

TULALIP FISH PASSAGE COLLABORATIVE

PROJECT SUMMARY

- 1) Applicant Organization: The Tulalip Tribes
- 2) Project Title: Tulalip Fish Passage Collaborative
- 3) Site Location: Snohomish County, Washington State

This proposal has several priority projects sites which are all located in Snohomish County, Washington (see map in Supplemental Materials). The projects are priority watersheds in the Snohomish and Stillaguamish River Basins (known collectively as the South Whidbey Basin) that flow into the Puget Sound, the largest estuary by volume in the United States. The Snohomish and Stillaguamish Basin deltas are located north of the City of Seattle near the Cities of Everett and Stanwood in Washington State. The Tulalip Tribes Reservation is located at the Snohomish delta, and all projects are within the ancestral lands of the Tulalip People who retain fishing, hunting and other rights and deep cultural connections to this area.

4) Project Description:

This project is a collaboration between The Tulalip Tribes (Tulalip), Adopt a Stream Foundation (AASF), Sound Salmon Solutions (SSS), Trout Unlimited (TU), Snohomish County (County), Snohomish Conservation District (SCD), Burlington Northern Santa Fe Railway (BNSF), and the City of Marysville (Marysville). Priorities include achieving measurable and lasting benefits to native migratory or sea-run (Migratory) fish populations including ESA listed (Listed) and Magnuson-Stevens Fishery Conservation and Management Act (Managed) salmon species, fostering regionally important habitat restoration, enhancing community resilience to climate hazards, and benefiting underserved communities including The Tulalip Tribes and local rural communities. Target Migratory species for this proposal are those native species that spend a portion of their lives in rivers and/or ponds and a portion in the ocean or estuaries including ESA listed Chinook salmon, steelhead, and bull trout, other salmonid species of concern (e.g. coho and chum) and culturally/ecologically important fish species.

Project Goals:

- Increase all Viable Salmonid Population Parameters including abundance, productivity, diversity, and distribution of ESA listed, Managed, Migratory, and other fish species.
- Increase food availability (salmon) for Southern Resident Killer Whales (Species in the Spotlight).
- Restore migratory fish access to **115 miles** of habitat through barrier removal.
- Address **34** migratory fish passage barriers.
- Enhance the quantity, quality and connectivity of priority spawning and rearing habitat for migratory fish species including Chinook salmon (Listed/Managed), Steelhead Trout (Listed), Bull Trout (Listed), Coho Salmon (Species of Concern/Managed), Chum Salmon, Pink Salmon (Managed), Sea Run Cutthroat Trout, and other fish species.
- Enhance ecological connectivity and natural process function within the Snohomish River Basin.
- Increase the abundance and access to Tribal treaty Retained Resources such as salmon.
- Replace/remove infrastructure to enhance safety, reduce flood hazards, and improve resilience.

Regional and Watershed Context: This proposal includes fish barrier removal projects in the South Whidbey Basins that drain to the Puget Sound. The 2022-2026 Action Agenda for Puget Sound, the Puget Sound National Estuary Program's Comprehensive Conservation and Management Plan, lists fish passage barrier removal as one of the primary strategies to recover salmon populations. The Snohomish River is the second largest Puget Sound River, and a major producer of ESA listed and Managed fish stocks including Chinook and coho salmon. The watershed produces salmon that are critical food for endangered Southern Resident Killer Whales (Species in the Spotlight). A relatively small river with a huge impact, the Stillaguamish is at the leading edge of salmon declines and habitat conservation concerns in Washington state and across the West Coast. The Stillaguamish is an imperiled ecosystem that is a top priority for west coast fisheries, the State, Native American tribes, local governments, anglers, conservationists, and many other stakeholders. Many fish stocks (Chinook, steelhead, coho, and chum salmon) have experienced record low returns over the last 5 years in these basins. These low abundance numbers have restricted harvest. Restoring natural processes, habitat connectivity, and migratory fish abundance is critical to the survival of these iconic, economically important, and culturally vital species.

This collaborative proposal will remove 34 migratory fish passage barriers within a focused geographic region, restoring connectivity to 115 miles of upstream habitat. All these barriers are in priority streams for the recovery of anadromous fish including salmon, and have been identified as priority for restoration in Tulalip Tribes Culvert Coordination Analysis (In development). The crossings are in watersheds that are prioritized by the State of Washington and the South Whidbey Basin for fish passage barrier removal. Crossings are located in areas that will benefit critical species, and/or will provide significant upstream habitat connectivity gains. In general, upstream habitat to be connected as part of this proposal is high quality and will provide critical spawning and rearing habitat for priority species.

There are no known federally-owned dams in the Snohomish or Stillaguamish. The only significant hydroelectric dams are the Culmback Dam and the associated Spada Lake Reservoir on the Sultan River, and the South Fork Tolt Dam and Tolt Reservoir on the South Fork Tolt River in the Snohomish River Basin. The dams are not downstream or in the vicinity of any of the proposed fish barrier removal projects.

Timeline: This proposal includes the removal of 34 fish passage barriers implemented by 8 coordinating entities. Timelines for each associated project will differ depending on current status and project scale. Project activities will start in Summer 2024, and potentially continue through 2029 (total of 5 years). See the below narrative for project specific timelines.

5) Landowner and Stakeholder Outreach:

M projects in this proposal are owned by project collaborators. This proposal has broad stakeholder support, including from the five primary project collaborators (Tulalip, County, SCD, BNSF, and Marysville), and many others (see support letters in PDF 4. Supplemental Materials). We are working closely with permitting agencies including Snohomish County, the Washington Department of Fish and Wildlife, the Washington State Department of Natural Resources, the Washington Department of Ecology, the Washington Department of Archaeology and Historic Preservation, NOAA, and the Army Corps of Engineers. We intend to utilize a streamlined Fish Habitat Enhancement Project for these projects.

