



Contact Information

2025 Upper Columbia Regional Project Pre-Application

* Pre-applications (SRFB & Monitoring) due March 12, 2025 (COB)

*Complete SRFB applications due in PRISM April 18, 2025 (COB)

*Complete Monitoring applications due in PRISM May 1, 2025 (COB)

*Revised SRFB proposals due in PRISM May 27, 2025 (COB)

*Final revised SRFB & Monitoring applications due in PRISM June 23, 2025 (noon)

Project Title	Entiat 1D Habitat Enhancement Final Design
Sponsor	Chelan County Natural Resources Department
Primary Contact	Mike Kane
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Project Summary

Please provide a description or summary of the proposed project, including project goals. The goal of the project should be to solve identified problems by addressing the root causes. Then clearly state the desired future condition.

This is a final design phase project and includes design development, preparation of a basis of design report, hydraulic modeling and other elements as per Manual 18 Requirements. Additionally included is a CLOMR, wetland delineation and cultural resource surveys. Preliminary Designs were completed in December of 2024 in a SRFB funded effort.

Human impacts within the lower Entiat River have had a large and detrimental effect on instream habitat (re-routing, channelization, levee building, etc.). Due to existing conditions the river lacks the ability to readily create new habitat through natural processes alone. As a result of the confined river channel and limited floodplain habitats, the majority of habitat that historically existed on the lower Entiat River was instream habitat; therefore, re-establishing instream habitat is vitally important to salmon and steelhead (Reclamation 2012).

Goals: Improve side channel hydraulic connectivity and habitat quality for juvenile salmonids. Improve instream habitat for juvenile salmonids. Increase riparian buffer structure and function related to stream shading and large wood recruitment potential. Reduce instream water temperatures.

The desired future condition for this site is to enhance the existing functional attributes like large wood structures and perennial and seasonal side channels.

What are the project objectives? Objectives support and refine biological goals, breaking them down into small steps. Objectives are specific, quantifiable actions the project will complete to achieve the stated goal. Each objective should be SMART (Specific, Measurable, Achievable, Relevant, and Time-bound).

Note: This exact question is included in the PRISM application. Example format: The project seeks to address [specify limiting factor(s)] for [limiting life stage(s)] by [specific actions proposed] to create an estimated [include specific target metrics, as described below] upon implementation in [estimated year].

Side channel connectivity-Objectives: Improve existing 920' of seasonal and perennial side channel features through the strategic construction of 9 ELJs to increase flow interaction and provide cover. Instream habitat-Objective: Install 9 ELJs to provide cover, pool formation, and sediment sorting. Enhance hydraulic variability and provide instream cover along 1600' of the mainstem river.

Increase riparian buffer-Objective: Restore riparian mature riparian forested vegetation located within the 2-year floodplain or within 25 feet of the existing banks.

Reduce instream water temperatures-Objective: Increase main channel shade through riparian revegetation fill planting and long-term shading along 730' of the south bank. Increase hyporheic and floodplain flow storage and discharge through strategically constructing engineered log jams (ELJs) to deflect and increase flows into adjacent floodplain and gravel bar features along 1600' of mainstem and 920' of side channel habitat.

Budget Request

Values MAY be duplicative and do not have to equal TOTAL anticipated budget in pre-application.

Anticipated Request - SRFB (standard round) 259,800

Anticipated TOTAL Budget 259,800

Project Location

Briefly describe the location of the project

This project is focused on Reach 1D between River Miles (RM) 4.3 – 4.8 of the Entiat River, bounded upstream by the Hanan-Detwiler diversion structure and downstream by Dinkelman Canyon Road bridge.

Latitude (decimal degrees) 47°40'24.08"N

Longitude (decimal degrees) 120°18'35.57"W

Project subbasin

Entiat

Entiat Assessment Unit(s)

Entiat River-Mills Creek

Does the proposed project span multiple assessment units?

No

Reach(es) Name

Entiat River Mills 05

Identify the reach(es) priority/ reach ranking. Note: If the project involves work in multiple reaches, select "Multiple" and include details in the text box that will appear below. Please reference the Prioritization Web Map: <https://prioritization.ucsrb.org/>.

Rank 2

Project Information

1. What species will the project benefit?

Spring Chinook

Steelhead

Bull Trout

Summer Chinook

2. Select the project's objectives and the associated tracking metrics

Design, Monitoring or Assessment

4. Does this project already exist in Salmon Recovery Portal or PRISM?

Yes

5. Has this project been submitted previously for funding through the SRFB and/or other process(es)?

Yes

Please explain which process(es) and how this proposal differs from the previous submission (e.g., different phase, modified scope, etc.)

It was previously submitted and funded through Preliminary Designs.

6. What category is the project?

Design

If applicable, what is the secondary project category?

N/A

Is the project eligible for Riparian Funding?

No

Design and Restoration Proposals

7. What project phase(s) are proposed for completion?

Final Design

8. Is your project within a completed (or soon-to-be completed) Reach Assessment or other type of assessment (e.g., Rapid Site Assessment, other)?

