEL, LUBRICANTS, HYDRAULIC FLUID, OR OTHER CONTAMINANTS INTO THE RIPARIAN ZONE OR DIRECTLY INTO THE WATER. ADDITIONALLY, UNCURD CONCRETE AND FORM MATERIALS ADJACENT TO THE ACTIVE STREAM CHANNEL MAY RESULT IN ACCIDENTAL DISCHARGE INTO THE WATER. THESE CONTAMINANTS CAN DEGRADE HABITAT, AND INJURE OR KILL AQUATIC FOOD ORGANISMS AND ESA-LISTED SPECIES. THE PROJECT SPONSOR WILL ADHERE TO THE FOLLOWING MEASURES:

- A) A DESCRIPTION OF HAZARDOUS MATERIALS THAT WILL BE USED, INCLUDING INVENTORY, STORAGE, AND HANDLING PROCEDURES WILL BE AVAILABLE ON-SITE.
- B) WRITTEN PROCEDURES FOR NOTIFYING ENVIRONMENTAL RESPONSE AGENCIES WILL BE POSTED AT THE WORK SITE.
- C) SPILL CONTAINMENT KITS (INCLUDING INSTRUCTIONS FOR CLEANUP AND DISPOSAL) ADEQUATE FOR THE TYPES AND QUANTITY OF HAZARDOUS MATERIALS USED AT THE SITE WILL BE AVAILABLE AT THE WORK SITE.
- D) WORKERS WILL BE TRAINED IN SPILL CONTAINMENT PROCEDURES AND WILL BE INFORMED OF THE LOCATION OF SPILL CONTAINMENT KITS.
- E) ANY WASTE LIQUIDS GENERATED AT THE STAGING AREAS WILL BE TEMPORARILY STORED UNDER AN IMPERVIOUS COVER, SUCH AS A TARPULIN, UNTIL THEY CAN BE PROPERLY TRANSPORTED TO AND DISPOSED OF AT A FACILITY THAT IS APPROVED FOR RECEIPT OF HAZARDOUS MATERIALS.

12) INVASIVE SPECIES CONTROL. THE FOLLOWING MEASURES WILL BE FOLLOWED TO AVOID INTRODUCTION OF INVASIVE PLANTS AND NOXIOUS WEEDS INTO PROJECT AREAS:

- A) PRIOR TO ENTERING THE SITE, ALL VEHICLES AND EQUIPMENT WILL BE POWER WASHED, ALLOWED TO FULLY DRY, AND INSPECTED TO MAKE SURE NO PLANTS, SOIL, OR OTHER ORGANIC MATERIAL ADHERES TO THE SURFACE.
- B) WATERCRAFT, WADERS, BOOTS, AND ANY OTHER GEAR TO BE USED IN OR NEAR WATER WILL BE INSPECTED FOR AQUATIC INVASIVE SPECIES.
- C) WADING BOOTS WITH FELT SOLES ARE NOT TO BE USED DUE TO THEIR PROPENSITY FOR AIDING IN THE TRANSFER OF INVASIVE SPECIES.

Designed	A. Childs/S. Welch	Date	Oct 2017
Drawn	S. Welch		Oct 2017
Checked			
Approved			
Title			

*MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
Union County, Oregon
Confederated Tribes of the Umatilla Indian Reservation &
Wallowa Whitman National Forest*



TERMS & CONDITIONS (HIP III)

WORK AREA ISOLATION & FISH SALVAGE.

ANY WORK AREA WITHIN THE WETTED CHANNEL WILL BE ISOLATED FROM THE ACTIVE STREAM WHENEVER ESA-LISTED FISH ARE REASONABLY CERTAIN TO BE PRESENT, OR IF THE WORK AREA IS LESS THAN 300-FEET UPSTREAM FROM KNOWN SPAWNING HABITATS. WHEN WORK AREA ISOLATION IS REQUIRED, DESIGN PLANS WILL INCLUDE ALL ISOLATION ELEMENTS, FISH RELEASE AREAS, AND, WHEN A PUMP IS USED TO DEWATER THE ISOLATION AREA AND FISH ARE PRESENT, A FISH SCREEN THAT MEETS NMFS'S FISH SCREEN CRITERIA (NMFS 2011, OR MOST CURRENT). WORK AREA ISOLATION AND FISH CAPTURE ACTIVITIES WILL OCCUR DURING PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE, NORMALLY EARLY IN THE MORNING VERSUS LATE IN THE DAY, AND DURING CONDITIONS APPROPRIATE TO MINIMIZE STRESS AND DEATH OF SPECIES PRESENT.

- NATIONAL MARINE FISHERIES SERVICE. 2011. ANADROMOUS SALMONID PASSAGE FACILITY DESIGN. NORTHWEST REGION. AVAILABLE ONLINE AT:

[HTTP://WWW.NWR.NOAA.GOV/SALMON-HYDROPOWER/FERC/UPLOAD/FISH-PASSAGE-DESIGN.PDF](http://www.nwr.noaa.gov/salmon-hydro-power/ferc/upload/fish-pass-age-design.pdf)

- U.S. FISH AND WILDLIFE SERVICE. 2010. BEST MANAGEMENT PRACTICES TO MINIMIZE ADVERSE EFFECTS TO PACIFIC LAMPREY.

[HTTP://WWW.FWS.GOV/PACIFIC/FISHERIES/SPHABCON/LAMPREY/PDF/BEST%20MANAGEMENT%20PRACTICES%20FOR%20PACIFIC%20LAMPREY%20APRIL%202010%20VERSION.PDF](http://www.fws.gov/pacific/fisheries/sphabcon/lamprey/pdf/best%20management%20practices%20for%20pacific%20lamprey%20april%202010%20version.pdf)

FOR SALVAGE OPERATIONS IN KNOWN BULL TROUT SPAWNING AND REARING HABITAT, ELECTROFISHING SHALL ONLY OCCUR FROM MAY 1 TO JULY 31. NO ELECTROFISHING WILL OCCUR IN ANY BULL TROUT OCCUPIED HABITAT AFTER AUGUST 15. BULL TROUT ARE VERY TEMPERATURE SENSITIVE AND GENERALLY SHOULD NOT BE ELECTROSHOCKED OR OTHERWISE HANDLED WHEN TEMPERATURES EXCEED 15 DEGREES CELSIUS. SALVAGE ACTIVITIES SHOULD TAKE PLACE DURING PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE, NORMALLY EARLY IN THE MORNING VERSUS LATE IN THE DAY, AND DURING CONDITIONS APPROPRIATE TO MINIMIZE STRESS TO FISH SPECIES PRESENT.

SALVAGE OPERATIONS WILL FOLLOW THE ORDERING, METHODOLOGIES, AND CONSERVATION MEASURES SPECIFIED BELOW IN STEPS 1 THROUGH 6. STEPS 1 AND 2 WILL BE IMPLEMENTED FOR ALL PROJECTS WHERE WORK AREA ISOLATION IS NECESSARY ACCORDING TO CONDITIONS ABOVE. ELECTROFISHING (STEP 3) CAN BE IMPLEMENTED TO ENSURE ALL FISH HAVE BEEN REMOVED FOLLOWING STEPS 1 AND 2, OR WHEN OTHER MEANS OF FISH CAPTURE MAY NOT BE FEASIBLE OR EFFECTIVE. DEWATERING AND REWATERING (STEPS 4 AND 5) WILL BE IMPLEMENTED UNLESS WETTED IN-STREAM WORK IS DEEMED TO BE MINIMALLY HARMFUL TO FISH, AND IS BENEFICIAL TO OTHER AQUATIC SPECIES. DEWATERING WILL NOT BE CONDUCTED IN AREAS KNOWN TO BE OCCUPIED BY LAMPREY, UNLESS LAMPREYS ARE SALVAGED USING GUIDANCE SET FORTH IN US FISH AND WILDLIFE SERVICE (2010)3.

1) ISOLATE.

A) BLOCK NETS WILL BE INSTALLED AT UPSTREAM AND DOWNSTREAM LOCATIONS AND MAINTAINED IN A SECURED POSITION TO EXCLUDE FISH FROM ENTERING THE PROJECT AREA.

B) BLOCK NETS WILL BE SECURED TO THE STREAM CHANNEL BED AND BANKS UNTIL FISH CAPTURE AND TRANSPORT ACTIVITIES ARE COMPLETE. BLOCK NETS MAY BE LEFT IN PLACE FOR THE DURATION OF THE PROJECT TO EXCLUDE FISH.

C) IF BLOCK NETS REMAIN IN PLACE MORE THAN ONE DAY, THE NETS WILL BE MONITORED AT LEAST DAILY TO ENSURE THEY ARE SECURED TO THE BANKS AND FREE OF ORGANIC ACCUMULATION. IF THE PROJECT IS WITHIN BULL TROUT SPAWNING AND REARING HABITAT, THE BLOCK NETS MUST BE CHECKED EVERY FOUR HOURS FOR FISH IMPINGEMENT ON THE NET. LESS FREQUENT INTERVALS MUST BE APPROVED THROUGH A VARIANCE REQUEST.

D) NETS WILL BE MONITORED HOURLY ANYTIME THERE IS INSTREAM DISTURBANCE.

2) SALVAGE. AS DESCRIBED BELOW, FISH TRAPPED WITHIN THE ISOLATED WORK AREA WILL BE CAPTURED TO MINIMIZE THE RISK OF INJURY, THEN RELEASED AT A SAFE SITE:

A) REMOVE AS MANY FISH AS POSSIBLE PRIOR TO DEWATERING.

B) DURING DEWATERING, ANY REMAINING FISH WILL BE COLLECTED BY HAND OR DIP NETS.

C) SEINES WITH A MESH SIZE TO ENSURE CAPTURE OF THE RESIDING ESA-LISTED FISH WILL BE USED.

D) MINNOW TRAPS WILL BE LEFT IN PLACE OVERNIGHT AND USED IN CONJUNCTION WITH SEINING.

E) IF BUCKETS ARE USED TO TRANSPORT FISH:

- I. THE TIME FISH ARE IN A TRANSPORT BUCKET WILL BE LIMITED, AND WILL BE RELEASED AS QUICKLY AS POSSIBLE;
- II. THE NUMBER OF FISH WITHIN A BUCKET WILL BE LIMITED BASED ON SIZE, AND FISH WILL BE OF RELATIVELY COMPARABLE SIZE TO MINIMIZE PREDATION;
- III. AERATORS FOR BUCKETS WILL BE USED OR THE BUCKET WATER WILL BE FREQUENTLY CHANGED WITH COLD CLEAR WATER AT 15 MINUTE OR MORE FREQUENT INTERVALS.
- IV. BUCKETS WILL BE KEPT IN SHADED AREAS OR WILL BE COVERED BY A CANOPY IN EXPOSED AREAS.

V. DEAD FISH WILL NOT BE STORED IN TRANSPORT BUCKETS, BUT WILL BE LEFT ON THE STREAM BANK TO AVOID MORTALITY COUNTING ERRORS.

F) AS RAPIDLY AS POSSIBLE (ESPECIALLY FOR TEMPERATURE-SENSITIVE BULL TROUT), FISH WILL BE RELEASED IN AN AREA THAT PROVIDES ADEQUATE COVER AND FLOW REFUGE. UPSTREAM RELEASE IS GENERALLY PREFERRED, BUT FISH RELEASED DOWNSTREAM WILL BE SUFFICIENTLY OUTSIDE OF THE INFLUENCE OF CONSTRUCTION.

G) SALVAGE WILL BE SUPERVISED BY A QUALIFIED FISHERIES BIOLOGIST EXPERIENCED WITH WORK AREA ISOLATION AND COMPETENT TO ENSURE THE SAFE HANDLING OF ALL FISH.

3) ELECTROFISHING. ELECTROFISHING WILL BE USED ONLY AFTER OTHER SALVAGE METHODS HAVE BEEN EMPLOYED OR WHEN OTHER MEANS OF FISH CAPTURE ARE DETERMINED TO NOT BE FEASIBLE OR EFFECTIVE. IF ELECTROFISHING WILL BE USED TO CAPTURE FISH FOR SALVAGE, THE SALVAGE OPERATION WILL BE LED BY AN EXPERIENCED FISHERIES BIOLOGIST AND THE FOLLOWING GUIDELINES WILL BE FOLLOWED:

A) THE NMFS'S ELECTROFISHING GUIDELINES (NMFS 2000).

B) ONLY DIRECT CURRENT (DC) OR PULSED DIRECT CURRENT (PDC) WILL BE USED AND CONDUCTIVITY MUST BE TESTED.

I. IF CONDUCTIVITY IS LESS THAN 100 MS, VOLTAGE RANGES FROM 900 TO 1100 WILL BE USED.

II. FOR CONDUCTIVITY RANGES BETWEEN 100 TO 300 MS, VOLTAGE RANGES WILL BE 500 TO 800.

III. FOR CONDUCTIVITY GREATER THAN 300 MS, VOLTAGE WILL BE LESS THAN 400.

C) ELECTROFISHING WILL BEGIN WITH A MINIMUM PULSE WIDTH AND RECOMMENDED VOLTAGE AND THEN GRADUALLY INCREASE TO THE POINT WHERE FISH ARE IMMOBILIZED.

D) THE ANODE WILL NOT INTENTIONALLY CONTACT FISH.

E) ELECTROFISHING SHALL NOT BE CONDUCTED WHEN THE WATER CONDITIONS ARE TURBID AND VISIBILITY IS POOR. THIS CONDITION MAY BE EXPERIENCED WHEN THE SAMPLER CANNOT SEE THE STREAM BOTTOM IN ONE FOOT OF WATER.

F) IF MORTALITY OR OBVIOUS INJURY (DEFINED AS DARK BANDS ON THE BODY, SPINAL DEFORMATIONS, DE-SCALING OF 25% OR MORE OF BODY, AND TORPIDITY OR INABILITY TO MAINTAIN UPRIGHT ATTITUDE AFTER SUFFICIENT RECOVERY TIME) OCCURS DURING ELECTROFISHING, OPERATIONS WILL BE IMMEDIATELY DISCONTINUED. MACHINE SETTINGS, WATER TEMPERATURE AND CONDUCTIVITY CHECKED, AND PROCEDURES ADJUSTED OR ELECTROFISHING POSTPONED TO REDUCE MORTALITY.