6) Funding Request: See PDF 2. Budget Narrative for full description

	Year 1	Year 2	Year 3	Total
Funding Request	\$3,910,649	\$12,674,901	\$4,373,228	\$20,958,778

PROJECT NARRATIVE

1) IMPORTANCE AND APPLICABILITY:

The removal of 34 migratory fish passage barriers and connectivity of 115 miles of habitat will provide substantial intrinsic value including measurable and lasting benefits to migratory fish populations including ESA listed salmon species. This will foster regionally important habitat restoration, enhance community resilience to climate hazards, and benefit underserved communities including The Tulalip Tribes and the local rural community.

a) Priority for Migratory Fish: This project will provide substantial measurable migratory fish population benefits through the collaborative removal of 34 fish passage barriers (figure 1). These fish barrier removals will restore Listed and Managed migratory fish access to 115 miles of priority upstream spawning and rearing habitat (table 1). This proposal will remove fish passage barriers for Chinook salmon (Listed/Managed), steelhead trout (ESA Listed), bull trout (Listed), coho salmon (Species of Concern/Managed), chum salmon, pink salmon (Managed), cutthroat trout, and other fish species. All projects are located in priority areas for South Whidbey Basin salmon recovery efforts (see b below).

The priority of fish barrier removal in the South Whidbey Basin is highlighted in associated ESA Recovery and Management Plans. The Puget Sound Salmon Recovery Plan (2007) lists fish access including restoring access on barrier road culverts as one of the top ten actions needed for salmon recovery. One of the primary objectives in The Snohomish River Basin Salmon Conservation Plan (SBSRF, 2005) is to eliminate human-made barriers such as blocking culverts to anadromous fish passage, prevent the creation of new barriers, and provide for the transport of water, sediment, and organic matter at all stream crossings. The 2022 Plan for Puget Sound Chinook: Harvest Management Component Snohomish River Management Unit Status Profile states that “restoration and protection of rearing habitats that support both yearling and subyearling smolt life history traits is vitally important to the recovery of these stocks.” The Snohomish River Natural Coho Salmon Rebuilding Plan (2020) states that human made physical barriers to coho migration including culverts confound rebuilding efforts. This proposal will directly address these priorities.

Coho, Chinook, and Puget Sound Pink Salmon Essential Fish Habitat includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington. All projects in this proposal will either remove fish passage barrier infrastructure or replace existing infrastructure on anadromous streams with fish passable culverts or bridges per current Washington State fish passage standards as required in Washington Administrative Code (WAC) 220-660-190 per stream simulation design standards and NOAA fish passage guidelines. This aligns with guiding principal 1 (Support ecosystem conservation and enhancement) of the National Saltwater Recreational Angler Policy through restoration and conservation of habitats that benefit recreational and other fish stocks. No fish ladders, weirs or other retrofits/temporary fish passage structures will be installed. This proposal will also benefit Southern Resident Killer Whales (Species in the Spotlight) by increasing the abundance of their primary food, salmon.

The Tulalip Tribes and partners have conducted rigorous monitoring of coastal streams within the Whidbey Basin, and have determined that these coastal streams are important rearing areas for juvenile salmon including Chinook, and are also important salmon spawning systems ([Beamer et al. 2013](#)). It was determined that chinook and other salmon use is correlated with the distance to larger natal river

systems, such as the Snohomish River. However, many of these coastal streams have fish passage barriers at their confluence with Puget Sound that reduce or prevent salmon use. Tulalip has implemented several priority [coastal stream barrier removal projects](#) with immediate and impressive results. Many of the coastal [stream barriers are associated with the Burlington Northern Santa Fe Railway \(BNSF\)](#) that hugs the coastline south of the Snohomish River. Tulalip and partners worked with BNSF to develop a [restoration prioritization](#) and a subsequent [implementation planning document](#). This resulted in the very successful pilot barrier removal [restoration project at Meadowdale Beach](#). Tulalip plans to work with BNSF to build upon all of this effort and implement the two highest priority projects within the Whidbey Basin.

Table 1. Project names, sponsors, barriers, habitat gain, and target species within the four priority watersheds.

Project Sponsor	Project Name	# Barriers Addressed	Habitat Gain (Mi)	Primary Target Species
Tulalip	Tulalip Capacity	4	4	Chinook/coho
	Allen	2	3.47	Coho/steelhead
	Beecher	2	0.82	Coho/steelhead
	Anderson Tulalip	1	0.06	Chinook/coho
	WF Quilceda	1	24.89	Coho/steelhead
Trout Unlimited	TU Capacity	0	0	Chinook/coho
Sound Salmon	SSS Capacity	0	0	Chinook/coho
Adopt A Stream Foundation	Catherine	3	5.21	Coho/steelhead
	Grace	2	2.92	Coho/steelhead
	Sorgenfrei	3	1.71	Coho/steelhead
Snohomish Conservation District	Portage	1	13.5	Coho/steelhead
	Riley	2	5.63	Coho/steelhead
	Anderson Farms	3	1.45	Coho/steelhead
Snohomish Co.	Anderson County	1	1.41	Coho/steelhead
Marysville	MF Quilceda	2	12.96	Coho/steelhead
Burlington Northern Santa Fe Railway	Big Gulch	1	3.76	Chinook/coho
	Merrill & Ring	1	1.12	Chinook/coho
	Fish	1	10.83	Coho/steelhead
	Edgecomb	2	3.13	Coho/steelhead
	Hayho	1	3.59	Coho/steelhead
	Quilceda	1	14.5	Chinook/coho
Total		34	114.96	

b) *Enhancing community resilience to weather and climate hazards and providing other co-benefits:* Every project in this proposal has an undersized crossing that is aging and poses flooding, lack of access, or other community safety/economic/environmental risks that will be exacerbated with climate change. This proposal will replace undersized fish passage barriers with adequately sized stream crossings that meet current fish passage standards and incorporate climate change considerations into the design. The result will be increased access, reduced flood risk, and increased safety for the community. Also, the increase in Treaty Retained Resource (such as salmon) abundance will provide cultural resilience to the Tulalip Tribes and other members of the community who utilize these resources for economic, recreational, cultural, or other purposes.