Lower Entiat Reach Assessment (BOR 2012)

9. Which limiting factors does the project propose to address?

Cover - Wood

Off-Channel - Floodplain

Off-Channel - Side-Channels

Pool Quantity & Quality

Riparian

Riparian - Canopy Cover

Riparian - Disturbance

10. Which life stages will the proposed project address?

Fry

Spawning and Incubation

Summer Rearing

11. Freshwater Benefits - Describe how your project will improve survival, capacity and/or distribution for target species at the reach scale?

The project will add 9 ELJ structures and associated pools thus increasing overall habitat capacity and distribution within the lower Entiat River. Polivka and Claeson (2020) found that restoration increased the habitat capacity of the reach at the scale of pools created by ELJ's.

Additionally, the strategic location of the ELJ's will enhance flows into side channel habitats, adding capacity by increasing the amount of wetted area. Some of the ELJ's are located within side channels, providing cover and improving survival. Over the long-term, fill-planting of forested clumps along the south shore will increase shading and provide relief to late summer in stream heating.

The Reach-based Ecosystem Indicators (REI) analysis (Reclamation 2012) found that within Lower Entiat River, water quality (temperature); habitat quality (large woody debris, pools, off-channel habitat), floodplain connectivity, and riparian vegetation were in an "at risk" condition due to historic anthropomorphic impacts, including floodplain development, bed armoring (embeddedness), and a lack of large wood recruitment potential.

12. Temporal Effect - Briefly describe how and to what extent the project would promote natural stream/watershed process consistent with the geomorphology of the stream?

In 2012, Reclamation concluded that habitat restoration in the lower Entiat River "should be aimed at improving and enhancing those forms and processes that currently exist, rather than attempting to create wholly new conditions that may not be appropriate or sustainable" (Reclamation 2012). Human impacts within the lower Entiat River have had a large and detrimental effect on instream habitat. Due to existing conditions the river lacks the ability to readily create new habitat through natural processes alone. As a result of the confined river channel and limited floodplain habitats, the majority of habitat that historically existed on the lower Entiat River was instream habitat; therefore, re-establishing instream habitat is vitally important to salmon and steelhead (Reclamation 2012).

The project has limited ability to promote any large scale natural stream process, but the localized benefits of large wood structures and associated pools, flow partitioning and sediment sorting provides a significant improvement in habitat conditions on a reach scale.

13. Temporal Effect - How long will it take for the project to achieve its intended response?

1-10 years

14. Temporal Effect - How long will the restoration action and its benefits persist?

50+ years

15. Temporal Effect - What level and/or interval of maintenance is anticipated? What is the plan for any anticipated maintenance?

The project will be designed to minimize maintenance needs, however a monitoring plan will be developed as part of the Final Designs to identify maintenance needs for ELJ's and plantings. Typically, three years of plant maintenance is required to address potential issues and comply with permitting requirements, especially for disturbed areas associated with access, staging and construction. Maintenance can include watering, mulching, fill planting, and weeding in planted areas. ELJ's typically do not require maintenance, but Monitoring includes checking threaded rods and bolts and whether the ELJ is causing an unintended consequence like excessive erosion, full span channel blockage or other changes not anticipated. Annual maintenance would be anticipated for at least the first three years post-construction.

16. Methods - Briefly describe the potential (for design) or proposed restoration methods and how they will achieve project objectives.

Currently, the Preliminary Design consists primarily of the construction of 9 ELJ's. This includes a reduction from earlier Concepts. The goals of the ELJs remain the same from the conceptual design; The deflector groups will provide cover, slow water down and increase pool habitat and be placed in sections

of the river that are deeper and slower, to have the most impact on river hydraulics and the maintain the scour pool that will be constructed. The smaller jams within the side channel will provide hydraulic complexity within the side channels and help form pools for resting areas while slowing down flows. Both types of jams include a scour pool that will be excavated in front of the structure to provide immediate pool habitat.

The ELJs will utilize rootwad posts with some installed at a batter angle. The ELJs will need to be excavated prior to post placement. Post elevations (10 ft below thalweg for the side channel ELJs, and 15 ft below thalweg for the deflector ELJs) were determined based on stability calculations. Rootwad posts are recommended to be used instead of piles due to the large cobbles within the streambed. For both the side channel and deflector ELJs, racking and slash material is placed particularly on the upstream end and flanks of the ELJ to provide complex instream cover. The structures are designed such that scour will not destabilize the structure. If scour occurs, the structure is intended to “self-settle”, essentially lowering the overall elevation of the structure in conjunction with scour; however the racking material at the front of the structure which is countersunk below the bed elevation should serve as a buffer against potential scour. The deflectors will include three bolted connections, at the final (top) layer of the ELJ with the large rootwads pinned to the rootwad posts. This is to prevent the top logs from floating away.

Assessment Proposals

Protection Proposals

Monitoring Proposals

Project Risk and Economic Benefits

1. What is the landownership?

The project is wholly within private lands except for the aquatic portion which is administered by Washington State Department of Natural Resources.

