# Appendix C-2:Planning Project Proposal

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| **Project Number** | 18-1233 |
| **Project Name** | Lower Skokomish R Mainstem LWD Design |
| **Sponsor** | Mason Conservation District  |
| **Planning Type** | Preliminary Design |

List all related projects previously funded or reviewed by RCO:

|  |  |  |
| --- | --- | --- |
| Project # or Name | Status | Status of Prior Phase Deliverables and Relationship to Current Proposal? |
|  | Choose a status  |  |
|  | Choose a status  |  |
|  | Choose a status  |  |

1. **Project brief.**

This project will analyze 1.5 miles of the Skokomish River between river miles 1.5-3 to determine the most appropriate size, frequency, and location for LWD installations to achieve the goal of improving salmonid habitat conditions and converting the reach from sediment storage to sediment transport.

1. **Project location**.

The Skokomish watershed is approx. 240 square miles with 80 miles of mainstem, and over 260 miles of tributaries. It drains the southeast corner of the Olympic Mountains and has the largest estuary and intertidal delta in the Hood Canal Basin. The watershed consists of three major drainages: North Fork (33.3 miles), South Fork (27.5 miles) and Vance Creek (11 miles). This project is located downstream of the three major drainage confluences, on the mainstem Skokomish River between river mile 1.5-3.5.

1. **Problem statement**.

Salmonid habitat quality and quantity in the Skokomish watershed has been heavily degraded due to a complex combination of stressors. This project will take place in the Lower Mainstem Skokomish River, between river mile 1.5-3. Over the years, forest practices have altered sediment loads, sediment transport, channel stability, and associated habitat characteristics. Small logging operations began occurring in the Skokomish Watershed in the late 1800s, but the logging industry escalated practices in the second half of the 20th century (Skokomish 55-56). By the mid-1990s approximately 80 percent of the South Fork Skokomish sub basin had been logged, approximately 470 miles of road had been built to support logging, and the large majority of old growth forest was gone. These changes accelerated sediment delivery to watercourses and, in turn, to the main channels. Other associated changes occurred, including alterations to riparian structure, runoff patterns, and in-channel large wood jams (Skokomish 55-56).

Farm establishment and development of the floodplain in the Skokomish valley began in the 1850s. Throughout the next 20-30 years, the amount of land cleared along the lower river steadily increased. By 1910, large portions of the lower valley had been cleared and major logjams had been removed from the channel. In the late 1920s, a dam was built on the North Fork Skokomish River. Dam construction on the North Fork resulted in an estimated 40-70 percent reduction in transport capacity. These dams were particularly severe as no fish passage was provided, and nearly all of the flow to the North Fork was diverted straight into the Hood Canal (Skokomish 55-56).

This combination of stressors throughout the entire watershed has resulted in a high sediment load, massive aggradation, loss of channel complexity, loss of LWD structure, decreased LWD recruitment, unstable sediments and channels, and increased flood frequency. These issues have resulted in loss of Chinook performance at all life stages including spawning, incubation, and juvenile habitat quality and quantity (Skokomish 101).

1. **List the fish resources present at the site and targeted by the project.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Species** | **Life History Present (egg, juvenile, adult)** | **Current Population Trend (decline, stable, rising)** | **Endangered Species Act Coverage (Y/N)** |
| Chinook | All | Decline | Y |
| Chum | All |  | Y |
| Steelhead | All | Decline | Y |
| Bull Trout | All | Decline | Y |
| Coho | All |  | N |
| Pink | All |  | N |
| Sockeye | All | Decline | N |
| Cutthroat | All |  | N |
| Rainbow | All |  | N |

1. **Describe the limiting factors, and limiting life stages (by fish species) that the project expects to address.**

Although this project will have a positive impact on all species present in the Skokomish Watershed, including Summer Chum, this proposal focuses on its benefit to Chinook, as there is no Skokomish River Summer Chum Recovery Plan. The Skokomish Chinook Recovery Plan identifies LWD placement as a specific strategy to restore sediment processes, improve channel efficiency, and restore channel complexity (Skokomish 101). The plan indicates that all of these factors are contributing to loss in Chinook performance at all life stages including loss of spawning, incubation, and juvenile habitat quality and quantity (Skokomish 101).

Additionally, this proposed project will primarily address sediment process and large stream channel limiting factors. According to “Guidance for Prioritizing Salmonid Stocks, Issues, and Actions for the Hood Canal Coordinating Council”, both of these limiting factors received the highest ranking for recovery of Skokomish River Chinook.