The Washington Department of Fish and Wildlife has an online tool for designing climate-change-resilient culverts that will be used for these barrier replacement designs. We will consider the 2080 results for both predicted bankfull width and flow rate changes. Spans are increased when the lifespan of the structure exceeds the predicted change interval. In addition, freeboard may be adjusted to continue to pass debris and scour is analyzed to prevent damage to the structure foundation. Footing depths may be increased as a countermeasure. The results also help plan for future maintenance and operations. Tulalip has identified stream crossings and culvert adaptation as one of the climate resilience strategies to improve hydrology by allowing the stream flow during extreme events and improving salmon access.

c) Tribal Priority: Northwest Treaty Tribes including Tulalip have known for a long time that manmade fish passage barriers are a huge issue for salmon recovery. Blocking culverts deny salmon access to hundreds of miles of good habitat in western Washington streams, affecting the fish in all stages of their life cycle. Twenty-one northwest Washington tribes asked the U.S. District Court to find that the State of Washington has a treaty-based duty to preserve fish runs by repairing or replacing culverts that impede salmon migration. The court ruled in the tribes' favor, requiring the state to refrain from building or operating culverts under state-maintained roads that hinder fish passage. Issued in March 2013, the [permanent injunction](#) requires the state to significantly increase the effort for removing state-owned culverts that block habitat for salmon and steelhead by 2030. However, only fraction of the total fish barriers for salmon will be removed by the injunction, as there remain many fish passage barriers on public and private roads that will not be removed but are critical to achieving salmon recovery goals. **The Tulalip Salmon Strategy** (in development) identifies barrier removal as "one of the most cost-effective ways to increase habitat" and states that culvert inventory, implementation, partnerships, barrier removal on the Tulalip Reservation, and outreach are Tulalip priorities. Tulalip's goals are to increase spawning and rearing habitat 20% by 2032 in attempt to increase abundance of salmon by 25% in the next ten years. The outreach, project development and implementation of fish barrier removal projects like the ones included in this proposal, align with those goals.

The projects included in the proposal will benefit two of the most critical river basins in the Puget Sound Region for the recovery of migratory fish populations. The Snohomish River is the second largest Puget Sound river, and the largest Puget Sound producer of Managed coho salmon. The Snohomish has substantial restoration potential, and [significant effort](#) has been made over the last decades to restore and connect natural processes and habitats. The critically low abundances of salmon in the Stillaguamish River impact fisheries along the west coast. To achieve project goals, projects will occur within priority watersheds where we can maximize benefits and leverage ongoing salmon enhancement projects with total cost of ~ \$11,620,000 already invested by the WSDOT and NWIFC. Projects in this package will help build community and ecological resilience, including for underserved communities such as the Tulalip Tribes and the local rural community.

c) Regional and Watershed Context: This project will benefit two of the most critical river basins in the Puget Sound Region for the recovery of migratory fish populations. The Snohomish River is the second largest Puget Sound river, and the largest Puget Sound producer of Managed coho salmon. The Snohomish has substantial restoration potential, and significant effort has been made over the last decades to restore and connect natural processes and habitats. The critically low abundances of salmon in the Stillaguamish River impact fisheries along the west coast. To achieve project goals, projects will occur within 7 priority watersheds (Portage Creek, Quilceda Creek, Catherine Creek, Anderson Creek, Riley Slough, Sorgenfrei Creek, and coastal streams) where we can maximize benefits and leverage ongoing salmon enhancement projects. Projects in this package will help build community and ecological resilience, including for underserved communities such as the Tulalip Tribes and the local rural community.

Many culverts in the Puget Sound region are being removed/replaced by the Washington State Department of Transportation (WSDOT) as part of a federal court injunction for fish passage. No barriers in this proposal are part on this injunction, however there are injunction culverts up/downstream of several projects in this proposal. Twenty-one northwest Washington tribes asked the U.S. District Court to find that the State of Washington has a treaty-based duty to preserve fish runs by repairing or replacing culverts that impede salmon migration. The court ruled in the tribes' favor, requiring the state to refrain

from building or operating culverts under state-maintained roads that hinder fish passage. Issued in March 2013, the permanent injunction requires the state to significantly increase the effort for removing state-owned culverts that block habitat for salmon and steelhead by 2030.

[Portage Creek Watershed](#)

Fish Creek in the Portage Creek Watershed, and is an important salmon producing stream at the lower end of the Stillaguamish River Basin. This system is one of the primary coho salmon producers within the basin, however there are several associated fish passage barriers. This includes two barriers low in the system owned by BNSF and a farm. Tulalip will facilitate the removal of these barriers in collaboration with our partners at BNSF and SCD.

[Quilceda/Allen Creek Watershed](#)

Quilceda Creek is the largest watershed on the Tulalip Reservation and the City of Marysville that flows directly to the lower Snohomish River Estuary. It is the most important and productive native salmon bearing stream on the Tulalip Reservation, with a large run of coho and other salmon species. The adjacent Allen Creek Watershed is also an important coho and other salmon producer, and is upstream of the large [Qwuloolt Estuary Restoration Project](#) completed by Tulalip in 2015. However, there are many significant fish passage barriers located primarily on City, State and private property. We will address 11 priority barriers within Quilceda Creek in this proposal. Barrier removal in this watershed has the potential to increase fish passage and abundance significantly in coordination with many habitat restoration projects that are occurring within the watershed.

[Catherine Creek Watershed](#)

Catherine Creek is a tributary of the Pilchuck River in the Snohomish River Basin. It is a large producer of Coho and other salmon species. Tulalip and other partners have invested significant effort in fish passage in the Pilchuck River including the [Pilchuck River Dam Removal Project](#) and several crossings associated with the Snohomish Cooperative Salmon Barrier Removal Project funded by NOAA in 2023 (Federal Award ID NA23NMF4630025). We will address 3 barriers on Catherine Creek in collaboration with the Adopt a Stream Foundation.

[Anderson Creek Watershed](#)

Anderson Creek is an important tributary of the mainstem Snohomish River where 7 barriers will be addressed. This creek is associated with a large floodplain restoration project ([Thomas' Eddy Restoration Project](#)) being conducted by Snohomish County. Anderson Creek has high salmon use currently, and has greater fish use potential once fish passage is restored to upstream spawning and rearing habitat.

[Riley Slough Watershed](#)

Riley slough was historically a large producer of coho and other salmon species, but this has changed due to fish passage barriers and other anthropogenic changes. Replacement of fish passage barriers in Riley Slough is part of the larger [Tualco Valley Connectivity Project](#) with the goal of restoring salmon abundance in Riley Slough and the larger Tualco Valley vicinity. We will address 2 crossings in this watershed in collaboration with SCD.