4) DEWATER. DEWATERING, WHEN NECESSARY, WILL BE CONDUCTED OVER A SUFFICIENT PERIOD OF TIME TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA AND WILL BE LIMITED TO THE SHORTEST LINEAR EXTENT PRACTICABLE.

A) DIVERSION AROUND THE CONSTRUCTION SITE MAY BE ACCOMPLISHED WITH A COFFER DAM AND A BY-PASS CULVERT OR PIPE, OR A LINED, NON-ERODIBLE DIVERSION DITCH. WHERE GRAVITY FEED IS NOT POSSIBLE, A PUMP MAY BE USED, BUT MUST BE OPERATED IN SUCH A WAY AS TO AVOID REPETITIVE DEWATERING AND REWATERING OF THE SITE. IMPOUNDMENT BEHIND THE COFFERDAM MUST OCCUR SLOWLY THROUGH THE TRANSITION, WHILE CONSTANT FLOW IS DELIVERED TO THE DOWNSTREAM REACHES.

B) ALL PUMPS WILL HAVE FISH SCREENS TO AVOID JUVENILE FISH IMPINGEMENT OR ENTRAINMENT, AND WILL BE OPERATED IN ACCORDANCE WITH NMFS'S CURRENT FISH SCREEN CRITERIA (NMFS 2014, OR MOST RECENT VERSION). IF THE PUMPING RATE EXCEEDS 3 CUBIC FEET SECOND (CFS), A NMFS HYDRO FISH PASSAGE REVIEW WILL BE NECESSARY.

C) DISSIPATION OF FLOW ENERGY AT THE BYPASS OUTFLOW WILL BE PROVIDED TO PREVENT DAMAGE TO RIPARIAN VEGETATION OR STREAM CHANNEL.

D) SAFE REENTRY OF FISH INTO THE STREAM CHANNEL WILL BE PROVIDED, PREFERABLY INTO POOL HABITAT WITH COVER, IF THE DIVERSION ALLOWS FOR DOWNSTREAM FISH PASSAGE.

E) SEEPAGE WATER WILL BE PUMPED TO A TEMPORARY STORAGE AND TREATMENT SITE OR INTO UPLAND AREAS TO ALLOW WATER TO PERCOLATE THROUGH SOIL OR TO FILTER THROUGH VEGETATION PRIOR TO REENTERING THE STREAM CHANNEL.

4 NATIONAL MARINE FISHERIES SERVICE. 2011. ANADROMOUS SALMONID PASSAGE FACILITY DESIGN. NORTHWEST REGION. AVAILABLE ONLINE AT:

[HTTP://WWW.NWR.NOAA.GOV/SALMON-HYDROPOWER/FERC/UPLOAD/FISH-PASSAGE-DESIGN.PDF](http://www.nwr.noaa.gov/salmon-hydro-power/ferc/upload/fish-pass-age-design.pdf)

5) SALVAGE NOTICE. MONITORING AND RECORDING OF FISH PRESENCE, HANDLING, AND MORTALITY MUST OCCUR DURING THE DURATION OF THE ISOLATION, SALVAGE, ELECTROFISHING, DEWATERING, AND REWATERING OPERATIONS. ONCE OPERATIONS ARE COMPLETED, A SALVAGE REPORT WILL DOCUMENT PROCEDURES USED, ANY FISH INJURIES OR DEATHS (INCLUDING NUMBERS OF FISH AFFECTED), AND CAUSES OF ANY DEATHS.

CONSTRUCTION AND POST-CONSTRUCTION CONSERVATION MEASURES.

1) FISH PASSAGE. FISH PASSAGE WILL BE PROVIDED FOR ANY ADULT OR JUVENILE FISH LIKELY TO BE PRESENT IN THE ACTION AREA DURING CONSTRUCTION, UNLESS PASSAGE DID NOT EXIST BEFORE CONSTRUCTION OR THE STREAM IS NATURALLY IMPASSABLE AT THE TIME OF CONSTRUCTION. IF THE PROVISION OF TEMPORARY FISH PASSAGE DURING CONSTRUCTION WILL INCREASE NEGATIVE EFFECTS ON AQUATIC SPECIES OF INTEREST OR THEIR HABITAT, A VARIANCE CAN BE REQUESTED FROM THE NMFS BRANCH CHIEF AND THE FWS FIELD OFFICE SUPERVISOR. PERTINENT INFORMATION, SUCH AS THE SPECIES AFFECTED, LENGTH OF STREAM REACH AFFECTED, PROPOSED TIME FOR THE PASSAGE BARRIER, AND ALTERNATIVES CONSIDERED, WILL BE INCLUDED IN THE VARIANCE REQUEST.

2) CONSTRUCTION AND DISCHARGE WATER.

A) SURFACE WATER MAY BE DIVERTED TO MEET CONSTRUCTION NEEDS, BUT ONLY IF DEVELOPED SOURCES ARE UNAVAILABLE OR INADEQUATE.

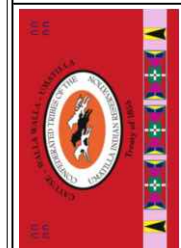
B) DIVERSIONS WILL NOT EXCEED 10% OF THE AVAILABLE FLOW.

C) ALL CONSTRUCTION DISCHARGE WATER WILL BE COLLECTED AND TREATED USING THE BEST AVAILABLE TECHNOLOGY APPLICABLE TO SITE CONDITIONS.

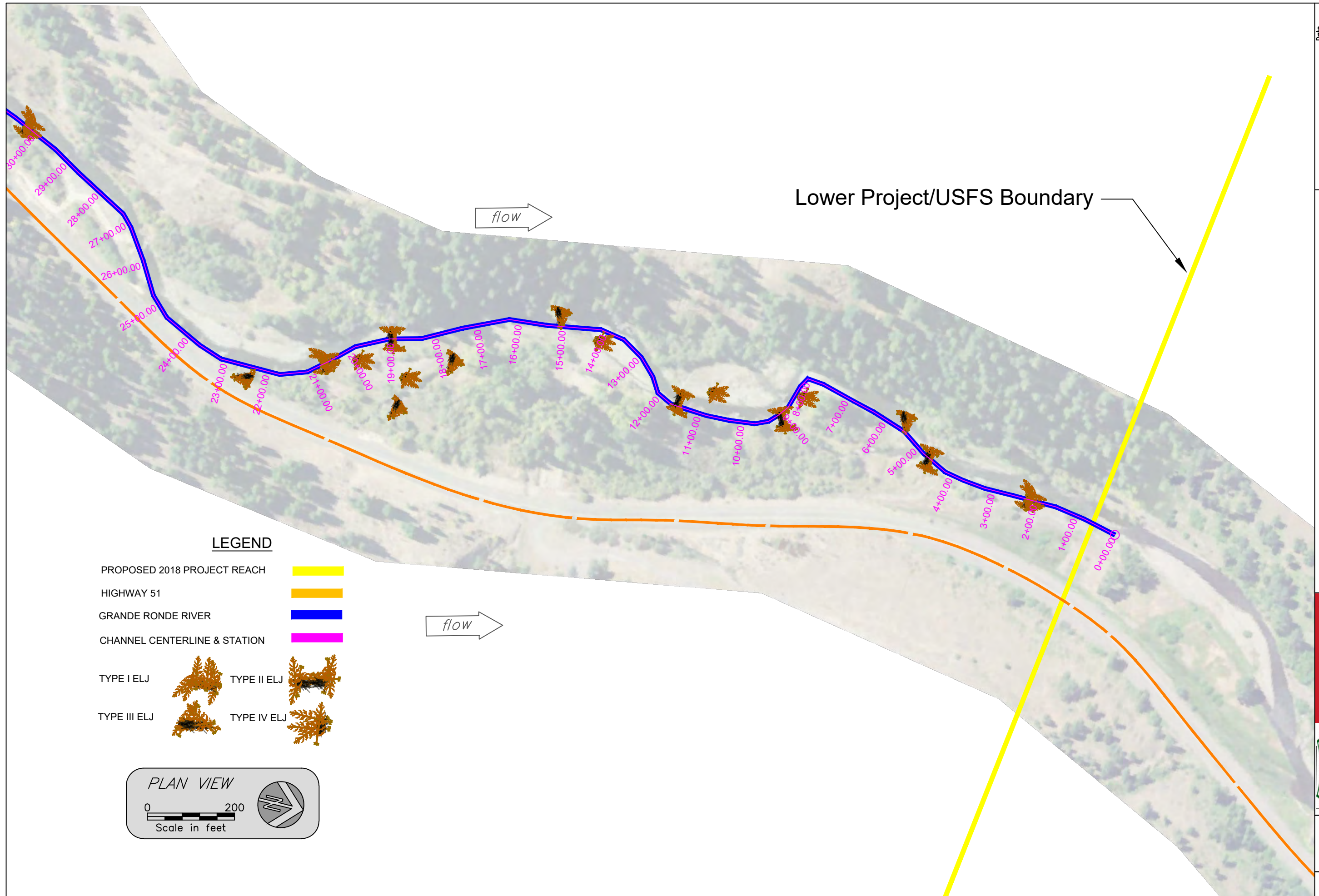
D) TREATMENTS TO REMOVE DEBRIS, NUTRIENTS, SEDIMENT, PETROLEUM HYDROCARBONS, METALS AND OTHER POLLUTANTS LIKELY TO BE PRESENT WILL BE PROVIDED.

Date	Designed	A. Childs/S. Welch	Oct 2017
	Drawn	A. Childs	Oct 2017
	Checked		
	Approved		
	Title		

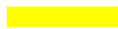







MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
 Union COUNTY, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Wallowa Whitman National Forest




TERMS & CONDITIONS (HIP III)




LEGEND

- PROPOSED 2018 PROJECT REACH 
- HIGHWAY 51 
- GRANDE RONDE RIVER 
- CHANNEL CENTERLINE & STATION 
- TYPE I ELJ  TYPE II ELJ 
- TYPE III ELJ  TYPE IV ELJ 

PLAN VIEW

0  200
Scale in feet



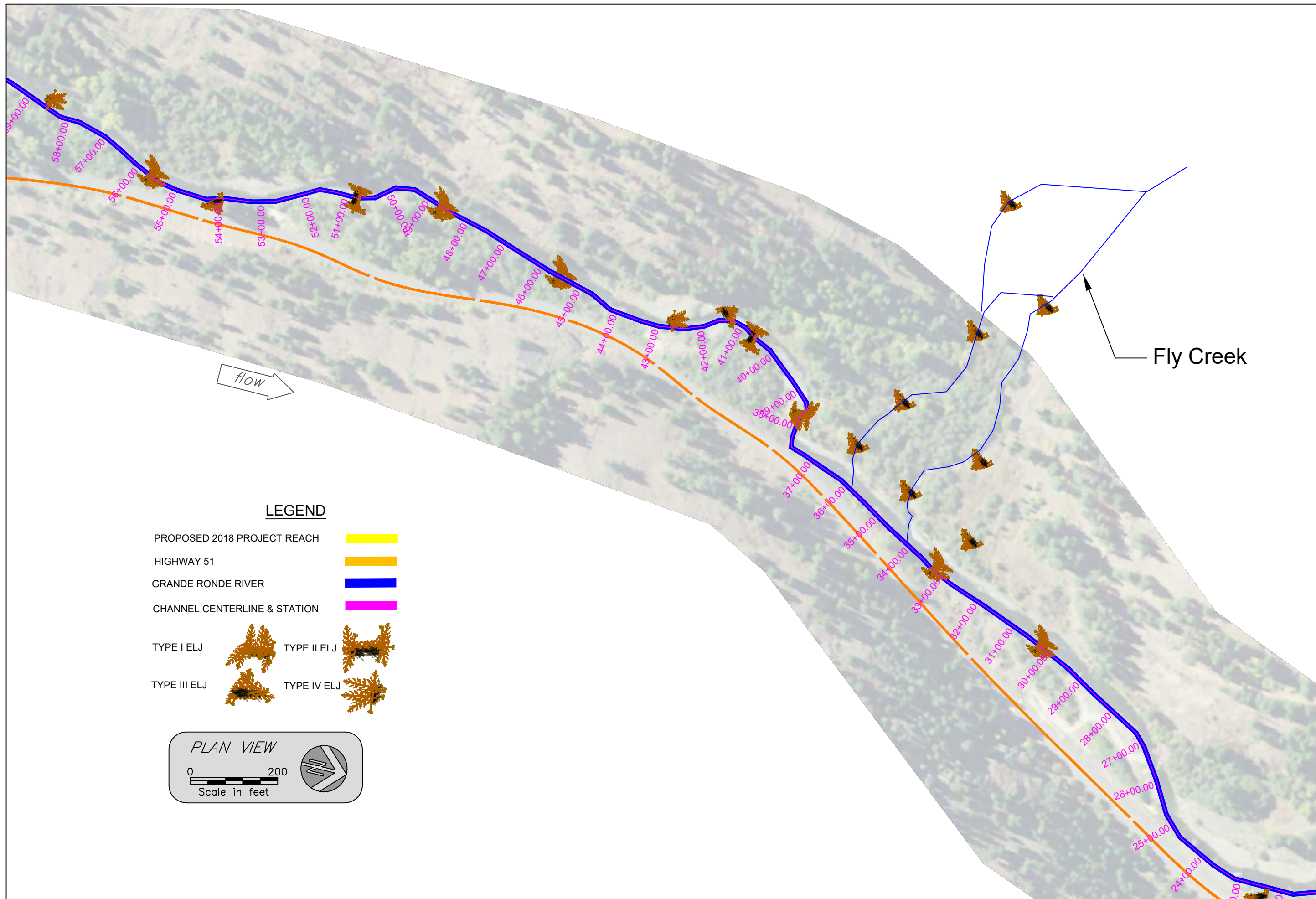
Lower Project/USFS Boundary

MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
Union County, OREGON
Confederated Tribes of the Umatilla Indian Reservation &
Walla Walla National Forest



