

Mill Creek Fish Passage Project

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FBRB FINAL APPLICATION QUESTIONS



1. Project Type

Are you applying for a Planning or Restoration grant?

Manual 22: Planning projects are funded for final design only. Restoration projects are funded for construction. Funding for restoration projects also may include funding for final designs. Note: If the total requested amount for a restoration project is greater than \$500,000, then recently completed preliminary-level designs are required to be submitted with the final application. The person or team completing the preliminary project design is required to include at least one licensed professional engineer with experience in fish passage restoration.

This proposal is for a Restoration grant and includes funding to complete Preliminary and Final Designs, permitting, construction and management.

2. Total Requested Amount

What is the total requested grant amount? (Note: this must match the 'Total PRISM Project Budget' dollar amount in the 'FBRB Cost Estimate Spreadsheet.xlsx'.)

This proposal requests funding to complete final designs, permitting, project management and construction. Projected total costs based on current designs are \$626,075.

Chelan County requests \$494,599 (79%) from FBRB and will request \$131,476 (21%) from SRFB or another local funder.

The included spreadsheet

The construction cost estimate between the draft and final proposal has increased as a reflection of most recent project costs and additional input from Chelan County Public Works. Cost estimates for design were determined with consultant input based on previous and current design efforts in the Wenatchee Watershed. Cost estimates for construction were based on 30% plans completed by a PE with Natural Systems Design and reflect the latest cost information.

3. Limiting Factors

Describe how the proposed project addresses limiting factors to salmon and steelhead productivity and life history stages within the watershed. Limit 500 words.

This project directly addresses the #5 ranked Ecological Concern, habitat quantity (Anthropogenic Barriers) for steelhead and bull trout by restoring fish passage on Mill Creek and is specifically identified in the Biological Strategy (UCRTT 2017). Additionally, it also provides access to peripheral habitats #4 for juvenile rearing (tributary habitats can function like side channels), water quality #3 (temperature is an issue in Peshastin Creek) and even the #2 ranked concern, structural diversity, by providing access to complex habitat, which is rare in the heavily altered Peshastin drainage. Recent research by WDFW shows low egg to parr steelhead survival in Peshastin Creek (Cram 2016) potentially due to scour. This could be a direct result of channelization in mainstem Peshastin Creek. Opening up Mill Creek to steelhead spawning and rearing provides access to a relatively natural channel for spawning and rearing.

Peshastin Creek supports spring Chinook, steelhead, and bull trout as well as redband and cutthroat trout. Peshastin Creek is a minor spawning area for spring Chinook and a major spawning area for steelhead (UCRTT 2013 p. 40). Recent data indicates that Peshastin Creek had the highest percentage of wild steelhead spawners and lowest proportion of hatchery spawners for any single tributary in the Wenatchee basin (WDFW 2017). The project allows access to spawning and rearing habitat for adult steelhead, resident trout, and bull trout. Some use by Spring Chinook and Coho salmon is anticipated as well but gradients of 5%+ may restrict that use. Mill Creek stream temperature data show temperatures stay below 12°C by late September, suggesting potential for Bull trout spawning.

4. Level of Coordination

Describe the level of coordination of the proposed project with other recently completed or ongoing restoration projects within the watershed. Only describe projects within the same HUC 10 and completed since 2010 or funded for implementation by 2021. (*Note: this can be any type of habitat restoration, e.g., large wood placement or floodplain restoration.*) Limit 500 words.

The Bureau of Reclamation funded a modification to the irrigation diversion upstream of the Mill Creek Barrier Culvert in 2004 that provided for fish passage thru construction of 6 weirs. One of those weirs was identified by WDFW as a partial barrier to fish passage (#602260) during the review of the draft FBRB proposal (Mill Creek Fish Passage Project). Reclamation has indicated they will provide design services and other support to the Cascadia Conservation District (CCD) and CCD will manage the project and a fix (Adaptive Management) of the structure by 2021. Chelan County is coordinating with Reclamation, the CCD and the landowner on fixing this issue and will provide support as needed to insure correction by 2021. A site visit has been planned for July 19, 2018 to start this design process. Letters of support are attached. The landowner has been very supportive of past efforts to improve access to fish habitat in Mill Creek and continues to be so.