[Sorgenfrei Creek Watershed](#)

Sorgenfrei Creek is a tributary to Woods Creek in the Snohomish River Basin that is a large producer of coho and other salmon species. Woods Creek has been prioritized by several Basin partners for fish

passage barrier replacements, and projects in this watershed will build off of these previous efforts. We will address 3 barriers in this watershed in collaboration with the Adopt a Stream Foundation.

Coastal Streams

The Tulalip Tribes and partners have conducted rigorous monitoring of coastal streams within the Whidbey Basin, and have determined that these coastal streams are important rearing areas for juvenile salmon including Chinook, and are also important salmon spawning systems (Beamer et al. 2013). It was determined that chinook and other salmon use is correlated with the distance to larger natal river systems, such as the Snohomish River. Tulalip plans to work with BNSF to build upon all of this effort and implement the two highest priority projects within the Whidbey Basin.

d) Providing benefit to underserved communities, including through partnerships with federally recognized tribes: The applicant and primary sponsor for this proposal is the federally recognized Tulalip Tribes. Tulalip will be involved in all projects in this proposal and will be the primary sponsor. Other underserved communities within the project area include persons who live in rural areas, persons living in areas within the project area that have persistent poverty, and local Latino populations.

Community Demographics Within Project Area Per EPA Environmental Justice Screening and Mapping Tool (V 2.2; National Percentiles):

- People of Color: Up to 60th-80th percentile
- Low Income: Up to 80-90th percentile
- Unemployment Rate: Up to 80-100th percentile
- English Speaking Rates: Up to 80-95th percentile
- Less Than High School Education: Up to 80-90th percentile
- Under age 5: Up to 90-100th percentile
- Over age 64: Up to 90-95th percentile

2) TECHNICAL AND SCIENTIFIC MERIT:

All of the fish barrier removal projects in this proposal will be implemented via technically sound, established methods including stream crossing removal or replacement per current Washington State requirements. This includes crossing sizing and installation as described in the Washington Department of Fish and Wildlife Water Crossing Guidelines (WDFW, 2013) and NOAA design guidelines (Guidelines for Salmon Passage at Stream Crossings in Oregon, Washington and Idaho, 2023). Project site characteristics and methods support barrier removal and fish passable replacement in all project sites using typical, well established construction methods. Many of these projects have planning/designs underway, and barrier owner support. All projects will result in fish barrier removal design or implementation within the performance period. Permitting and environmental compliance will be needed for all projects, and all project collaborators are adept at the permitting process, options for permitting streamlining, and have relationships with permitting agency staff. All projects will include implementation monitoring to ensure project success per NOAA Tier I guidance. All projects will provide socioeconomic benefits including increased access, reduced flood risk, increased safety, and environmental/cultural resilience. Capacity building projects including Tulalip Capacity Funding, Sound Salmon Solution's Project and Trout Unlimited project will address the gap of knowledge about fish barriers in tribally important watershed identified in previous coordination efforts, that have been not inventoried to date. Most of the unknown fish passage structures are on private lands, where outreach through coordinated efforts is paramount. The request

for funding from partner organizations will fund efforts and expand capacity to perform this vital work. All projects will be sustainable by incorporating current design standards and climate change considerations into implemented barrier removal/replacement projects, enhancing ecosystem resilience to extreme weather events. Any data collected will have an associated data management plan.

a) Proposal Site Characteristics and Methods: Tulalip and project partners will design or replace 34 barrier culverts to restore migratory fish access to 115 miles of priority habitat. Habitat above these crossings is generally complex, with mature vegetation and spawning gravels. Slopes are generally low, and the likelihood of fish use is high post barrier removal. The culverts are on Tulalip, City, County, BNSF and private roads/railways, and are typically lower in the stream system. There are no complete fish passage barriers downstream of any of the projects in this proposal. Mapped and observed species include Chinook, Coho, Chum, Pink Salmon, Steelhead, Bull Trout, and other species. The preferred alternatives were determined upon stream surveys and consultation with fish passage engineers. The removal of the barriers and installation of fish passable infrastructure will increase safety, maintain access, and increase resiliency.

b) Project Description and Milestones: This proposal will consist of planning and construction to replace barrier culverts with fish passable structures. Archeological and hydraulic permits will be required. This includes permits/review from Snohomish County, the WA Department of Fish and Wildlife (WDFW), WA Department of Natural Resources (DNR), WA Department of Ecology (ECY), WA Department of Archeology and Historic Preservation (DAHP), US Army Corps of Engineers (Corps), US Fish and Wildlife Service (USFWS), and/or NOAA depending on the project. Projects will utilize streamlined Fish Habitat Enhancement Project (FHEP), Forest Practices Hydraulic Permit (FPHP), Habitat Recovery Pilot Program (HRPP), and/or Nationwide permitting processes whenever possible and appropriate. Planning phases will include outreach, final designs and permitting. Construction will involve mobilization, staging, erosion and water control, traffic control, road fill removal, utilities management, culvert/bridge installation, channel construction, channel stabilization, and planting. See milestones for each component project below.

c) Fish Passage Implementation Monitoring and Evaluation: For all implementation and design projects please see PDF 3. Supplemental Materials. For capacity building projects that include only pre-implementation activities, monitoring plans for future implementation will be developed concurrently with securing implementation funding and development of additional projects.

d) Sustainability: The replacement or removal of crossing is expected to take little to no active management in the future as the stream simulation design allows for natural channel migration and passage of debris. Adaptive management responsibilities will be written in a 10-yr landowner agreement when occurring on private land and will include a requirement for annual inspections and photo-documentation by the landowner/project sponsor for 10 years following construction as well as visual qualitative inspection/monitoring of the crossing and installed riparian vegetation and photo-documentation completed by the project sponsor for a minimum of the first three years post-construction. Installed infrastructure is expected to last upward of 50-75+ yrs. Proposed projects from partner organizations and Tulalip have been discussed prior to this application, and the fish passage techniques align with accomplishing the tribe's goals of opening habitat for tribally important treaty reserved resources.