PLANVIEW
STATION
0+00 TO
30+00

Date	Designed	Drawn	Checked	Approved	Title
Oct. 2017	A. Childs/S. Welch	A. Childs			
Oct. 2017					



LEGEND

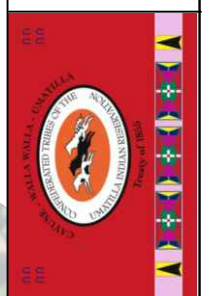
- PROPOSED 2018 PROJECT REACH
- HIGHWAY 51
- GRANDE RONDE RIVER
- CHANNEL CENTERLINE & STATION
- TYPE I ELJ
- TYPE II ELJ
- TYPE III ELJ
- TYPE IV ELJ

PLAN VIEW

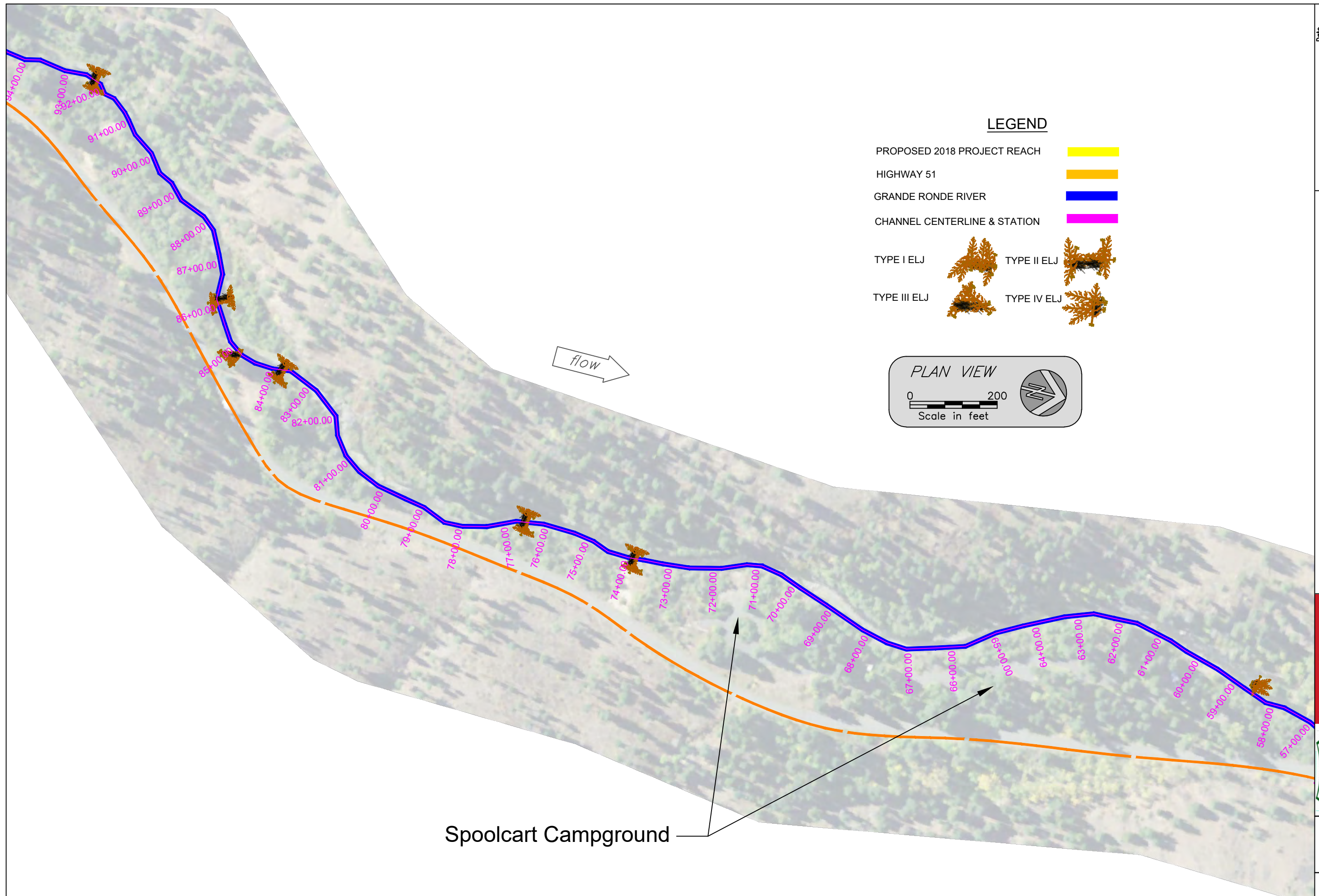
0 200
Scale in feet

Date	By
Oct. 2017	A. Childs/S. Welch
Oct. 2017	A. Childs
	Checked
	Approved
	Title

MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
 Union COUNTY, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Wallowa Whitman National Forest



PLANVIEW
STATION
30+00 TO
58+00



LEGEND

- PROPOSED 2018 PROJECT REACH
- HIGHWAY 51
- GRANDE RONDE RIVER
- CHANNEL CENTERLINE & STATION
- TYPE I ELJ
- TYPE II ELJ
- TYPE III ELJ
- TYPE IV ELJ

PLAN VIEW

0 200
Scale in feet

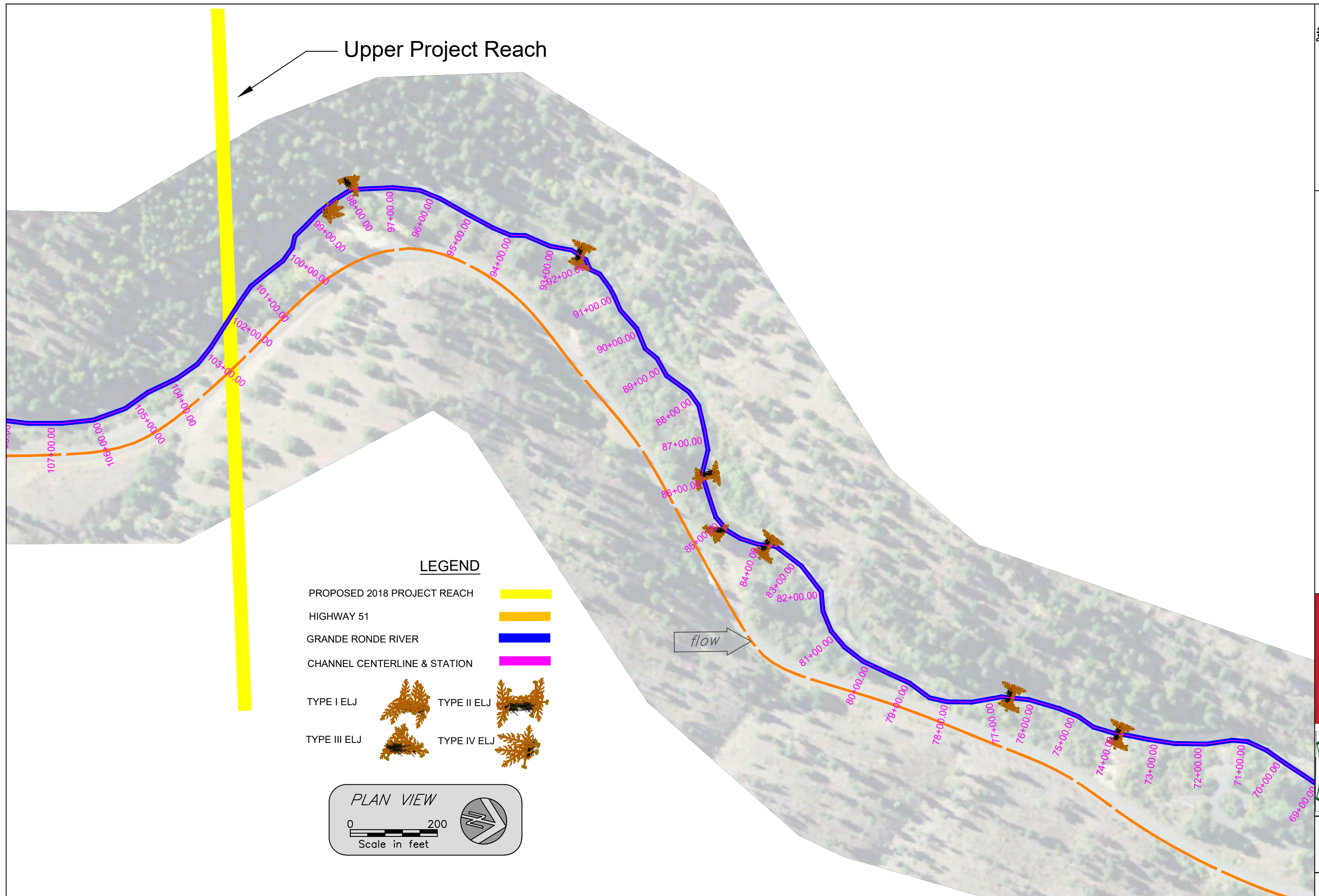
Spoolcart Campground

Date	By
Oct. 2017	A. Childs/S. Welch
Oct. 2017	A. Childs
	Checked
	Approved
	Title

MIDDLE UPPER GRANDE RONDE
 Fish Habitat & Floodplain Restoration
 Union COUNTY, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Wallowa Whitman National Forest



PLANVIEW
 STATION
 58+00 TO
 93+00



LEGEND

- PROPOSED 2018 PROJECT REACH
- HIGHWAY 51
- GRANDE RONDE RIVER
- CHANNEL CENTERLINE & STATION
- TYPE I ELJ
- TYPE II ELJ
- TYPE III ELJ
- TYPE IV ELJ

PLAN VIEW

0 200

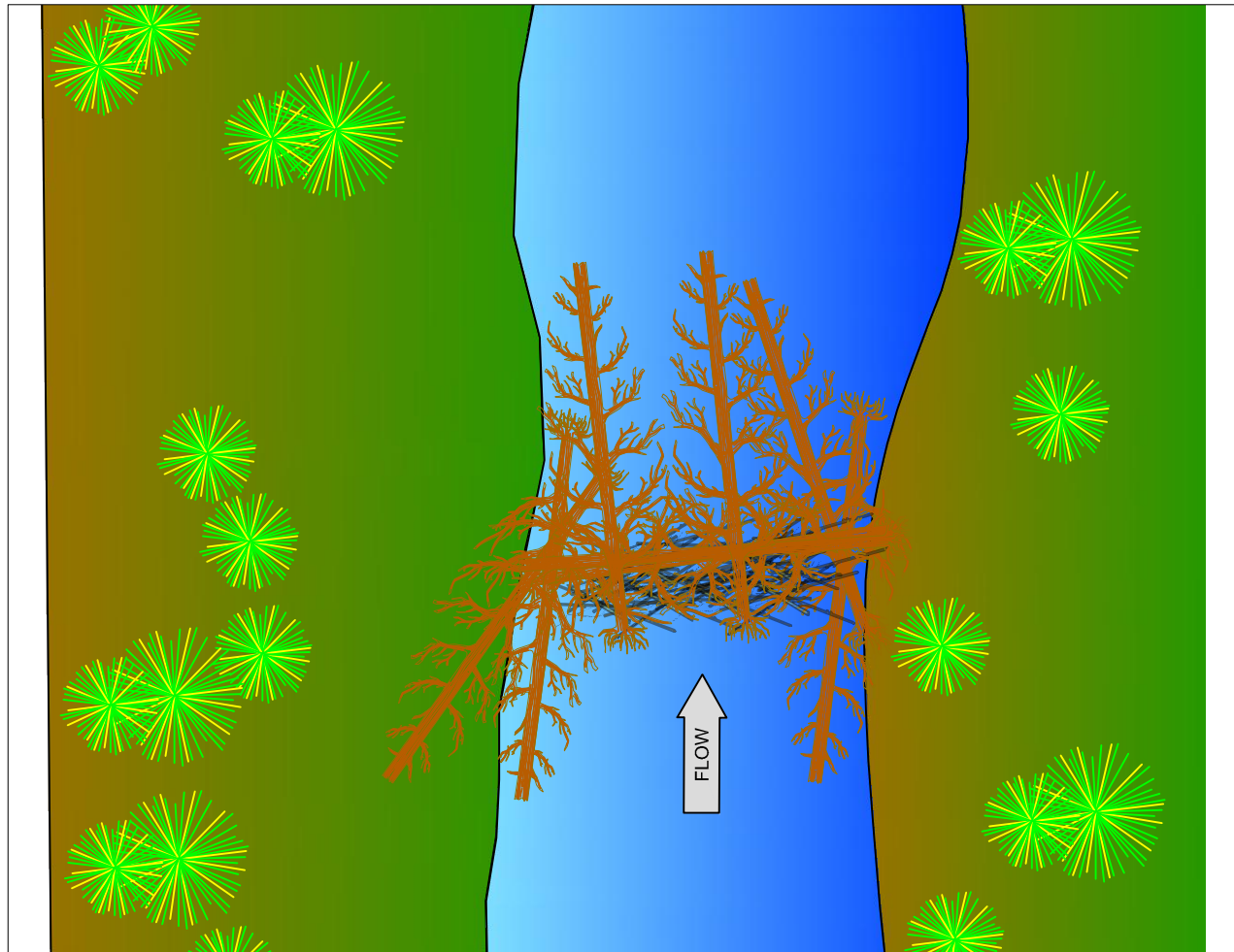
Scale in feet

Date	
Designed	A. Childs/S. Welch Oct. 2017
Drawn	A. Childs Oct. 2017
Checked	
Approved	
Title	

MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
 Union County, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Wallowa Whitman National Forest