Additionally, the Bureau of Reclamation funded design and the Yakama Nation provided construction funding for a modification to the Icicle-Peshastin Irrigation District Dam Fishway that was completed in 2012. This is Site #950114 and was originally constructed in 2005, 13,664' downstream of the Mill Creek Barrier on Peshastin Creek. Chelan County was the original sponsor in construction of the Fishway and provided construction oversight services to the Yakama Nation for the 2012 modification.

In 2018, Chelan County will replace the Larsen Creek Culvert with a fish passable structure (FFFPP funding). Larsen Creek is a tributary to Peshastin Creek, about one mile downstream of the Mill Creek

confluence. In 2019, wood treatments are planned for Larsen Creek to treat incision, provide instream habitat complexity and provide natural water storage, similar to beaver dam analogs.

The Yakama Nation is planning a small habitat enhancement project at RM 2.7 on Peshastin Creek consisting of 5 bank-based wood structures to be constructed in 2019. Chelan County assisted with community coordination and permitting for this project.

5. Project Scope

Describe the scope of the proposed project, and the goals and objectives. Describe how the project scope is appropriate to meet the identified goals and objectives. Include milestones and schedule. Limit 500 words.

Project Scope

The objective of the Mill Creek Fish Passage project is to fund final design, permitting and construction of a crossing to open 2.2 miles of perennial stream to provide access to spawning and rearing habitat on Mill Creek (RM 5.2 on Peshastin Cr.). Currently a 4'x5' box culvert with a 1.5% slope and 2' outfall drop at RM 0.1 on Mill Creek creates a barrier to fish passage. The project would remove this structure and replace it with an arch culvert to allow access to spawning and rearing habitat for adult steelhead, resident trout, and bull trout. Some use by Spring Chinook and Coho salmon is anticipated as well but gradients of 5%+ may restrict that use.

Designs/permitting/constraints

Initial cultural resource surveys and Geotech surveys have been completed at this site. Previous design alternatives have been proposed for this site, but the current design effort is proposed as the most cost effective alternative available that can meet the design requirements and landowner constraints, while achieving the goals of fish passage thru this site. The site is located on a sole access to residences in an area of typically high fire danger during the "fish window" provided for construction. This necessitates providing a temporary access around the construction site during construction to facilitate public and property safety. The site is also located on an alluvial fan at the base of a drainage basin that is prone to wildfire/storm events and the potential for debris flows must be considered in the design process.

Project Schedule

Project schedule will depend on when a contract award can be made. If July 2019 is the award date, then the most realistic scenario would be to complete the design and permitting phases during the remainder of 2019 and the beginning of 2020. It is possible that these steps could be completed to facilitate a 2020 construction window, if a spring advertising for bid is sufficient, but advertising to bid in the fall of 2020 would be the most realistic scenario and likely result in the best prices. This would result in construction during July/August 2021, planting in October 2021 and final inspection/final reports by December 2021.

Match

Chelan County is applying for project match in the 2018 SRFB round.

Goals

The goal of this project is to remove a fish barrier and restore access to 2.2 miles of quality tributary habitat.

Objectives

- Complete final design and permitting based on current 30% design
- Remove a 4'x5' box culvert that creates a barrier to fish passage
- Install a maximum 20'8" span arch culvert with a 12'1" rise to accommodate the potential for a debris flow event.
- Provide access to 2.2 miles of spawning and rearing habitat to ESA-listed steelhead and bull trout.

6. Cost Effectiveness

Describe how the project is cost-effective in terms of cost and biological benefit. Limit 500 words.

Feedback from SRFB Panel members indicate that even though the 2016 fish passage assessment listed this as 33% passable, it appears to be a complete barrier to fish passage.

This project was previously started but had to be shelved due to design and cost issues. The initial design effort did not meet the standards for Public Works and when a second design effort was started with an engineering firm preferred by Public Works, estimated construction costs exceeded \$1.2 million.