DATA MANAGEMENT PLAN

The Tulalip Fish Passage Collaborative project, implemented by The Tulalip tribes and subawardees (Snohomish County, Marysville, BNSF, Snohomish Conservation District, SSS, TU, and AASF) will generate environmental data and information including pre and post-implementation data on fish passage/site passibility, presence/absence of anadromous salmonids (adult, juvenile), channel width metrics, and channel gradient metrics, as well as riparian species assemblage, and invasive species presence/absence. Data will be collected and compiled by staff from representative sponsor organizations. The data will be stored on data servers hosted by the project proponent and project sub-recipients. The data will be readily available at the request of NOAA agency personnel, or other agencies on an as needed basis no later than two years after the date collected/created. Contact Brett Shattuck, Restoration Program Manager for Tulalip Tribes at 360.716.4618 or e-mail to bshattuck@tulaliptribes-nsn.gov to make a data request. All sub-awardees will have a condition of their contract acceptance of this data sharing plan. Any additional data sharing stipulations for future subawardees may be outlined at that time and described in their contract.

IMPLEMENTATION MONITORING PLAN

FISH IMPLEMENTATION MONITORING AND EVALUATION: TIER I

The Tulalip Tribes and project sub-awardees will follow NOAA’s Tier I monitoring guidelines to conduct pre and post barrier removal site monitoring including site passibility, presence of targeted fish, operational cost assessment, safety, and community enhancement evaluations. Data will be collected, compiled, and stored following the Data Management Plan, and data will be made available on each of the listed Tier I metrics in a timely manner to NOAA representatives or others on an as needed basis.

NOAA TIER I MONITORING METRICS SUMMARY TABLE:

Metric	Method	Schedule		Target	References
		Pre	Post		
Channel Width	Average Measurement	Prior to Implementation	Soon Following Implementation	Emulate Natural Channel Width	Adjacent Channel Widths
Channel Slopes	Longitudinal Profile	Prior to Implementation	Soon Following Implementation	Emulate Natural Channel Slopes	Upstream Channel Slopes
Max Jump Height	Measured	Prior to Implementation	Soon Following Implementation	Emulate Natural Jump Height	Upstream Jump Height
Target Species Presence	Spawner Surveys; Electroshocking	Prior to Implementation	Until Detected Min 1yr max 3yr	Coho Presence Above Culvert	N/A
Costs	Calculate	Estimate 5-Year Cost With Dam	Estimate 5-Year Post-Dam	Reduced Cost With Removal	N/A
Safety	Describe	Prior to Implementation	Soon Following Implementation	Lower Hazard With Removal	N/A
Community Enhancement	Describe	Prior to Implementation	Soon Following Implementation	Enhancement Achieved	N/A

MONITORING METRICS:

- 1) **Site Passability:** A pre-implementation survey will be conducted at each site to document conditions before culvert barrier removal. Pre-implementation culvert passibility impairment will be calculated using Level A and B culvert assessment criteria and all culverts will be ranked as either 0, 33, 66, or 100% impassible. Post implementation surveys will be conducted at each location soon after project

implementation to document as-built conditions and observe presence/absence of diadromous fishes within and upstream from each project area.

- a. **Channel width** will be determined by taking the average of three measurements of the active channel width immediately within each barrier removal site. Pre-implementation measurements will be taken immediately upstream and downstream of the culvert to be removed and above/below the areas of influence created by pooling water or other artifactual habitat features created by the culvert itself.
- b. **Channel gradient** will be determined by taking a longitudinal profile through the project reach, defined by the extent of barrier influence on channel and/or water surface slope. Average channel slope from just upstream of the influence of the barrier to just downstream of its influence (below the scour pool) will be determined. Areas of maximum channel slope pre- and post-implementation will be identified visually from plotted longitudinal profiles and then computed. Maximum channel slopes will be identified and computed for channel distances greater than 5-10 feet. Significant changes in channel elevation over shorter distances will be considered as jump heights (see below).
- c. **Maximum jump height** is the largest abrupt discontinuity in the channel slope that would require a fish to jump to transit the site. These will also be identified visually from the pre-and post-implementation longitudinal profile plots and then measured, where applicable. Residual pool depths will be determined associated with these discontinuities to assess fish passage potential.

2) Presence of Target Fish Species

Coho and Chinook salmon are the primary target species for these projects and will be monitored for presence following culvert removal. Electrofishing surveys and spawning surveys may be conducted pre and post culvert removal along accessible habitats immediately upstream of the removed culvert(s). Photography of the site will be documented pre and post project to document geomorphological, habitat, or other changes over time.

3) Annual Operating and Maintenance Costs

- a. Pre-implementation: We will calculate the expected average annual operating, maintenance, and/or liability costs over the next 5 year period if the barrier were to remain in place. Periodic or less frequent costs that may occur during this period (e.g. structural upgrades to meet safety or regulatory requirements) may be incorporated into the estimate.
- b. Post-implementation: We will calculate the expected average annual operating, maintenance, and/or liability costs over the next 5 year period with the barrier removed.

4) Safety Hazard

- a. Pre-implementation: We will describe the safety hazards caused by the culvert structures and how they will be eliminated or diminished through culvert removal and replacement for each location and structure to be modified.
- b. Post-implementation: After implementation, we will confirm that the identified public safety hazard has been eliminated or diminished. The goal of each project implementation is to promote unimpeded natural processes of the stream course through the project area with no calculable manmade influence on the hydrologic functions of the waterway.

5) Community Enhancement

- a. Pre-implementation: We will determine local community, civic enhancement associated with the barrier removal project.
- b. Post-implementation: We will confirm that the enhancement associated with the barrier removal was realized.

PROJECT SPECIFIC TECHNICAL AND SCIENTIFIC MERIT

Please see the below descriptions of Technical and Scientific Merit associated with a) Project Site Characteristics and Methods, and b) Project Description and Milestones for each project. Projects will consist of stream analysis, planning, engineering design, environmental review & permitting, and construction. Culvert inventory and assessment will be completed to survey and assess fish barriers that have not been previously assessed, but have been identified by the Tulalip Tribes as high priority for opening fish habitat. The existing fish barriers will be replaced with fish passable structures. The preferred alternative will be selected based on the stream analysis and coordination with stakeholders. Archeological and hydraulic permits will be required to correct all barriers. The planning phase will include outreach, final designs, and permitting. Construction will involve mobilization, staging, erosion and water control, roadbed fill removal, abutment, bridge, and track installation, channel construction, streambed restoration, channel stabilization, and planting.