PLANVIEW
STATION
93+00 TO
102+00



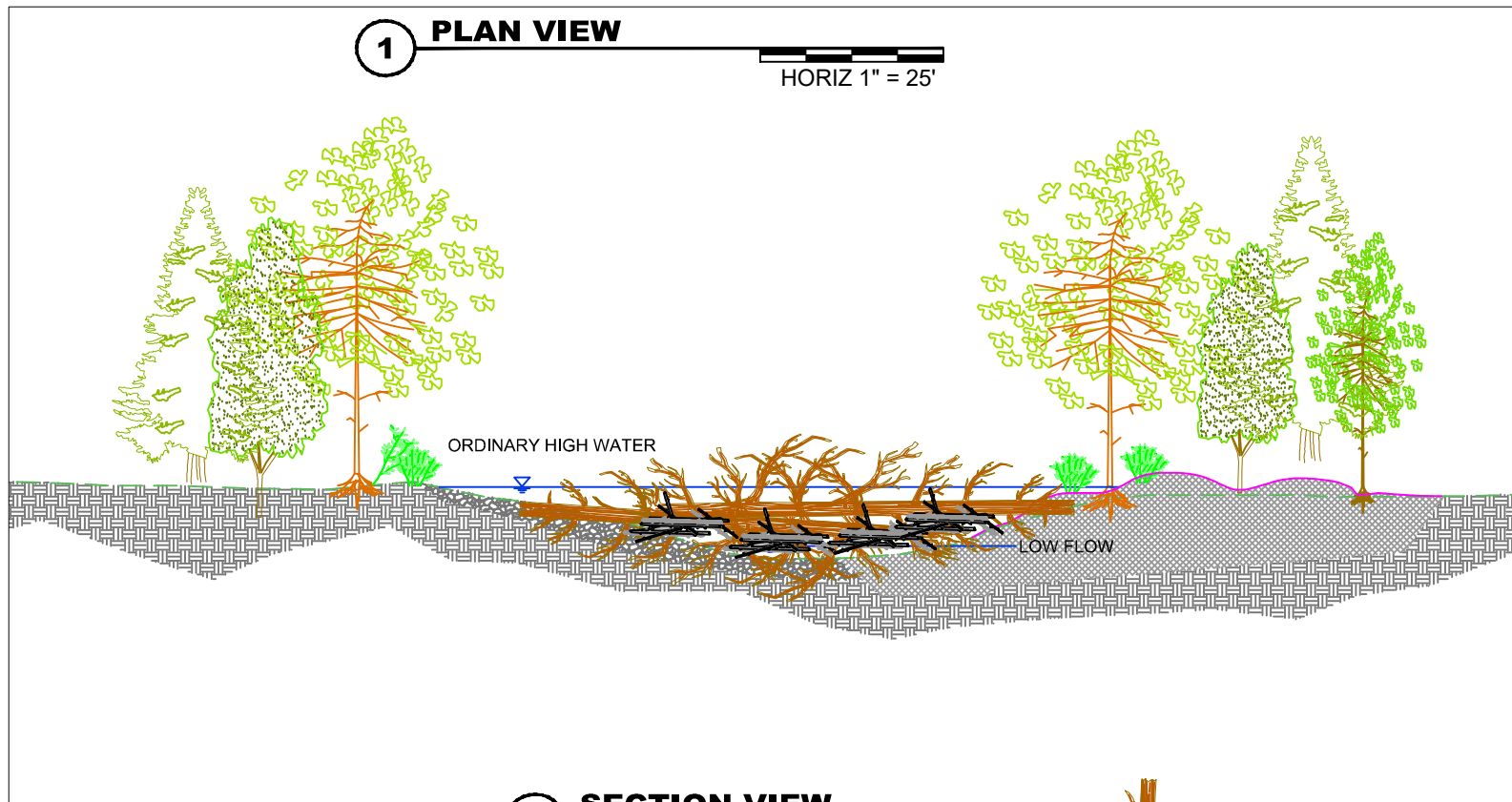
TYPE 1 ELJ BIOLOGICAL OBJECTIVES - DESIGN INTENT

- PURPOSE OF TYPE 1 ELJ IS TO CREATE A CHANNEL SPANNING LARGE WOOD STRUCTURE THAT INCREASES WATER SURFACE ELEVATION AND DEPTH, DECREASES WATER SLOPE, PROVIDES HABITAT COVER AND COMPLEXITY, AND PROMOTE TO FLOODPLAIN CONNECTIVITY AND INCREASED GROUNDWATER AND HYPERHEIC FUNCTIONS TO IMPROVE WATER TEMPERATURE DIVERSITY AND COLD WATER REFUGE.
- PROVIDES OVERHEAD COVER, VELOCITY REFUGE, AND ORGANIC NUTRIENTS THAT SUPPORT FOOD WEB PROCESSES AND ALL LIFE STAGES OF JUVENILE AND ADULT SALMONID (REARING, HOLDING)



1 PLAN VIEW

HORIZ 1" = 25'



2 SECTION VIEW

HORIZ 1" = 20'

3 ASSEMBLY DETAIL

HORIZ 1" = 24'

PROJECT ELEMENT NOTES

1. WOOD MATERIAL SHALL COME FROM FIR, SPRUCE, LODGPOLE PINE, OR PINE TREES.
2. LOCATION OF WOOD STRUCTURE SHALL BE STAKED AT EACH LOCATION BY CO.
3. CUT ENDS ON ALL EXPOSED LOGS TO BE BROKEN AND PROVIDE A ROUGHENED APPEARANCE.
4. WOOD STRUCTURE SHALL BE CONSTRUCTED BY HELICOPTER PLACEMENT.
5. STRUCTURE WILL BE CONSTRUCTED IN LAYERS WITH LARGE BASE MEMBER, RACKING INSTALLATION, AND TOP KEY MEMBERS PLACED TO ANCHOR RACKING MATERIAL AS DIRECTED BY CO.

MATERIAL SCHEDULE

ITEM	QUANTITY	DIA. (IN)	LENGTH (FT)	ROOTWAD (Y/N)
KEY MEMBER	8	20" Plus	~ 45' plus	YES - 5" DIA. MIN.
RACKING LOGS/TOPS	16	8-16"	~ 20-30'	NO

Designed	Drawn	Checked	Approved	Title
A. Childs/S. Welch	A. Childs			

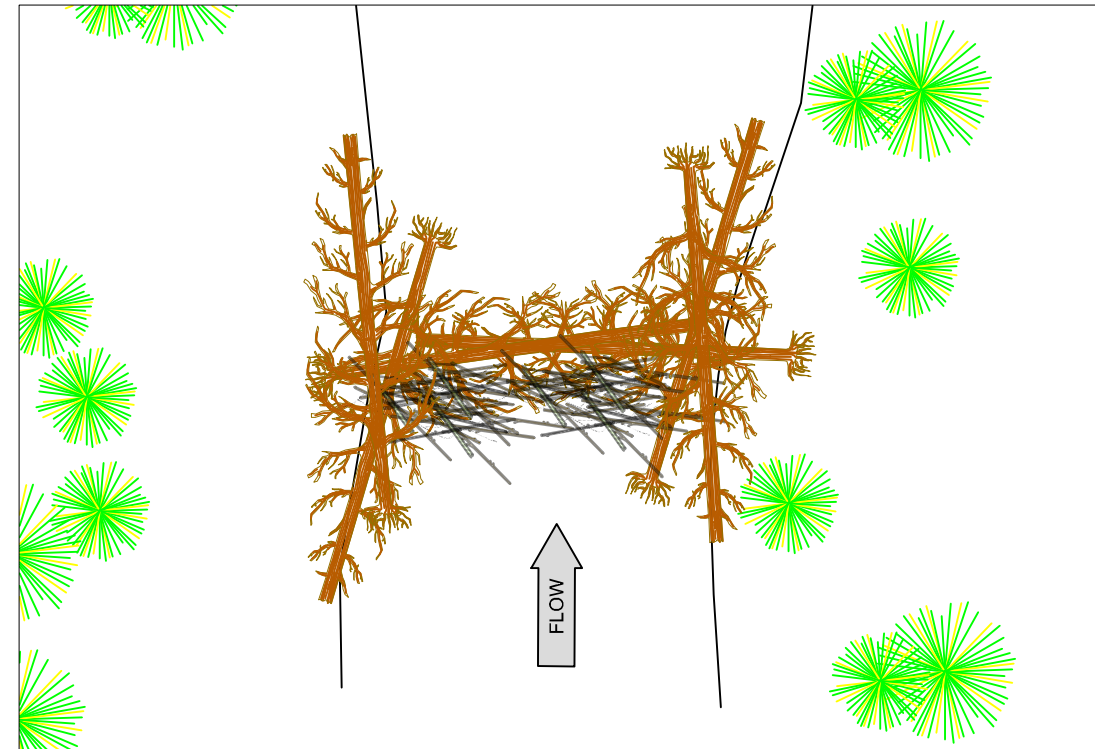
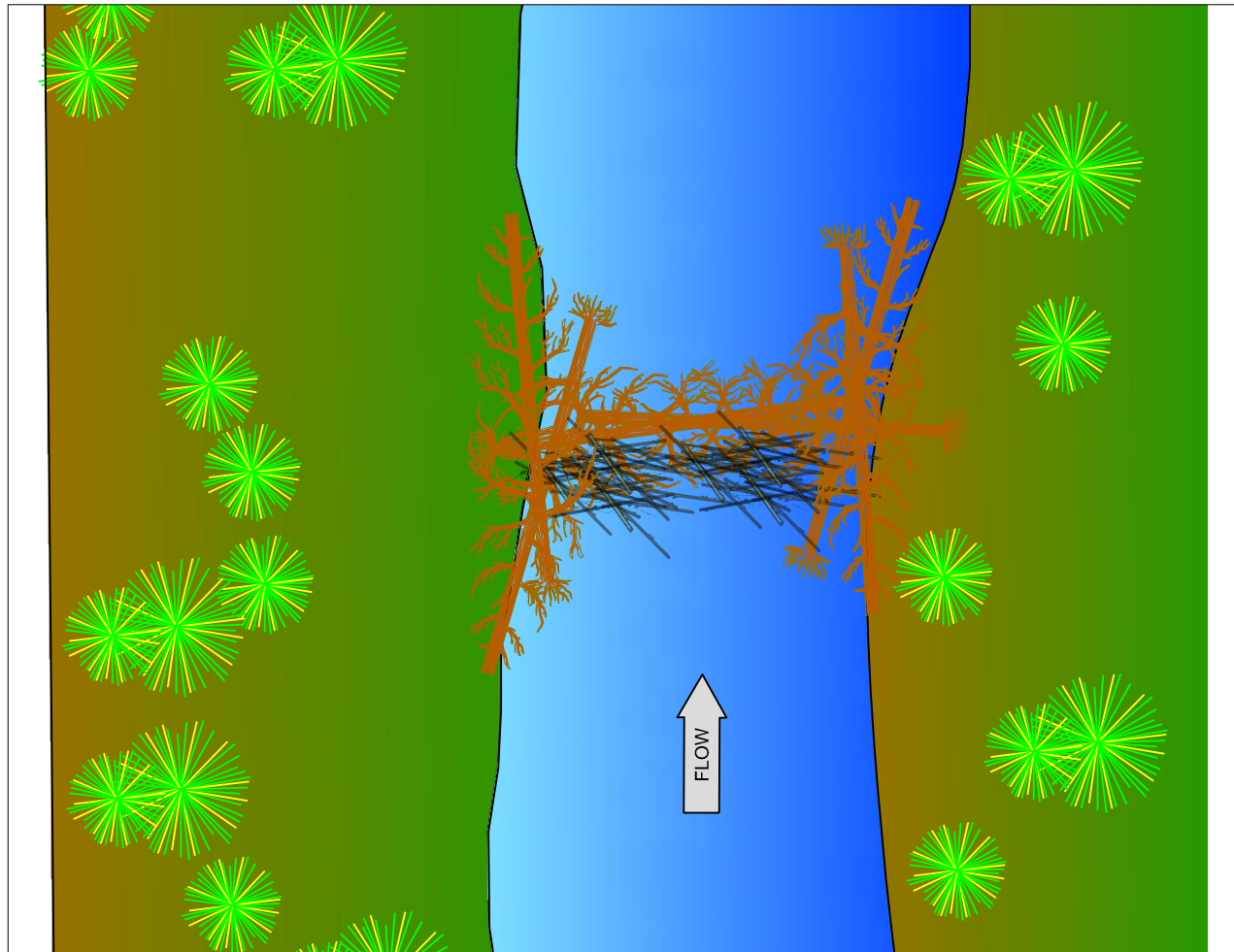
MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
Union County, OREGON
Confederated Tribes of the Umatilla Indian Reservation &
Wallowa Whitman National Forest