Sediment processes are characterized by changes that “led to increased fine sediments levels within spawning gravels, channel and habitat instability, and in some cases, to severe channel aggradation (as in the Skokomish)”. Relevance to salmonid species includes increased mortality rates of embryo and juveniles during incubation and overwintering, and an increase in habitat instability resulting in a decrease in general population performance across all life stages (Lestelle, 2015).

Large stream channels are characterized as having “ lost structural and habitat diversity…resulting in changes in channel stability, changes in substrate stability, loss of pool habitat and other habitat types, and coarsening of channel substrates”. These factors directly limit salmonids through: a general loss of habitat for all life stages; increased mortality rates for all life stages; loss in food diversity and quantity for juvenile salmonids; and a general decline in population performance at all life stages and over the entire life cycle (Lestelle, 2015).

The HCCC Prioritization Guidance also outlines the importance of LWD placement as actions that will provide solutions to these issues. Large wood/ELJ placement actions received the highest ranking for addressing Skokomish Fall Chinook recovery.

1. **Project goals and objectives.**
	1. **What are the project’s goals?**

a. This project aims to improve instream conditions for Chinoook Salmon to include LWD cover, pool creation, and a meandering thalweg between river mile 1.5 – 3 of the Skokomish River.

b. Convert the project reach from a sediment storage to a sediment transport reach.

* 1. **What are the project’s objectives?**

a. Complete a final design by 12/2020 for engineered log jam installation to scour sediment creating pools, create a meandering thalweg, and reduce the width to depth ratios resulting in improved habitat and increased sediment transport to the estuary. The design will outline the appropriate size, frequency, distribution, and style of ELJ necessary to accomplish the project goals.

1. **What are the assumptions and constraints that could impact whether the sponsor achieves the objectives?**

The project site presents potential constraints around the US Hwy 106 Bridge. However, the majority of properties adjacent to this project site allow for flexible and robust LWD applications, as they are owned by the Skokomish Tribe. Additionally, a similar project the District is managing upstream from this reach (RM 5 Enhancement Construction) has a similar constraint around the US Hwy 101 Bridge and the project managers and design team are confident in their approach. This project reach is also slightly different than other reaches within the Skokomish River as it is closer to the estuary and can be tidally influenced, which may involve additional modeling and engineering.

The level of participation from two landowners within this reach remains unknown until additional project details are provided. However, over the past year MCD has made tremendous progress toward helping these landowners realize the benefit of these salmon projects throughout the watershed. Outreach/communication is included in this scope of work, and if landowner support is not obtained, the project will move forward and appropriate properties will be avoided.

1. **Project details.**
	1. **Provide a narrative description of the proposed project.**

This project will take place between river mile 1.5 – 3 of the Lower Skokomish Mainstem. This reach has lost its structural and habitat diversity resulting in changes in channel stability, changes in substrate stability and loss of pool habitat as the channel has developed into plane-bed morphology with elongated riffle/glide sections, with the entirety of the reach heavily aggraded with sediment. The estuary just downstream alternatively has been starved of sediment for several decades; a recently completed restoration effort has removed the barriers to sediment transport into the estuary.

The project will replicate an approach that has been proven successful in the upper South Fork that utilizes LWD structures to stabilize the channel and sediment while also providing improved pool habitat.

The project team will hire a consultant to lead an analysis to determine the most appropriate size, frequency, and location for LWD installations with the goal to improve instream habitat conditions and convert the reach from sediment storage to sediment transport. Design alternatives will be discussed amongst project stakeholders, and the most appropriate alternative will be selected based on landowner support and benefit to fish. Final designs will be developed for the selected alternative and the project team will work with permitting agencies to obtain all required permits.

This project aligns with high priority issues and actions to recover Skokomish Fall Chinook according to the HCCC Prioritization Guidance. Although this project focuses on the recovery of Fall Chinook, it will improve conditions for all salmonids supported by the Skokomish River, and these benefits will continue in perpetuity.