PORTAGE CREEK WATERSHED

FISH CREEK (BNSF)

a) Project Site Characteristics and Methods: The BNSF Railway crosses a small, bridge-type concrete culvert over Fish Creek, a tributary to Portage Creek. The bankfull width of the creek at OHW is reported at approximately 40 feet, while the width of this culvert is 7.5 feet, constricting flow and causing increased velocity. This creates a velocity and depth barrier for juvenile salmonids. The 2008 WDFW report (999505) identifies this culvert as only 33% passable.

Habitat above the project site is complex and consists of agricultural and mature riparian forest vegetation. The downstream habitat is a mix of agricultural pasture and riparian forest vegetation along the stream that confluences with Portage Creek approximately 7,800 ft downstream of the barrier. There is documented adult and juvenile salmon presence in the lower portion of the creek. Mapped and observed species at the project site include coho, steelhead, resident coastal cutthroat trout, and sea run cutthroat trout. Replacing this structure will connect over **10.8 miles** of upstream habitat.

A preferred alternative to maintain access and restore fish passage will be determined upon a stream survey and consultation with a fish passage engineer. The removal of the barrier and replacement structure installation will improve safety, maintain access, and increase resiliency.

b) Project Description and Milestones: This project includes project design, permitting, construction, and Tier I monitoring.

Year	Milestones
2024	Agreement Outreach Engineering Award Prelim designs Cultural Award Permit Apps.
2025	Final designs Permit complete Construction Award
2026	Construction Implementation monitoring Riparian restoration As-built designs complete

PORTAGE CREEK (SCD)

a) Project Site Characteristics and Methods: Snohomish Conservation District will work with an engineering consultant to design and replace a partial fish passage barrier on Portage Creek, a tributary to the mainstem Stillaguamish River, with a fish passable culvert or bridge to improve fish access to **13.5 miles** of upstream habitat. SCD worked with the property owner in 2012 - 2015 to complete conceptual project designs to replace the fish passage barrier. Previous design work includes development of conceptual

drawings and a design report included in PDF 3. Supplemental Materials. SCD will complete preliminary and final designs, complete cultural resources consultation, regulatory permitting, develop final designs and construction bid documents, and complete construction to replace the barrier crossing with a fish passable structure. Mapped and observed species include Chinook, Coho, Chum Pink Salmon, and Steelhead. This project will address a barrier within the Tulalip Priority area of the Portage Sub-basing, increase watershed and community resiliency and protect existing infrastructure from future impact of climate change by reducing flooding.

b) Project Description and Milestones: This project will consist of planning/design, landowner and partner engagement, pre- and post-implementation monitoring, permitting, and construction to replace two partial fish passage barrier culverts with fish passable structures. Archeological and hydraulic permits will be required to correct these barriers. The planning phase will include outreach, final designs and permitting. Construction will involve mobilization, staging, erosion and water control, road fill removal, abutment and crossing structure installation, channel construction, channel stabilization, and riparian planting within the construction area.

Year	Milestones
2024	Subrecipient Agreement Executed Landowner Agreement Executed Engineering Award Draft Conceptual Design Documents
2025	Cultural Resources Consultation Complete for Design Work Initiate Partner, Tribal, and Regulatory Consultations and Permit Applications Draft and Final Preliminary Design Documents Pre-Construction Monitoring Initiated Permit Applications Submitted
2026	Final designs Permit Secured Construction Award Construction Implementation monitoring Riparian Restoration Complete As-built designs complete

QUILCEDA/ALLEN CREEK WATERSHED

QUILCEDA CREEK (BNSF)

a) Project Site Characteristics and Methods: The BNSF Railway crosses an 8-foot-wide culvert over Quilceda Creek, a tributary to Ebey Slough. The average width of the creek is 16 feet and flows through the culvert for 138 feet. This pipe constrains the bankfull flow of the creek, which creates a velocity and depth barrier for juvenile salmonids. There are no downstream barrier culverts. There are several upstream fish passage barriers, many of which this proposal will address.

The habitat above the project site is complex and consists of riparian forest vegetation and urban development. The downstream habitat is riparian forest vegetation along the stream. Quilceda Creek confluences with the Ebey Slough approximately 4.2 miles downstream of the barrier. There is documented adult and juvenile salmon presence in the lower portion of the creek. Mapped and observed species at the project site include chum, Chinook, coho, steelhead, resident coastal cutthroat trout, and sea run cutthroat trout.

BNSF Railway will develop preliminary and final designs to replace a culvert on a tributary to the Ebey Slough with a culvert or bridge. When constructed, this would restore access to **14.5 miles** of upstream intact spawning and riparian habitat.

A preferred alternative to maintain access and restore fish passage will be determined upon a stream survey and consultation with a fish passage engineer. The removal of the barrier and replacement structure installation will improve safety, maintain access, and increase resiliency.

b) Project Description and Milestones: This project includes final designs and permitting.

Year	Milestones
2024	Agreement Outreach Engineering Award Prelim designs Cultural Award Permit Apps.
2025	Final designs Permit complete

WF QUILCEDA CREEK (TULALIP)

a) Project Site Characteristics and Methods: The Tulalip Tribes will work with WSDOT to design the removal/replacement of an undersized (Span 2.65m, Length 35.7m) fish passage barrier on an abandoned railroad grade that is both located on the Tulalip Reservation and within the WSDOT Interstate 5 Highway right of way. This is the lowest most barrier on the West Fork Quilceda with substantial upstream habitat (**25 miles**) that will become more accessible post barrier removal. Downstream habitat is complex in a wide meandering wetland valley. Tulalip is working with partners to enhance water quality and habitat upstream through installation of instream large woody debris and riparian planting. Tulalip is also in the process of a comprehensive upstream barrier inventory within the Tulalip Reservation with plans to address priority upstream barriers. Species benefitting from this project include chinook, chum, coho, steelhead, searun cutthroat, and other fish species.

Due to the complexities of barrier ownership and proximity to Interstate 5, we propose preliminary design for this phase of the project as part of this proposal. This will allow for permit application and project implementation to be highly fundable in subsequent grant rounds once the project scope and costs are better understood. This is one of the highest priority culverts on the Tulalip reservation for correction, and this project will make significant progress towards barrier removal.

b) Project Description and Milestones: This project includes preliminary designs.