TYPE I ELJ

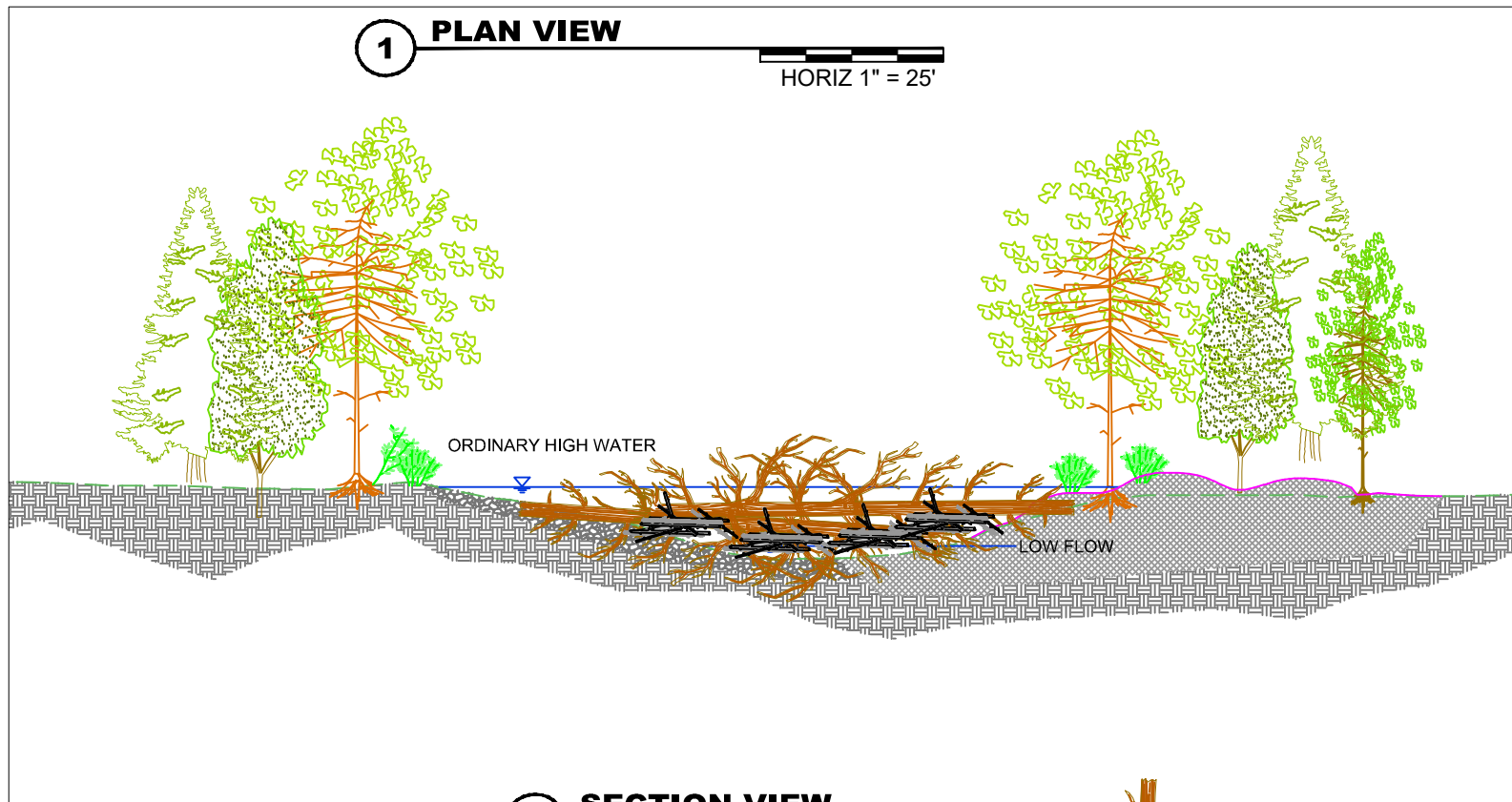
TYPE II ELJ BIOLOGICAL OBJECTIVES - DESIGN INTENT

- PURPOSE OF TYPE II IS THE SAME AT A TYPE I ELJ. CREATE A CHANNEL SPANNING LARGE WOOD STRUCTURE THAT INCREASES WATER SURFACE ELEVATION AND DEPTH, DECREASES WATER SLOPE, PROVIDES HABITAT COVER AND COMPLEXITY, AND PROMOTE TO FLOODPLAIN CONNECTIVITY AND INCREASED GROUNDWATER AND HYPORHEIC FUNCTIONS TO IMPROVE WATER TEMPERATURE DIVERSITY AND COLD WATER REFUGE.
- PROVIDES OVERHEAD COVER, VELOCITY REFUGE, AND ORGANIC NUTRIENTS THAT SUPPORT FOOD WEB PROCESSES AND ALL LIFE STAGES OF JUVENILE AND ADULT SALMONID (REARING, HOLDING)
- TYPE II STRUCTURE IS DESIGNED TO AUGMENT EXISTING CONSTRUCTED ELJ'S, USING THE KEY MEMBER BASE STRUCTURE AS AN ANCHOR POINT FOR CHANNEL SPANNING TYPE II ELJ



1 PLAN VIEW

HORIZ 1" = 25'



2 SECTION VIEW

HORIZ 1" = 20'

3 ASSEMBLY DETAIL

HORIZ 1" = 24'

PROJECT ELEMENT NOTES

1. WOOD MATERIAL SHALL COME FROM FIR, SPRUCE, LODGPOLE PINE, OR PINE TREES.
2. LOCATION OF WOOD STRUCTURE SHALL BE STAKED AT EACH LOCATION BY CO.
3. CUT ENDS ON ALL EXPOSED LOGS TO BE BROKEN AND PROVIDE A ROUGHENED APPEARANCE.
4. WOOD STRUCTURE SHALL BE CONSTRUCTED BY HELICOPTER PLACEMENT.
5. STRUCTURE WILL BE CONSTRUCTED IN LAYERS WITH LARGE BASE MEMBER, RACKING INSTALLATION, AND TOP KEY MEMBERS PLACED TO ANCHOR RACKING MATERIAL AS DIRECTED BY CO.

MATERIAL SCHEDULE

ITEM	QUANTITY	DIA. (IN)	LENGTH (FT)	ROOTWAD (Y/N)
KEY MEMBER	6	20" Plus	~ 45' plus	YES - 5" DIA. MIN.
RACKING LOGS/TOPS	16	8-14"	~ 20-30'	NO

Designed	A. Childs/S. Welch	Date	Oct 2017
Drawn	A. Childs		Oct 2017
Checked			
Approved			
Title			

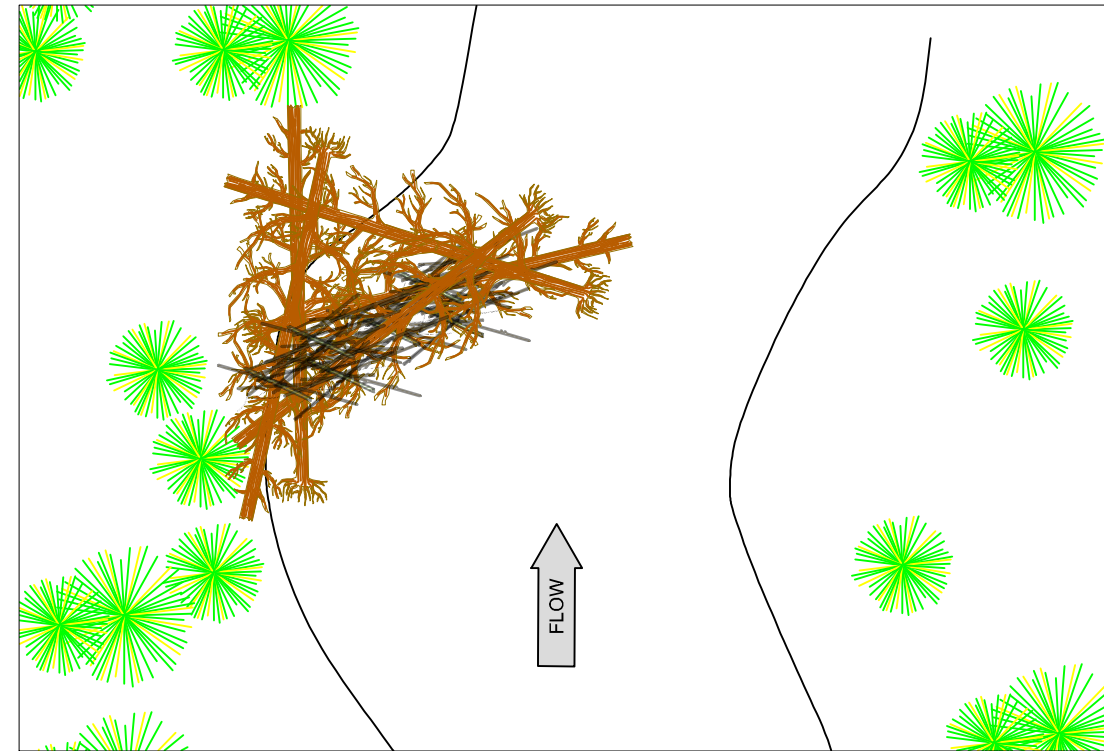
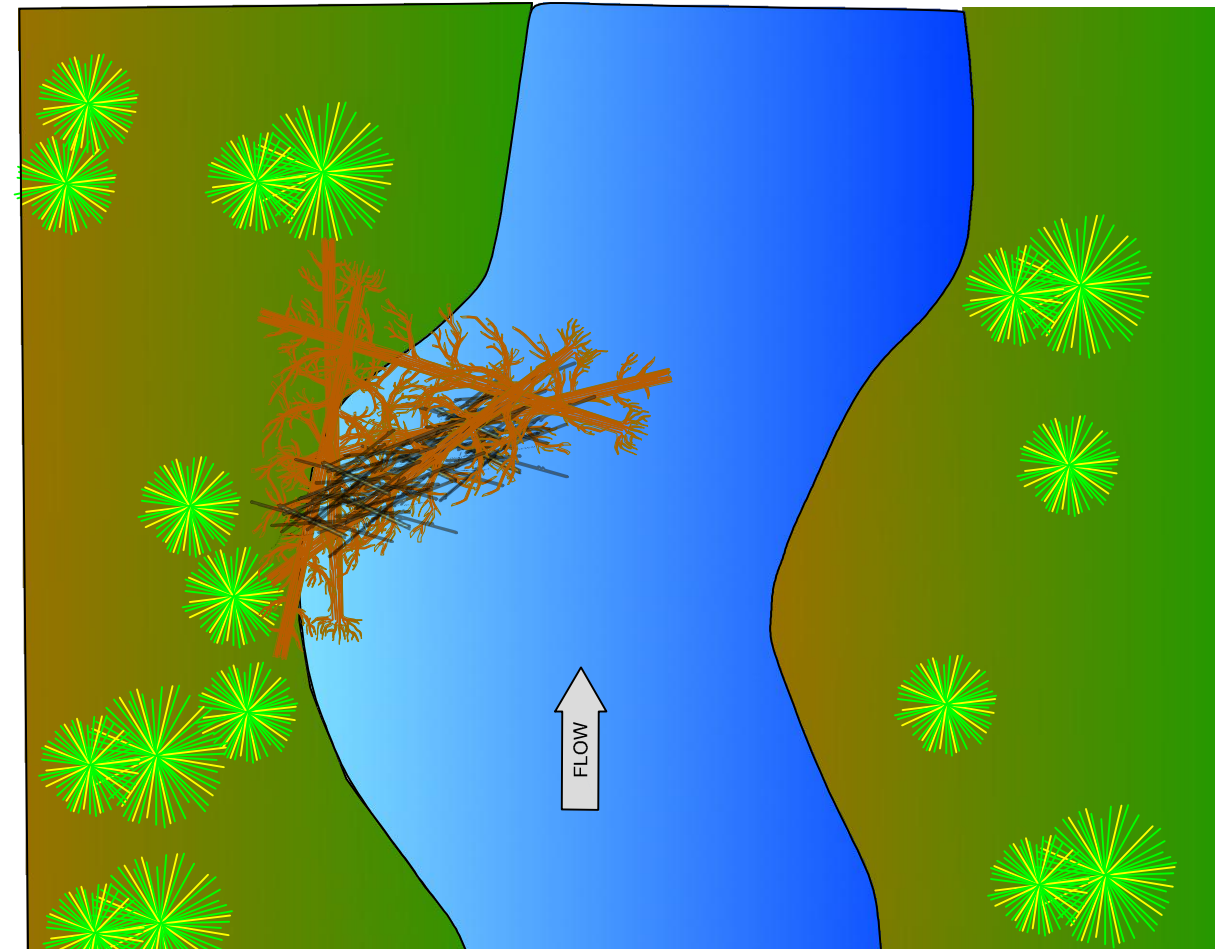
MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
 Union County, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Waiwala Whitman National Forest



TYPE II ELJ

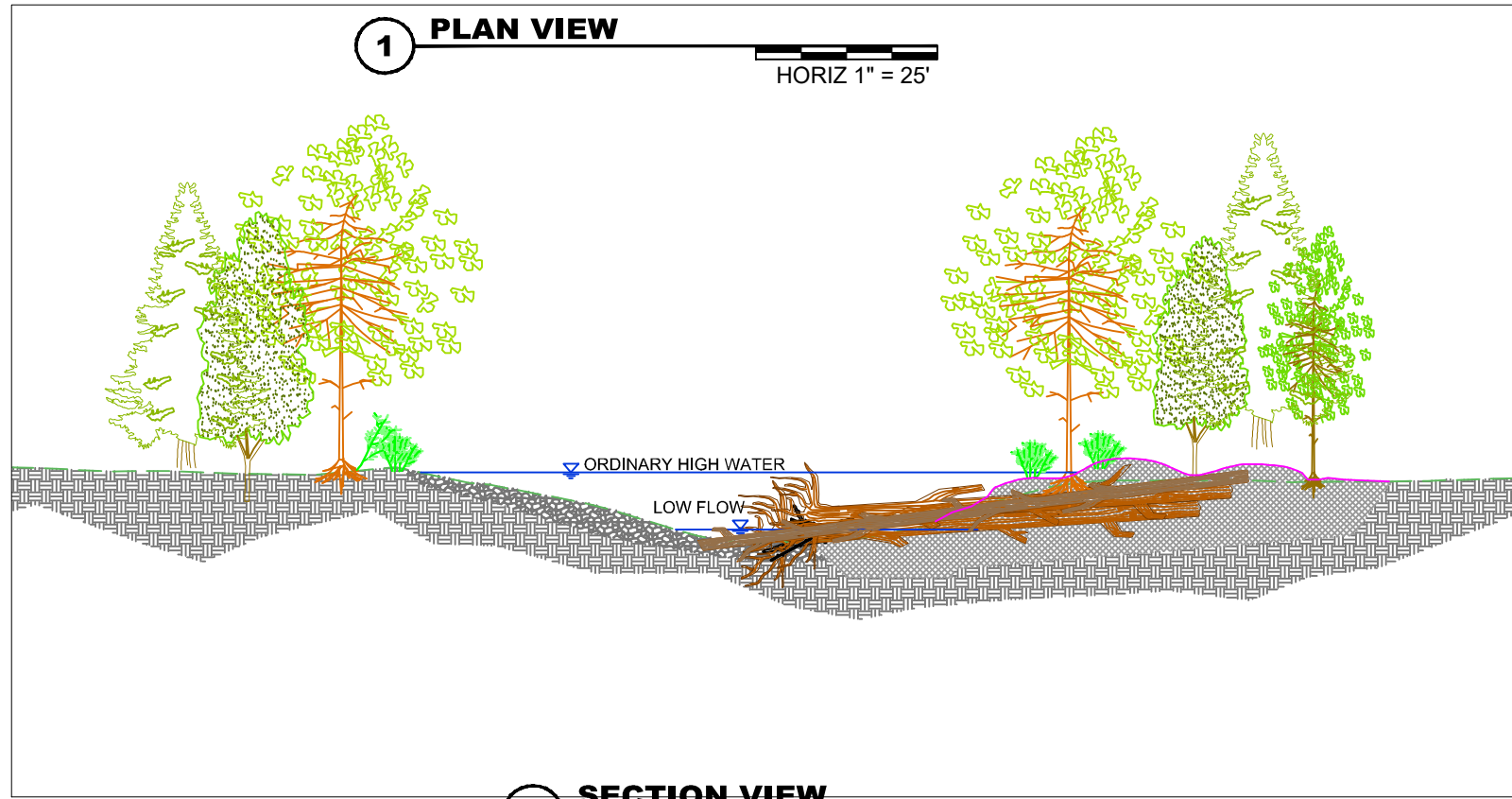
TYPE II ELJ BIOLOGICAL OBJECTIVES - DESIGN INTENT