* 1. **Provide a scope of work and detailed list of project deliverables.**
* 1/1/2019 - 4/1/2019
	+ MCD will hire a consultant to lead the design process.
* 4/1/2019– 7/1/2019
	+ Gather and provide the consultant with all appropriate background data (including all completed hydraulic models produced as a part of the Skokomish General Investigation and Green LiDAR recently acquired by the Skokomish Tribe).
* 7/1/2019 – 9/1/2019
	+ Collect all necessary topographic and other field data throughout the entire project reach during the low flow period.
	+ Begin landowner outreach when necessary to obtain field data.
* 9/1/2019 – 11/1/2019
	+ Work with the consultant to analyze topographic data and hydraulic modeling to determine the most appropriate size, frequency, and distribution of LWD installation that will achieve the project objectives.
	+ Develop conceptual design
* 11/1/2019 – 2/1/2020
	+ Complete landowner outreach to gain input on conceptual design
* 2/1/2020 – 5/1/2020
	+ Develop preliminary designs and a report that incorporates the findings from the analysis and input from landowners.
* 5/1/2020 – 8/1/2020
	+ Work with permitting agencies to and obtain required permits.
* 8/1/2020 – 9/1/2020
	+ Collect additional topographic data if required in response to permitting agencies.
* 9/1/2020– 12/1/2020
	+ Complete final designs and design report.
* 12/1/2020 – 12/31/2020
	+ Complete final report and final billing.
	1. **Explain how the sponsor determined cost estimates.**

Cost estimates were generated by using actual contracted prices for similar projects that MCD has managed in recent years. The costs estimate is based on actual costs realized during the Mainstem RM 5 LWD design project. MCD consulted with the design team working on the RM5 LWD design project and made a few minor budget adjustments based on differing site conditions.

* 1. **How have lessons learned from completed projects or monitoring studies informed the project?**

Mason Conservation District has carried out large-scale restoration projects in the Skokomish Estuary, numerous smaller restoration projects elsewhere in the Skokomish Valley, and carried out large-scale engineered logjam construction projects in the Skokomish South Fork. Lessons learned during these projects include how to plan material sourcing and transport to minimize project costs and traffic impacts, how to work with Skokomish Valley landowners to construct river restoration projects, and techniques and timing to work in the Skokomish River to minimize impacts to fish and their habitat. Ongoing fish population and habitat monitoring information by the Skokomish Tribe and WDFW will be used to plan and monitor construction to minimize fish impacts.

1. **If the project includes an assessment or inventory**
	1. **Describe any previous or ongoing assessment or inventory work in your project’s geographic area and how this project will build upon, rather than duplicate, the completed work.**

N/A: This design project does not involve an assessment or inventory; however, LiDAR used from similar projects will be utilized on this project.

* 1. **If a design is NOT a deliverable of this grant, please describe how this project meets all of the required criteria for filling a data gap that are list in Section 2 of Manual 18.**
1. **If the project includes developing a design or a feasibility study:**
	1. **Will a licensed professional engineer design the project?**
	**Yes**
	2. **If the project includes a fish passage or screening design, has the project received a Priority Index (PI) or Screening Priority Index (SPI) number?**

N/A

* 1. **Will you apply for permits as part of this project’s scope?
	Yes**
1. **Explain why it is important to do this project now instead of later.**

Comprehensive watershed scale restoration efforts are underway in the Skokomish Watershed. The majority of estuary restoration was completed in 2017, and a large wood project located 1-2 miles upstream from the proposed reach is scheduled for construction in 2019/20. The sequencing of this project with the estuary restoration and upstream wood project will synergize habitat benefits, improve efficiencies among project teams, and continue restoration momentum.

1. **If the project is a part of a larger overall project or strategy, describe the goal of the overall strategy, explain individual sequencing steps, and which of these steps is included in this application for funding.**

Due to several causes, the Skokomish Watershed is severely aggraded in the Upper South Fork above the Gorge as well as below the Gorge to the estuary. Several strategic LWD projects have been constructed, designed, or planned to address aggradation on a watershed scale. Beginning in 2010, the USFS implemented a LWD project between river miles 12 and 12.9 in the Upper South Fork Skokomish River to slow down the rate of sediment moving from the Upper South Fork Basin into the Skokomish Valley. A second construction phase in the Upper South Fork was completed in 2016, and an assessment is underway to prioritize additional treatments throughout an additional 10 miles of the Upper South Fork. Five additional LWD projects are planned for the Valley to encourage a combination of instream habitat, deeper thalweg, and sediment processing. All LWD projects within the watershed play a strategic role in comprehensive river restoration.

1. **Describe the sponsors experience managing this type of project.**

The Mason Conservation District has a rich history of working with property owners concerning natural resource management issues. A large number of resource management plans have been written and dozens of improvements have been made with District guidance. The District has a strong relationship with partnering groups, having worked together with many of them of previous restoration projects. The District has substantial experience and technical expertise with assessment, planning and restoration implementation. The District has successfully designed and implemented several major restoration projects with budgets ranging from hundreds of dollars to more than 8 million.