Year	Milestones
2024	Agreement Outreach Coordination
2025	Engineering Award Feasibility Alternatives Analysis
2026	Preliminary Designs

MF QUILCEDA CREEK (MARYSVILLE)

a) Project Site Characteristics and Methods: The City of Marysville will design the replacement of 2 culverts on Middle Fork Quilceda, a tributary to Quilceda Creek, with bridge structures, restoring access to miles of upstream intact spawning and riparian habitat. The habitat above the project site is forested and agricultural, along with some residential areas. The downstream habitat is complex and consists of mature riparian forest vegetation as well as more residential; there are documented adult and juvenile salmon present that utilize the existing crossing. When constructed, this would restore access to **13 miles** of upstream intact spawning and riparian habitat.

The existing downstream box culvert is undersized for the 25-foot wide channel, which creates a velocity and depth barrier for juvenile salmonids. The downstream culvert was inspected in 2017 and the presence

of a bend was observed in the downstream end of the culvert. The existing upstream cylindrical culvert is undersized for the 14-foot wide channel, which creates a velocity and depth barrier for juvenile salmonids. Mapped and observed species at the project sites include coho, chum, steelhead, chinook, resident trout, and searun cutthroat trout. A preferred alternative to maintain access and restore fish passage will be determined upon a stream survey and consultation with a fish passage engineer. The removal of the barriers and installation of replacement structures will improve safety, maintain access, and increase resiliency. The City of Marysville has strongly invested in fish barrier replacements in this basin with a multimillion-dollar bridge just downstream of this proposed replacement.

b) Project Description and Milestones: This project includes project design.

Year	Milestones
2024	Agreement Outreach Engineering Award Prelim designs Cultural Award Permit Apps.
2025	Final designs Permit Awards

EDGECOMB CREEK (BNSF)

a) Project Site Characteristics and Methods: The BNSF Railway will replace 2 culverts on Edgecomb Creek, a tributary to the Middle Fork Quilceda Creek. The average width of the creek is approximately 7 feet, and crossing culverts are approximately 24 inches in diameter. These pipes constrain the bankfull flow of the creek, which creates a velocity and depth barrier for juvenile salmonids. The 2020 Washington Department of Fish and Wildlife reports identify these culverts as only 67% and 33% passable due to velocity and slope.

The habitat above the project site consists of industrial agricultural, and rural residential land uses. The downstream habitat is agricultural pasture along the stream within the floodplain of Quilceda Creek. There have been several recent WSDOT barrier replacement projects and mitigation projects in the vicinity on Edgecomb Creek. Edgecomb Creek confluences with the Middle Fork Quilceda Creek approximately 1,600 feet downstream of the barrier. There is documented adult and juvenile salmon presence in the lower portion of the creek. Mapped and observed species at the project site include pink, chum, Chinook, coho, steelhead, resident coastal cutthroat trout, sea run cutthroat trout, and bull trout. BNSF Railway will design and replace a culvert on a tributary to Quilceda Creek with a culvert or bridge, restoring access to **3.1 miles** of upstream intact spawning and riparian habitat.

A preferred alternative to maintain access and restore fish passage will be determined upon a stream survey and consultation with a fish passage engineer. The removal of the barrier and replacement structure installation will improve safety, maintain access, and increase resiliency.

a) Project Description and Milestones: This project includes project design, permitting, construction, and Tier I monitoring.

Year	Milestones
2024	Agreement Outreach Engineering Award Prelim designs Cultural Award Permit Apps.
2025	Final designs Permit complete Construction Award
2026	Construction Implementation monitoring Riparian restoration As-built designs complete

HAYHO CREEK (BNSF)

a) Project Site Characteristics and Methods: The BNSF Railway crosses a 36-inch-diameter precast concrete culvert (PCC) over Hayho Creek, a tributary to the Middle Fork Quilceda Creek. The toe width of the creek is 10 feet and flows through the culvert for 39 feet. This pipe constrains the bankfull flow of the creek, which creates a velocity and depth barrier for juvenile salmonids. This culvert is only 67% passable due to depth. Hayho Creek confluences with Middle Fork Quilceda Creek approximately 0.6 miles downstream of the barrier. There is documented adult and juvenile salmon downstream of the barrier. Mapped and observed species at the project site include coho, chum, resident coastal cutthroat trout, and sea run cutthroat trout. This project has been identified as priority for restoration by the Tulalip Tribes Culvert Coordination Efforts. BNSF Railway will design and replace a culvert on a tributary to Middle Fork Quilceda Creek with a culvert or bridge, restoring access to **3.6 miles** of upstream spawning and riparian habitat. A preferred alternative to maintain access and restore fish passage will be determined upon a stream survey and consultation with a fish passage engineer. The removal of the barrier and replacement structure installation will improve safety, maintain access, and increase resiliency.

b) Project Description and Milestones: This project will consist of planning, permitting, and construction to replace an existing culvert with a fish passable structure. Archeological and hydraulic permits will be required to correct this barrier. The planning phase will include outreach, final designs and permitting. Construction will involve mobilization, staging, erosion and water control, roadbed fill removal, abutment, bridge, and track installation, channel construction, channel stabilization, and planting.

Year	Milestones
2024	Agreement Outreach Engineering Award Prelim designs Cultural Award Permit Apps.
2025	Final designs Permit complete Construction Award Landowner Agreement executed
2026	Construction Implementation monitoring Riparian restoration As-built designs complete

ALLEN CREEK (Tulalip)

a) Project Site Characteristics and Methods: The Tulalip Tribes is working with The Tulalip Foundation to acquire over 40 acres within the historical Kellogg Marsh valley and adjacent to Allen Creek with other County conservation funding. Allen Creek is a major coho salmon producing stream, and associated Kellogg Marsh has historically been an important area for holding adult salmon heading upstream to spawn, and for rearing juvenile coho prior to their exit into saltwater. The property is also culturally significant to Tulalip as an important former fishing and gathering area.

Allen Creek is upstream from the Qwuloolt Project, a large tidal wetland restoration project completed by the Tulalip Tribes in 2015. The intent of this project is to build upon the successes of the Qwuloolt project and other habitat restoration and channel improvements installed by the Tulalip Tribes and Snohomish County through the **removal** of two fish passage barriers within the property that Tulalip is acquiring. Culvert removal will increase access to **3.5 miles** of priority upstream habitat.

b) Project Description and Milestones: This project includes project design, permitting, construction, and Tier I monitoring.

Year	Milestones
2024	Agreement Engineering Award Cultural Award Preliminary Designs Permit Apps.