- PURPOSE OF TYPE II IS THE SAME AT A TYPE I ELJ. CREATE A CHANNEL SPANNING LARGE WOOD STRUCTURE THAT INCREASES WATER SURFACE ELEVATION AND DEPTH, DECREASES WATER SLOPE, PROVIDES HABITAT COVER AND COMPLEXITY, AND PROMOTE TO FLOODPLAIN CONNECTIVITY AND INCREASED GROUNDWATER AND HYPORHEIC FUNCTIONS TO IMPROVE WATER TEMPERATURE DIVERSITY AND COLD WATER REFUGE.
- PROVIDES OVERHEAD COVER, VELOCITY REFUGE, AND ORGANIC NUTRIENTS THAT SUPPORT FOOD WEB PROCESSES AND ALL LIFE STAGES OF JUVENILE AND ADULT SALMONID (REARING, HOLDING)
- TYPE II STRUCTURE IS DESIGNED TO AUGMENT EXISTING CONSTRUCTED ELJ'S, USING THE KEY MEMBER BASE STRUCTURE AS AN ANCHOR POINT FOR CHANNEL SPANNING TYPE II ELJ



1 PLAN VIEW

HORIZ 1" = 25'



2 SECTION VIEW

HORIZ 1" = 20'

3 ASSEMBLY DETAIL

HORIZ 1" = 24'

PROJECT ELEMENT NOTES

1. WOOD MATERIAL SHALL COME FROM FIR, SPRUCE, LODGPOLE PINE, OR PINE TREES.
2. LOCATION OF WOOD STRUCTURE SHALL BE STAKED AT EACH LOCATION BY CO.
3. CUT ENDS ON ALL EXPOSED LOGS TO BE BROKEN AND PROVIDE A ROUGHENED APPEARANCE.
4. WOOD STRUCTURE SHALL BE CONSTRUCTED BY HELICOPTER PLACEMENT.
5. STRUCTURE WILL BE CONSTRUCTED IN LAYERS WITH LARGE BASE MEMBER, RACKING INSTALLATION, AND TOP KEY MEMBERS PLACED TO ANCHOR RACKING MATERIAL AS DIRECTED BY CO.

MATERIAL SCHEDULE

ITEM	QUANTITY	DIA. (IN)	LENGTH (FT)	ROOTWAD (Y/N)
KEY MEMBER	5	20" Plus	~ 45' plus	YES - 5" DIA. MIN.
RACKING LOGS/TOPS	10	8-14"	~ 20-30'	NO

Designed	Drawn	Checked	Approved	Title
A. Childs/S. Welch	A. Childs			

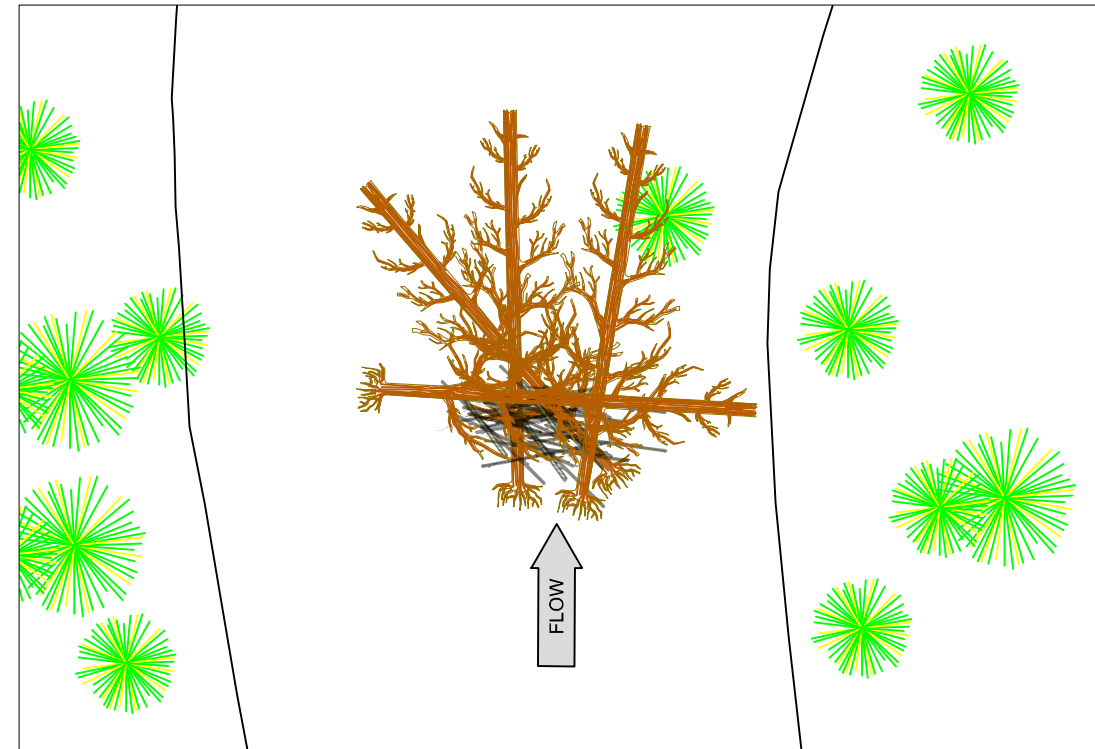
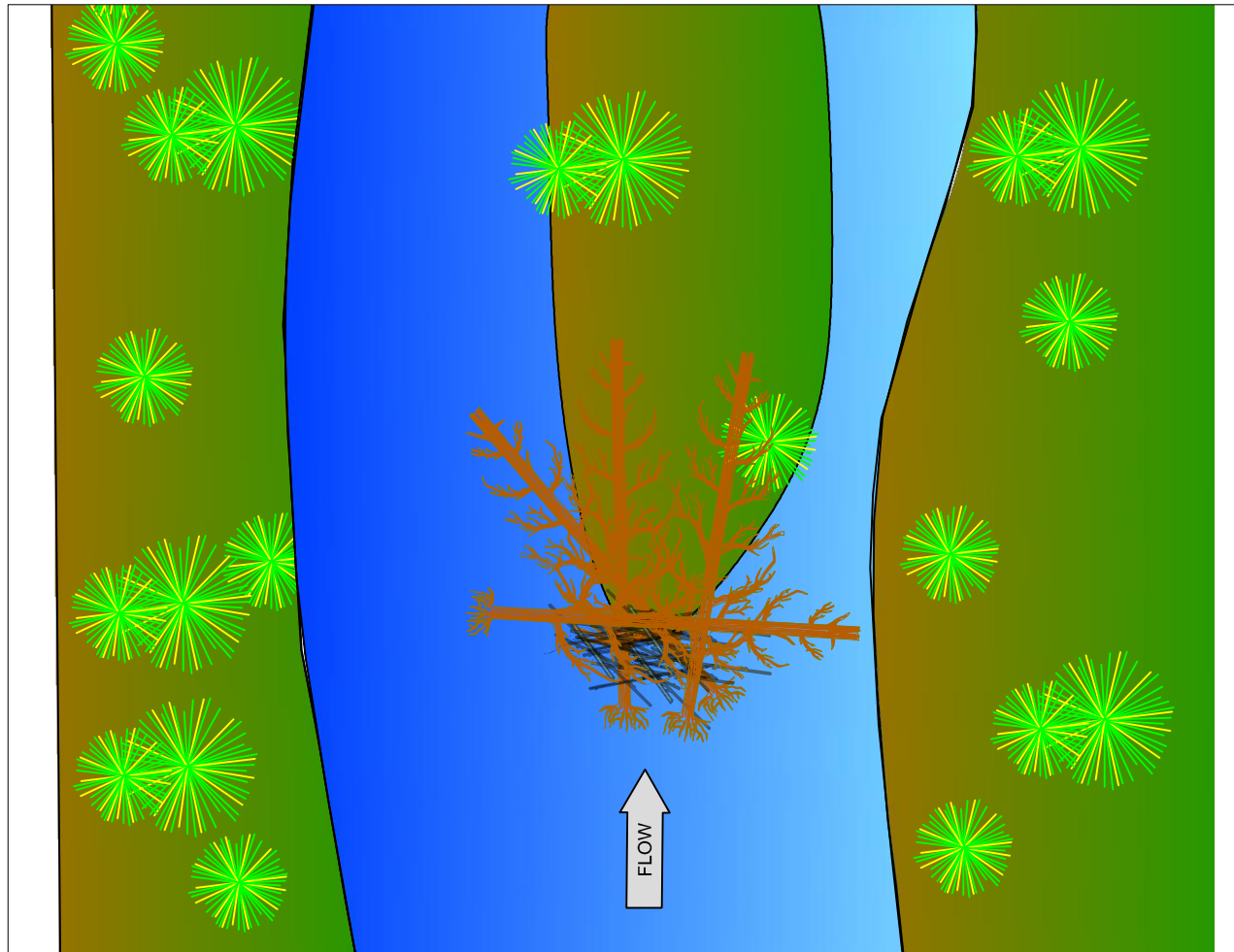
MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
 Union COUNTY, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Wallowa Whitman National Forest



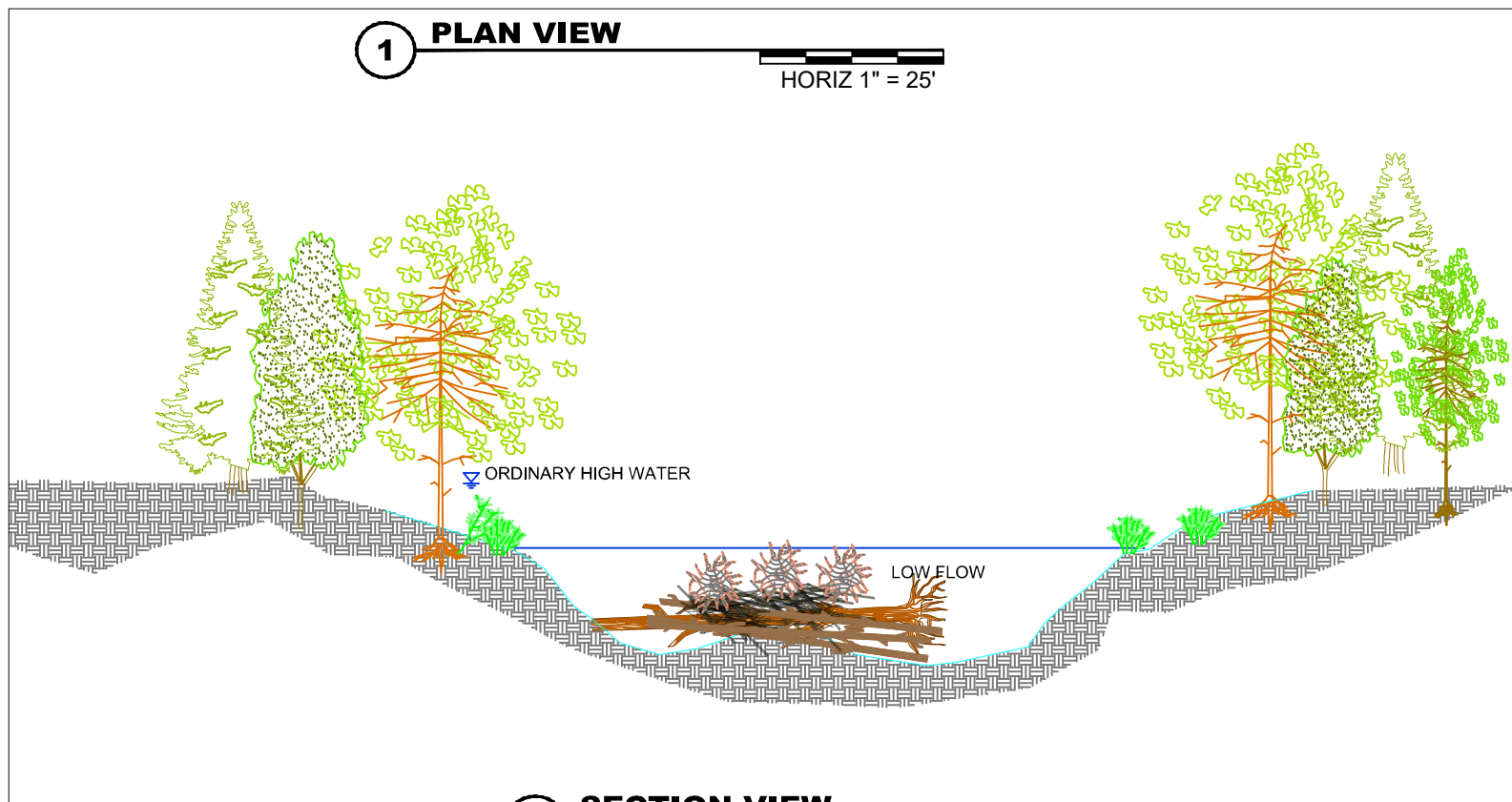
TYPE III ELJ

TYPE IV APEX ELJ BIOLOGICAL OBJECTIVES - DESIGN INTENT

- PURPOSE OF TYPE III APEX IS TO CREATE/MAINTAIN CHANNEL SPLIT FLOW AND ISLAND HABITAT.
- PROVIDES OVERHEAD COVER, VELOCITY REFUGE, AND ORGANIC NUTRIENTS THAT SUPPORT FOOD WEB PROCESSES AND ALL LIFE STAGES OF JUVENILE AND ADULT SALMONID (REARING, HOLDING)



1 PLAN VIEW
 HORIZ 1" = 25'



2 SECTION VIEW
 HORIZ 1" = 20'

3 ASSEMBLY DETAIL
 HORIZ 1" = 24'

PROJECT ELEMENT NOTES

1. WOOD MATERIAL SHALL COME FROM FIR, SPRUCE, LODGPOLE PINE, OR PINE TREES.
2. LOCATION OF WOOD STRUCTURE SHALL BE STAKED AT EACH LOCATION BY CO.
3. CUT ENDS ON ALL EXPOSED LOGS TO BE BROKEN AND PROVIDE A ROUGHENED APPEARANCE.
4. WOOD STRUCTURE SHALL BE CONSTRUCTED BY HELICOPTER PLACEMENT.
5. STRUCTURE WILL BE CONSTRUCTED IN LAYERS WITH LARGE BASE MEMBER, RACKING INSTALLATION, AND TOP KEY MEMBERS PLACED TO ANCHOR RACKING MATERIAL AS DIRECTED BY CO.