2. Have you secured landowner participation in or acceptance for this project?

Yes

Please explain

We have been working with landowners through the Conceptual Design Process up to completion of the Preliminary Designs. Landowners preferred to wait until Spring to review and comment on the current Preliminary Designs. Their acceptance will be secured during this SRFB process.

3. Describe any land owner requirements (e.g., design elements, right-of-ways, access agreements, liability waivers, etc.) and if/how they could affect the project

The two main landowners on the Left and Right Bank of the river are Agricultural owners and as such use the adjacent uplands for grazing. Riparian buffer widths have been reduced in the Preliminary Designs to reflect their interest in maintaining grazing land. Additionally, at least one of the owners has expressed concern about creating thick forested areas along the shoreline that could promote crown fires and work against fire fuel reduction efforts.

4. Will the project raise potential concerns for interest groups (e.g., recreational users) or the community at large (including upstream/ downstream/ adjacent landowners)?

It is unlikely that the project will create concerns for river floaters which is mostly a small local group of kayakers that run during spring flows and a few local innertuber's that run during summer low flow. Sightlines are good in this area to minimize risk. Their have been issues in the past with large wood structures being installed further upstream in the Entiat, but ELJ's in the lower Entiat have not been very controversial in the past.

5. Who will have the responsibility to manage and maintain the project? What is the responsibility of current or future landowners?

Chelan County Natural Resources Department will assume responsibility for managing and maintaining the project. Landowners primary responsibility will be to continue to allow some access for design, monitoring and maintenance. Irrigation of riparian plants may become a landowner responsibility if they are interested, once we have installed and maintained the infrastructure.

6. Are other projects being proposed immediately upstream or downstream of worksite?

Yes

7. Please describe the risk of failure associated with this project.

NSD applied the basic risk evaluation method as outlined in the Bureau of Reclamation (Reclamation) Large Woody Material - Risk Based Design Guidelines (Reclamation 2014) to broadly assess risk to the public and property associated with ELJ elements of the project. The Risk Guidelines make use of two risk matrices which quantify risk associated with ELJ project elements: The Property Damage Risk Matrix, and the Public Safety Risk Matrix. The Matrices quantify general characteristics of the project reach, structure setting, recreational use, and channel characteristics to categorize risk to the public and property as a result of project actions. Ratings for risks associated with public safety concerns and potential property damages result in a low or high and low, moderate, or high risks, respectively (Reclamation 2014). The ratings then result in recommended factors of safety for horizontal and vertical loads which are then applied to ELJ design.

The evaluation resulted in a public safety risk rating of “low”, and a property damage risk rating of “moderate”. Per the RBDG, these risk factors correspond to a 25-year design event with factors of safety of 1.5 and 1.75 for sliding and buoyancy, respectively. Factors of safety for rotation and overturning were determined to be not applicable for all structure types and were not considered.

8. Is there any public outreach planned during and/or after implementation? Does the project build community support for salmon recovery efforts?

Public outreach to date has been limited to project updates during the Entiat Planning Unit Meetings held quarterly. These are well-attended by local Entiat River Corridor residents. Prior to starting work in the 1D Reach, Chelan County was approached by landowners and asked when we were going to do some work in this section of the river.

This project overlaps with prior projects completed by the county and others, including the HD Weir and includes landowners who have historically been very active in Watershed Planning and salmon recovery, the Citizen's Committee and even one contractor.

The project builds on existing support for salmon recovery and the recent opening of fishing seasons where some fishers use the HD Weir to fish on the lower Entiat is especially effective at building support.

9. Does the project represent an opportunity for economic benefit? How much benefit does the project create for the dollars invested?

This proposal is a good investment of public funds because it supports salmon recovery by improving and expanding habitat in a 1/2 mile long reach. Since there are primarily two landowners to work with, it simplifies coordination while maximizing project benefits in the 1D reach.

10. Describe any partnerships, their experience, and types of contributions supporting the project.

The Voluntary Stewardship Program and the Salmon Recovery Funding Board funded the initial phases of the project, including Preliminary Designs. The US Bureau of Reclamation has played an active role in funding reach assessments, project concepts and designs in the Entiat River and is providing funding for Chelan County staff to continue work on this project.

Tom Desgroseillier, with the WDFW Science Program, is very familiar with this reach from years of conducting side channel studies in the lower Entiat. He has graciously contributed his time by reviewing and providing comment on the Preliminary Designs and has agreed to meet with landowners onsite to discuss scientific research conducted in this reach as a way to advance coordination between State and local agencies and landowners.

Optional Section - Preparation for PRISM (SRFB applications only)

The following questions are identical to the questions RCO requires in the PRISM application for SRFB projects. If desired, sponsors can complete associated questions early and copy responses into PRISM during the "Complete Application" phase due on April 18, 2025.

*please note, this section is not applicable for Monitoring proposals

Do you want to review and/or pre-populate PRISM questions?

No

Supporting Documents

[Upper Columbia Process Guide 2025](#)

[SRFB Manual 18 \(2025\)](#)

[RCO Application Resources \(2025\)](#)