1. **List all landowner names.**

Parcel Map Attached to PRISM. Landowners include:

* Skokomish Tribe
* WSDOT
* Deno
* J. Hunter
* B. Hunter
1. **List project partners and their roles and contributions to the project.** *Attach a Partner Contribution Form (Manual 18, Appendix G) from each partner in PRISM. Refer to Manual 18, Section 3 for when this is required.*

There are no formal partners involved in this project. However, MCD greatly values input and direction from the landowners in the project reach. Additionally, the Skokomish Tribe will play a key role in making design decisions and in dealing with other resource management issues.

1. **Stakeholder outreach.**

The majority of properties adjacent to this project site allow for flexible and robust LWD applications, as they are owned by the Skokomish Tribe who are in support of this project. The four other landowners along this reach have supported restoration projects in the past, and the District anticipates full support. One of the major landowners in this reach suggested that ELJs in this reach would be a great idea.

### Supplemental Questions

*For acquisition and planning combination projects, applicants will need to answer the acquisition supplemental questions found in the “Restoration, Acquisition, and Combination Proposal.”*

### Comments

Use this section to respond to the comments received after the initial site visits and after submitting the final application.

#### Response to Site Visit Comments

Please describe how the sponsor responded to the review panel’s initial site visit comments. *RCO recommends that the sponsor list each of the review panel’s comments and questions and identify the response. The sponsor may use this space to respond directly to the comments*

Comments

Review Panel Members: Thank you for the constructive feedback. Below you will find your comments/questions in black and our responses in track changes.

1) The proposal should describe why you chose to target this particular reach and focused on an ELJ approach.

This reach was identified as having a channel habitat limiting factor with applicable restoration measures being “placement of structures to maintain channel dynamics, scour channels, and maintain in-stream habitat complexity” (USACE Appendix F, p.11). This limiting factor and restoration measure however were recommended for all reaches between RM 1-12, as the entire lower watershed is severely aggraded and completely lacks sufficient LWD structures. This reach was targeted this grant round as construction and design projects are underway upstream from this reach. Downstream from this reach, the estuary restoration project has recently been completed. The timing to begin this design work is appropriate based on the timing of other projects within the watershed and condition of the reach. An ELJ approach was used based on 1) an understanding that optimal historical watershed processes were largely influenced by naturally occurring LWD structures which are practically obsolete within this reach; and 2) recovery planning documents identifying a lack of LWD structures as a limiting factor for Skokomish River Chinook.

2) The proposal could be strengthened by stepping back and expanding the overall goal from solely “improv(ing) instream conditions for Chinook salmon to include LWD cover, pool creation, and a meandering thalweg” to a broader approach of evaluating a wider range of actions for restoring habitat forming processes in the reach. There is a general tendency among designers to limit their evaluation of restoration alternatives to installing log jams along the channel banks, and not expanding the range of alternatives to promoting such actions as removing existing hydro-modifications (such as bank armor), improving connectivity to floodplains, and even encouraging avulsion into relict channels or low-lying floodplain wetlands. What opportunities exist in the project reach for bigger-scale restoration approaches? Could Fish House Road be relocated away from the river bank and ELJs be used to improve connectivity to low lying floodplains and wetlands on both banks? Does the LiDAR show relict channel scars that could be reactivated? Should overflow channels be constructed through the Highway 106 road prism?

The area on the north side of the river between the Fish House and HWY 106 has large wetland areas that are activated during medium – high flows already. There is no infrastructure currently preventing the river from evolving through natural processes to the north. The north side of the river downstream of HWY 106 mostly consists of allotment properties and previous design processes have determined that restoration in this area is not feasible (see project #13-1204). On the south side of the river throughout this reach the primary landowner is well known to the District and their participation is limited to instream ELJ’s and some riparian restoration only at this time.

Due to the current landownership within this reach, ELJ’s seem appropriate for this point in time; however, this project will not limit potential future restoration actions given a change in landownership and/or landowner willingness. Fish House Road relocation is unappealing based on the project being very expensive for very little relative habitat gain. The road is constructed at the base of a steep valley wall with very little potential to reconnect channel migration zone or floodplain areas. Riparian restoration efforts are currently underway within the project reach.

3) It would be helpful to identify a reference condition from historical records or by comparison to a less-impacted river system with similar morphology to identify S.M.A.R.T. habitat objectives, such as LWD loading, number and spacing of pools and other channel features, connectivity with side channel and floodplain wetlands, and other relevant habitat features.

The design consultant will identify a reference reach or similar to use for identifying the S.M.A.R.T habitat objectives that account for the appropriate size and frequency of ELJs in this reach.

#### Response to Post-Application Comments

Please describe how the sponsor responded to the review panel’s post-application comments. *RCO recommends that the sponsor list each of the review panel’s comments and questions and identify the response. The sponsor may use this space to respond directly to the comments.*