MATERIAL SCHEDULE

ITEM	QUANTITY	DIA. (IN)	LENGTH (FT)	ROOTWAD (Y/N)
KEY MEMBER	4	20" Plus	~ 45' plus	YES - 5" DIA. MIN.
RACKING LOGS/TOPS	6	8-14"	~ 20-30'	NO

Designed	A. Childs/S. Welch	Date	Oct 2017
Drawn	A. Childs		Oct 2017
Checked			
Approved			
Title			

MIDDLE UPPER GRANDE RONDE
Fish Habitat & Floodplain Restoration
 Union County, OREGON
 Confederated Tribes of the Umatilla Indian Reservation &
 Wallawa Whitman National Forest



TYPE IV APEX ELJ

BUDGET

Totals automatically round to the nearest dollar

A	B	C	D	E	F	G	H	
Itemize projected costs under each of the following categories:	Quantity	Unit	Unit Cost	OWEB Funds	BPA Funds	Cash Match	In-Kind Match	Total Costs
	(e.g., # of hours)	Unit	(e.g., hourly rate)					(add columns D, E, F)
SALARIES, WAGES AND BENEFITS. List position titles, include only costs of employees charged to this grant.								
USFS NEPA specialists	50	hours	\$291				14,550	14,550
CTUIR Design, construction, inspection	1	unit	\$50,000				50,000	50,000
SUBTOTAL (1)				0	0	0	64,550	64,550
CONTRACTED SERVICES. Labor, supplies, and materials to be provided by <i>non-staff</i> for project implementation.								
Wood Acquisition & Hauling								
304 Key members, 540 tops/logs logging	120	hours	\$185		22,200			22,200
Key members haul (4 key members/load)	72	loads	\$800		57,600			57,600
Tops and racking haul	55	loads	\$800		44,000			44,000
Mobilization and site clean-up	1	unit	\$8,000		8,000			8,000
Helicopter - Vertol 107, log deck to sites								
Fly 304 key members	40	hours	\$7,500		300,000			300,000
Fly 844 tops, racking pieces, and small whole trees	20	hours	\$7,500		150,000			150,000
Helicopter mobilization	1	unit	\$20,000		20,000			20,000
MUGRR Construction								
200 series tracked excavator (44 ELJ @ 5 hr. each)	220	hours	\$185		40,700			40,700
200 series tracked excavator (10 Apex ELJ @ 3 hr. each)	30	hours	\$185		5,550			5,550
Log deck management during helicopter flight	40	hours	\$185		7,400			7,400
Mobilization and site clean-up	1	unit	\$10,000		10,000			10,000
Traffic control (Forest Road 51)	1	unit	\$30,000		30,000			30,000
SUBTOTAL (2)				0	695,450	0	0	695,450
TRAVEL. Mileage, per diem, lodging, etc. Must use current State of Oregon rates.								
								0
								0
SUBTOTAL (3)				0	0	0	0	0
MATERIALS/SUPPLIES. Refers to items that are "used up" in the course of the project. Costs to OWEB must be directly related to the implementation of this grant.								
18" DBH tree with rootwad	304	tree	\$200				60,800	60,800
8"-14" racking member	844	tree	\$50				42,200	42,200
SUBTOTAL (4)				0	0	0	103,000	103,000
EQUIPMENT/SOFTWARE. List portable equipment costing \$300 or more per unit. Must remain property of a governmental entity, tribe, watershed council, SWCD, institution of higher learning or school district.								
								0
								0
SUBTOTAL (5)				0	0	0	0	0
OTHER. Costs must be necessary and reasonable for successful completion of this grant.								
								0
SUBTOTAL (6)				0	0	0	0	0
[Add subtotals above] MODIFIED TOTAL DIRECT COSTS (7)				0	695,450	0	167,550	863,000

A	B	C	D	E	F	G	H	
Itemize projected costs under each of the following categories:	Quantity	Unit	Unit Cost	OWEB Funds	BPA Funds	Cash Match	In-Kind Match	Total Costs
	(e.g., # of hours)	Unit	(e.g., hourly rate)					(add columns D, E, F)
GRANT ADMIN. Select one of the methods below. Fill in the requested rate. Compute by multiplying MTDC (7) line by this rate.								
Federally Negotiated Indirect Cost Rate	<input type="checkbox"/>							0
Federally Accepted 10% <i>de minimis</i>	<input type="checkbox"/>							0
OWEB Negotiated Indirect Cost Rate	<input type="checkbox"/>							0
SUBTOTAL (8)				0	0	0	0	0
POST-GRANT. Pre-paid costs (\$3,500 or less) that are associated with either post implementation status reporting or effectiveness monitoring or plant establishment costs. List each separately.								
Post-Implementation Status Reporting (\$3,500 or less)	/yr							0
Effectiveness Monitoring (\$3,500 or less)	/yr							0
Plant Establishment (\$3,500 or less)	/yr							0
SUBTOTAL (9)				0	0	0	0	0

GRANT BUDGET TOTAL *Totals automatically round to the nearest dollar

GRANT BUDGET TOTAL [Add Totals (10), (11), and (12) as applicable]	0	695,450	0	167,550	863,000
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Prospectus of Proposed Project Opportunity

Opportunity Title: Upper Grande Ronde River Canyon

Opportunity Lead

Allen Childs/Jake Kimbro
Confederated Tribes of the Umatilla Indian Reservation
(541) 429-7940, (541) 429-7941
allenchilds@ctuir.org, jakekimbro@ctuir.org

Technical Contact

Allen Childs/Jake Kimbro
Confederated Tribes of the Umatilla Indian Reservation
(541) 429-7940, (541) 429-7941
allenchilds@ctuir.org, jakekimbro@ctuir.org

Landowner

USA, Wallowa-Whitman National Forest
Attn: Bill Gamble, District Ranger
(541) 963-8582
bgamble@fs.fed.us
Contacted: Yes
Supportive: Yes
Contribution: Design input, environmental compliance

River

Name: Grande Ronde River
Mile: 156.1-164.2
Tributary – Snake River

Restoration Atlas

BSR: UGR15
Tier: 1

Initial Score:

Proposed Score:

Restoration Activities

1. Protect Land and Water (Easement, Acquisition)
2. Channel Reconstruction
3. Pool Development
7. Levee Modification: Removal, Setback, Breach
9. Restoration of Floodplain Topography and Vegetation
11. Perennial Side Channel
12. Secondary (non-perennial) Channel
13. Floodplain Pond-Wetland
14. Alcove
15. Hyporheic Off-Channel Habitat (Groundwater)
16. Beaver Restoration Management
18. Riparian Buffer Strip, Planting
24. Add Nutrients
27. LWD Placement
28. Modify or Remove Armoring
31. Improve Thermal Refugia (spring reconnect, other)
35. Road Decommissioning or abandonment

Species Affected

Focal: Snake River Spring Chinook Salmon, Snake River Summer Steelhead, Bull Trout, Pacific Lamprey

Description

The Upper Grande Ronde River Canyon Fish Habitat Enhancement Project is located in the Upper Grande Ronde Subbasin along the Grande Ronde River between RM 156.1 and RM 164.2. The Project reach sits at an elevation of approximately 3,400-4,000 feet within a watershed area of 475 mi², which is predominantly snowmelt-driven. Most of the basin is forested (over 73 percent) and has very little development (less than 0.1 percent estimated impervious area) (USGS 2014). The Project reach is located within the Wallowa-Whitman National Forest along USFS Road 51 within the Grande Ronde recovery plan assessment unit UGR15.

The Project is a continuation of habitat restoration actions conducted by the US Forest Service (primarily large wood additions). Conceptual strategies include: 1) identifying and prioritizing response reaches within project area for improved floodplain connection and side channel habitat creation; 2) Utilizing apex Engineered Log Jams (ELJs) to force

split channel flow and increase habitat complexity and diversity, particularly in areas identified under strategy #1; and 3) Installation of channel spanning wood structures to increase depth and decrease velocity to mimic onsite examples exhibiting these key habitat conditions (e.g, ELJ's, natural wood, and beaver dams). Potential large wood sites include previous and existing large wood sites as well as additional locations with potential for achieving depth and velocity objectives. The Project area presents a large-scale and significant opportunity to expand, create, and enhance core spawning and rearing habitat for ESA listed spring-summer Chinook salmon and summer steelhead.

Channel degradation has occurred in response to floodplain constriction from constructed levees and railroads, as well historical log transport operations by splash damming through the project reach. Railroad grades, road grades, and levees through the floodplain create artificial channel constrictions and disconnected floodplains that have resulted in an enlarged and incised channel. Constriction increases flow depths, flow velocities, and shear stresses during high water events. The outcome is a wider, more uniform plane-bed channel with limited quantities of large woody material (LWM). Historical splash dam and log transport originating from upstream of the project reach also resulted in a degraded channel. The quantity and force of logs moving along the channel are known regionally to have coarsened stream beds and severely truncated pool-riffle sequences.

Existing riparian vegetation conditions include scattered patches of woody shrubs, deciduous and conifer forest, and areas of herbaceous plants that grade into coniferous forests. Beavers are uncommon and no longer play a major role in wood delivery to the channel or maintaining diverse off-channel riparian and wetland habitats, although beaver activity and beaver dams in particular likely played a vital role in maintaining and diversifying historic off-channel habitat.

Where beaver activity was prevalent within the response reaches on the Upper Grande Ronde River, the impacts could have included considerable low velocity off-channel areas. Beaver activity would have promoted a network of ponds and/or wetlands connected by single or multiple transportation routes that resulted in floodplain complexity. Beaver dams would have also provided increased sediment retention and increased groundwater recharge and retention, which may have increased in-stream flow at baseflow conditions. The off-channel wetland complexes associated with beaver activity would have provided increased total area of available fish habitat. Beaver dams also contributed to reduced water velocities, attenuated peak flows, and increased area of riparian vegetation (Pollock, Heim, and Werner 2003).

The long-term rehabilitation vision (CTUIR's River Vision) for the Upper Grande Ronde Canyon Fish Habitat Enhancement Project is to improve physical and ecological

processes by rehabilitating and restoring the project area to achieve immediate and long-term benefits to chinook, steelhead, and bull trout at all life stages, as well as providing habitat for pacific lamprey and freshwater mussels.

Objectives

- Increase the number and quality of large pools in the main and/or side channels.
- Increase the number and frequency of LWM in the main and/or side channels.
- Increase habitat diversity, instream velocity breaks, and cover through the addition of LWM.
- Create and enhance channel margin low water velocity areas in the main and/or side channels to improve juvenile rearing habitat.
- Expand on previously installed LWM structures to add lateral and vertical complexity to the channel planform and bed morphology to increase hyporheic exchange.
- Re-invigorate self-sustaining native plant communities with diverse compositions and structures along channel margins and across the floodplain, including patches associated with beaver colony activity.
- Increase riparian vegetation to support overall bank stability, particularly in locations where habitat structures have been installed and along banks with increased hydraulic roughness that are susceptible to erosion from loss of root mass.
- Provide the physical, geomorphic, and ecologic conditions that buffer diurnal and seasonal water temperature fluctuations within the project area and allow access to cold water spring sources.
- Create self-sustaining in-channel hydraulics that support varied bed forms including deep pools and a range of particle sizes with smaller median particle size favorable to salmonid spawning.
- Support diverse geomorphic processes, features, and patterns of sediment movement, sorting and deposition within the active channel(s).
- Increase the quantity of suitable habitat for juvenile Chinook winter rearing, based on the depth and velocity HSI curves per Favrot and Jonasson, 2014.
- Increase the quantity of suitable habitat for juvenile Chinook emigration.
- Increase the quantity of suitable habitat for juvenile Chinook summer rearing, based on the depth and velocity HSI curves per Maret et al., 2006.
- Increase the quantity of suitable habitat for adult salmonid use including spawning and holding.

Major Risks

Project area access is difficult due to the confined canyon, limited staging areas, and the presence of Forest Road 51. Risks associated with downstream private landowners include potential for downstream large wood migration. Additional risks include potential

impact to Forest Road 51 road prism associated with high flow events and road prism erosion. Risk elements will be incorporated into design and evaluated.