The current effort has produced a much more affordable construction cost in collaboration with a different engineering firm and Public Works input, however steel and concrete prices are high and don't appear to be going down anytime soon. Delaying this project will likely result in higher prices, so there is an incentive to do this now.

Additionally, restoration projects that are reach-based and treat large contiguous sections of stream have been found to provide the most effective approach and value. The Larsen Creek tributary one mile downstream from the Mill Creek confluence with Peshastin Creek will have a barrier culvert removed in 2018 (FFFPP funding). Additional wood treatments in Larsen Creek are planned for 2019 to treat incision, improve habitat and provide natural water storage on two miles of that stream. A floodplain reconnection/side-channel project is also being planned in Peshastin Creek downstream of Mill Creek confluence (RM 4.4-4.1). These projects are adjacent the best-connected stream habitat (floodplain) in the lower 9 miles of Peshastin Creek (RM 4.5-5.0). The combination of these projects will improve habitat/off-channel conditions on 1 mile of Peshastin Creek and access to 4 miles of adjacent tributary habitat.

7. Contribution to Recovery Plan and Additional Supporting Information

Describe the proposed project's contribution to an approved recovery plan and provide any other relevant information you would like for the Board to consider in the evaluation of the proposed project. Limit 500 words.

In the lower Peshastin Reach (RM 0 – 9.4 at Ingalls Creek), Mill Creek has the best tributary habitat opportunity available for spawning and rearing for steelhead. Anthropogenic impacts in the lower Peshastin (State Highway 97, irrigation, agricultural and residential encroachment) have resulted in low late summer flows, high instream temperatures, straightening and floodplain disconnection (Andonagui 2001). As a result, there are limited rearing opportunities in the lower mainstem and egg to parr survival is low (Cram 2016).

In contrast to the mainstem Peshastin, Mill Creek has only one residence above the barrier and is otherwise in a natural condition. Mill Creek has perennial flow, drains a north and east facing basin, and has a relatively shallow stream gradient compared to nearby Allen, Hansel and Camas Creeks. The Rat Creek Fire burned through the Mill Creek watershed in November 1994 but based on intrinsic potential maps and air imagery has 95% forest canopy cover with a gradient of 5 – 8%. Mill Creek has moderate amounts of woody debris in the first 1.5 miles, numerous plunge pools of 1-2' with some 3-4' drops and fish including *O. mykiss* were observed throughout the reach (October 2010 survey, ~1cfs). Data from a CCNRD discharge monitoring site just upstream of the barrier showed flows in 2013 between 4 and 18 cfs during the steelhead spawning window (March – May) and above 1 cfs during low flow. 2014 data shows a seven-day average maximum (7DAM) stream temperature of 21.9°C in Peshastin Creek (Ecology gage at the mouth) and a 7DAM of 16.9°C in Mill Creek, suggesting the potential for thermal refuge. This project is listed under Habitat Quantity (Anthropogenic Barriers) in the Biological Strategy (UCRTT 2017) a technical document in support of the Recovery Plan (UCSRB 2007) for Peshastin Creek.

References

Andonagui C. 2001. Salmon, Steelhead, and Bull Trout Habitat Limiting Factors. A state Conservation Commission. Olympia, WA

Cram 2016. Spatially continuous abundance and age-structure of juvenile steelhead in an important wild-fish production area. Presentation in Wenatchee, WA at the Upper Columbia Science Conference, 2018

National Oceanic and Atmospheric Administration, 2016. 2016 5-Year Review: Summary and Evaluation of Upper Columbia River Steelhead and Upper Columbia River Spring-run Chinook Salmon. Portland, OR

Hillman, T., P. Roni, and J. O'Neal. 2016. Effectiveness of tributary habitat enhancement projects. Report to Bonneville Power Administration, Portland, OR.

Truscott B.L., Cram J.M., Murdoch A.R. WDFW, 2017. Upper Columbia Spring Chinook Salmon and Steelhead Juvenile and Adult Abundance, Productivity, and Spatial Structure Monitoring. Wenatchee, WA. BPA Project Number 2010-034-00

Upper Columbia Regional Technical Team (UCRTT). 2017. Revised Biological Strategy to Protect and Restore Salmon Habitat in the Upper Columbia Region.