Permits and Consultation

ESA Section 7 - USFWS: Applicable
ESA Section 7 - NMFS: Applicable
COE/DSL Permit: Applicable
Cultural Resources Section 106: Applicable
DEQ 401 Water Quality Permit: Applicable

Project Schedule

Year: 2018-2020

Monitoring:

A juvenile Chinook overwintering tracking study began in 2014 to identify locations and preferred micro habitat (ODFW, 2014), and a rotary screw trap operated by ODFW is located within the project reach. Water temperature monitoring and fish presence and use monitoring began in 2009 and is ongoing. Aerial photo points will be established in 2017 to provide comparative progress of riparian condition, vegetation, channel conditions, and habitat complexity. Stream Channel morphology (profile, cross sections, and pebble counts) will be conducted pre and post-project and a 2-dimensional HEC-RAS model is currently being developed. A carcass addition evaluation conducted by the Columbia Inter Tribal Fish Commission (CRITFC) will begin summer, 2017.

Project Relations

Multi-phase Effort: Yes. Due to the size and scale, the project will likely be implemented in 2-3 phases.

Phase Description: Phase 1-2018, Phases 2-2019, Phase 3, 2020

Could Phase 1 be a Stand Alone Project: Yes

Preliminary Cost Estimate

Total: \$
BPA Funding: \$
OWEB FIP Funding: \$
Total Needed: \$

Design Funding

Design Funds Requested: No

Design Option: N/A

Type of Work: N/A

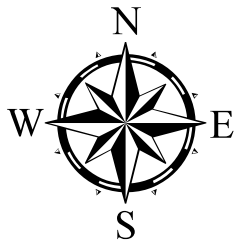
Specialties: N/A

MUGRR Canyon Wetland Map

 MUGRR Phase I 2018

 USFS Boundary

 Large wood locations



Wetlands (USFS)

 Freshwater Forested/Shrub Wetland

 UGRR CL

Scale

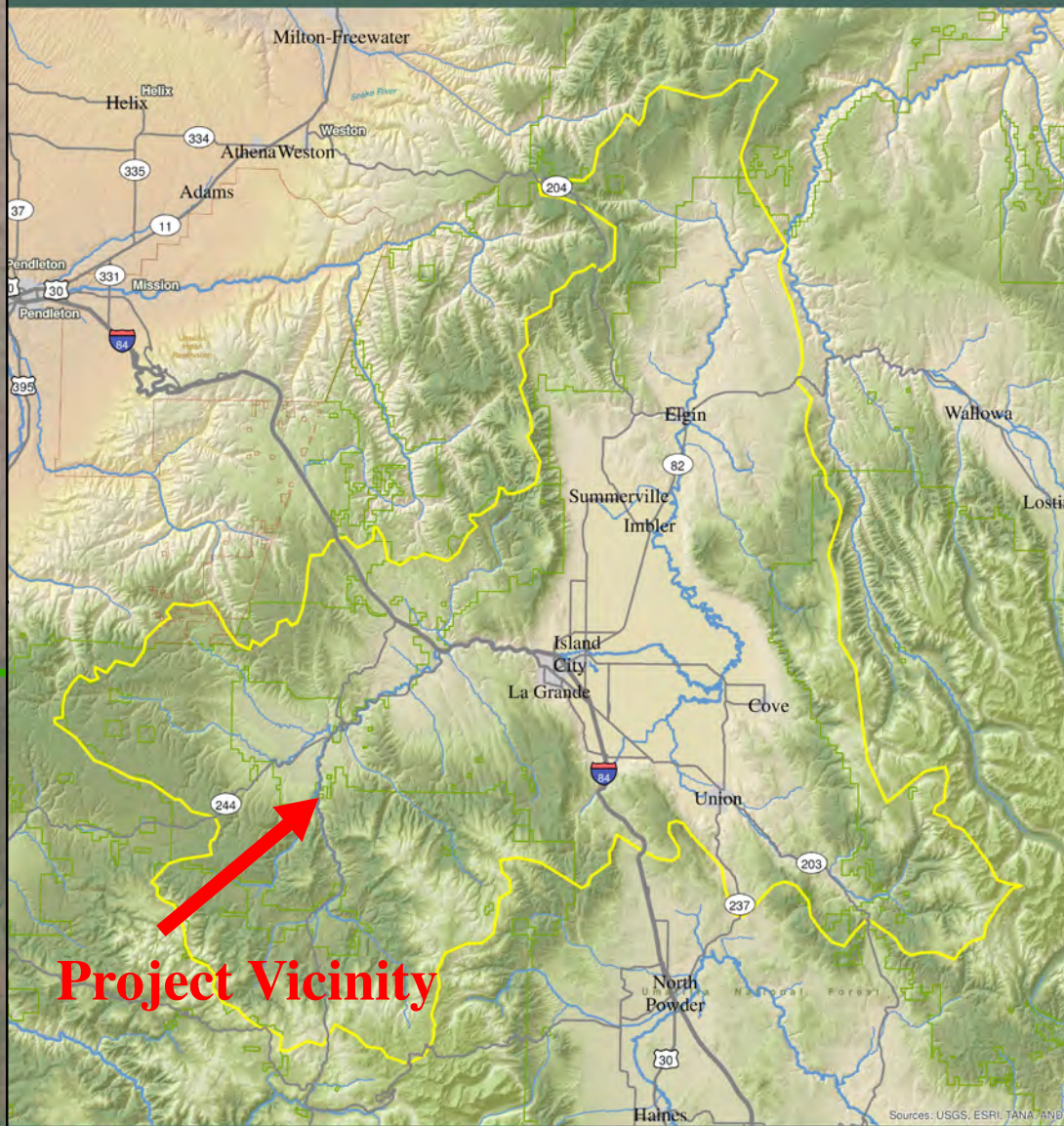
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Fly Creek

Flow

US Forest Service Road 51

Grande Ronde River Basin






Project Vicinity



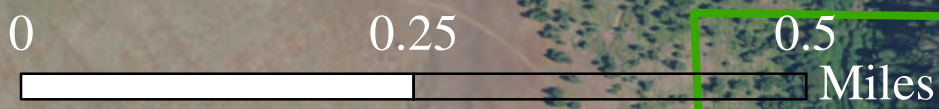
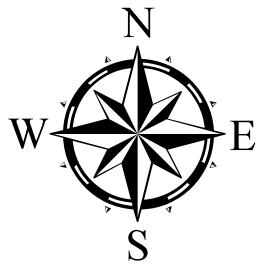
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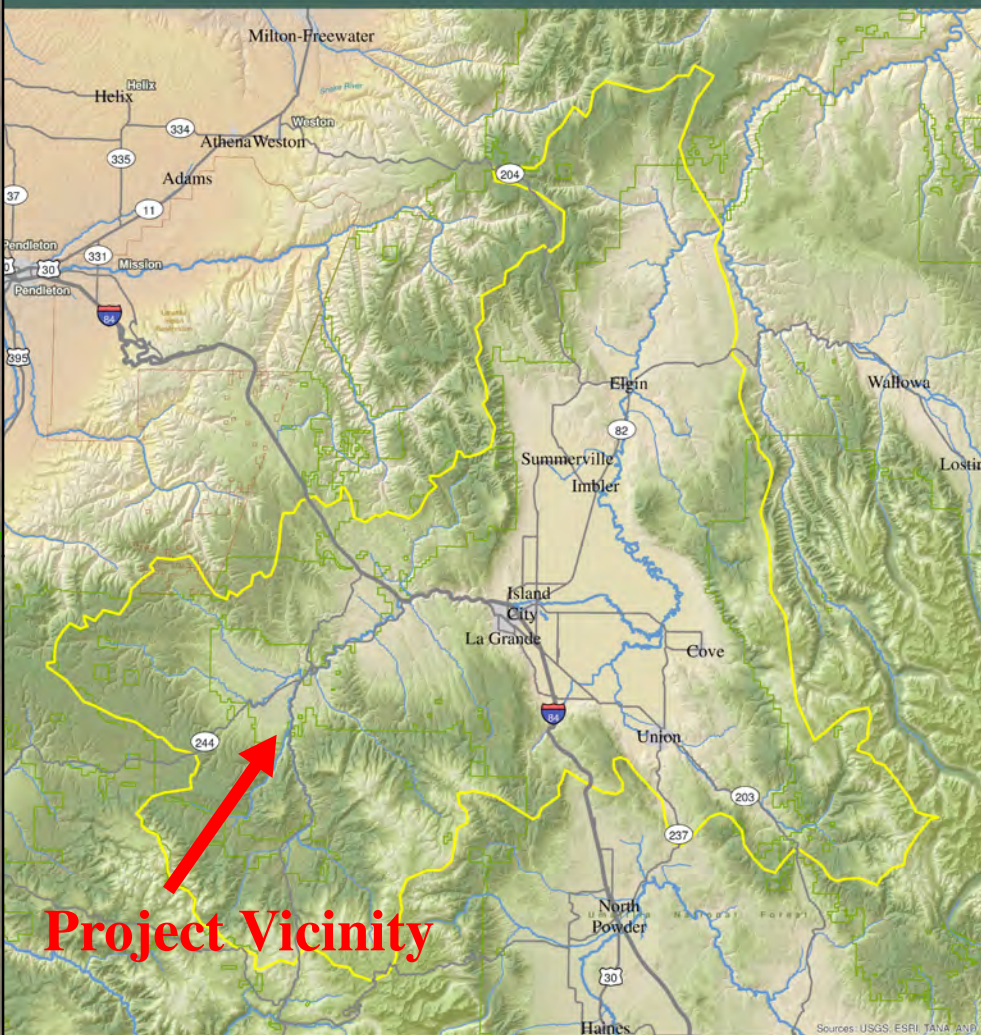
 Umatilla Indian Reservation
 County Boundary
 Grande Ronde Basin

MUGRR Canyon Overview Map

- UGRR CL
- USFS Boundary
- MUGRR Phase I
- Large wood locations



Grande Ronde River Basin

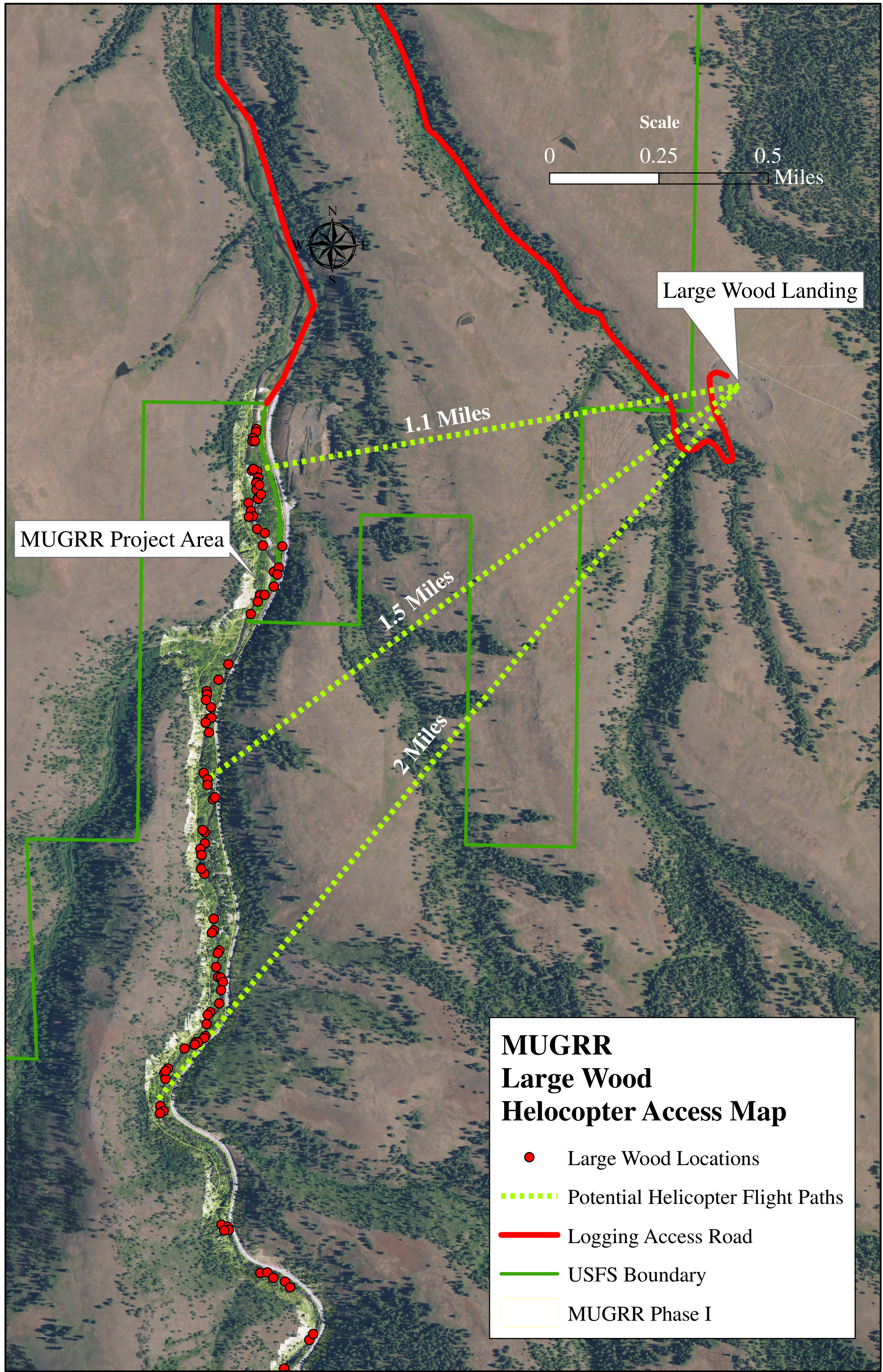


Project Vicinity



- Umatilla Indian Reservation
- County Boundary
- Grande Ronde Basin





Scale
0 0.25 0.5
Miles



Large Wood Landing

1.1 Miles

MUGRR Project Area

1.5 Miles

2 Miles

**MUGRR
Large Wood
Helicopter Access Map**

- Large Wood Locations
- ⋯ Potential Helicopter Flight Paths
- Logging Access Road
- USFS Boundary
- MUGRR Phase I