2025	Final Designs Construction Implementation monitoring Riparian restoration As-built designs complete
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GRACE CREEK (AASF)

a) Project Site Characteristics and Methods: Grace Creek is part of the Allen Creek Watershed, a priority watershed for Tulalip, in geographical proximity to the Tulalip Reservation. Allen Creek watershed is an important producer of anadromous salmon, a treaty reserved resource to the Tulalip Tribes, and within the tribes’ U&A. AASF proposed to work with private landowners and remove two 33% passable stream crossings on Grace Creek to open **2.9 miles** of fish habitat. AASF proposes working with the landowners at the respective barriers to replace them with 40-foot span bridges. Addressing the undersized culverts will improve fish passage, reduce flooding, decrease infrastructure risk on adjacent properties, and make the stream and crossings more resilient to climate change. AASF worked with Tulalip to identify these crossings as a priority.

b) Project Description and Milestones: This project will consist of planning, permitting, pre and post project monitoring, and construction to replace three fish barriers with a fish passable structures (likely bridged). Archeological survey and hydraulic permitting, and other permits will be required to correct this barrier. The planning phase will include landowner outreach, final designs and permitting. Construction will involve mobilization, staging, erosion and water control, road fill removal, abutment and bridge installation, channel construction, channel stabilization, and planting.

Year	Milestones
2024	Agreement Outreach Engineering Prelim designs Cultural Permit Apps.
2025	Final designs Landowner Agreement executed Pre-project Monitoring Construction
2026	Implementation monitoring Riparian restoration As-built designs complete

CATHERINE CREEK WATERSHED

CATHERINE CREEK (AASF)

a) Project Site Characteristics and Methods: Catherine Creek is an important tributary to the Pilchuck river that supports robust runs of anadromous salmon, a vital resource to the Tulalip Tribes, and within the tribes’ U&A. There are three fish barrier that will be removed with this project. All three crossings are barriers on private property and addressing them will open **5.2 miles of fish habitat** for migratory and anadromous fish. Currently the undersized culverts are upstream from one another and prevent fish migration through this productive habitat. AASF proposes working with the landowners at the respective barriers to replace them with 40-foot span bridges. Addressing the undersized culverts will improve fish passage, reduce flooding, decrease infrastructure risk on adjacent properties, and make the stream and crossings more resilient to climate change. The bridges will be designed with a lifespan of more than 50 years, due to the use of durable materials requiring very low maintenance. This long-term viability ensures that the structure will continue to facilitate fish passage and serve other functions effectively over the years, reducing the need for frequent repairs or replacements. These crossings have been identified as a high priority for Tulalip.

b) Project Description and Milestones: This project will consist of planning, permitting, pre and post project monitoring, and construction to replace three fish barriers with a fish passable structures (likely bridges).

Archeological survey and hydraulic permitting, and other permits will be required to correct this barrier. The planning phase will include landowner outreach, final designs and permitting. Construction will involve mobilization, staging, erosion and water control, road fill removal, abutment and bridge installation, channel construction, channel stabilization, and planting.

Year	Milestones
2024	Agreement Outreach Engineering Prelim designs Cultural Permit Apps.
2025	Final designs Landowner Agreement executed Pre-project Monitoring Construction
2026	Implementation monitoring Riparian restoration As-built designs complete

ANDERSON CREEK WATERSHED

ANDERSON CREEK TULALIP (TULALIP)

a) Project Site Characteristics and Methods: The Tulalip Tribes will work with Snohomish County (crossing owner) to replace an undersized (Span 0.91m, Length 14.6m) fish passage barrier on a farm road crossing of Anderson Creek. This is the lowest most barrier on Anderson Creek with substantial upstream habitat that will become more accessible post barrier removal in coordination with the other Anderson Creek barrier removal projects in this proposal. Downstream habitat is Lake Beacher that provides significant rearing habitat and drains to the Mainstem Snohomish River. This stream is associated with the large Thomas’ Eddy Restoration Project being conducted by Snohomish County. Species benefitting from this project include chinook, chum, coho, steelhead, searun cutthroat, and other fish species. Removal of this barrier will open up an additional **.06 miles** of habitat to the next barrier on Anderson Creek that will also be addressed in this proposal (Anderson Creek Farms crossings). Completion of this and the other Anderson Creek projects will support additional fish habitat projects within the Snohomish River basin including the County’s work at Thomas’ Eddy. The Thomas’ Eddy project has received over \$9 million in grant funding to reconnect the river floodplain. This project will restore critical habitat for wildlife and threatened salmon species and will benefit the Anderson Creek Project.

b) Project Description and Milestones: This project includes project design, permitting, construction, and Tier I monitoring.

Year	Milestones
2024	Agreement Outreach Engineering Award Prelim designs Cultural Award Permit Apps.
2025	Final designs Permit complete Construction Award Landowner Agreement executed
2026	Construction Implementation monitoring Riparian restoration As-built designs complete

ANDERSON CREEK FARMS (SCD)

a) Project Site Characteristics and Methods: Snohomish Conservation District (SCD) will work with an engineering consultant to design three fish passage barrier correction projects on Anderson Creek, a priority stream for fish passage barrier replacements identified by Tulalip Tribes and other Snohomish watershed partners. SCD will develop permit-level preliminary designs (approximately 66% design level) and complete initial tribal consultations with affected tribes and regulatory consultations with all relevant regulatory agencies to inform final preliminary design documents. Cultural resources consultation will be completed as appropriate depending on the timeline for the construction and as required for the design phase (an example may include cultural resources consultation prior to geotechnical analysis). The three barriers identified for design address partial barriers that impede coho and steelhead access to

approximately **1.45 miles** of fish habitat. A phased approach to these three fish passage barriers will inform Snohomish CD, Tulalip Tribes, and other partners as the partnership implements a highly strategic and coordinated fish passage barrier correction strategy on Anderson Creek. Design documents and engagement completed during this phase of the project will provide Tulalip Tribes and partners with a higher degree of certainty on construction costs, regulatory pathways, potential funding programs, and well-vetted design alternatives that Tulalip Tribes, SCD, and partners will use to obtain construction funding for these crossings.

b) Project Description and Milestones: This project will consist of planning/design, landowner and partner engagement, pre-implementation monitoring, and regulatory consultations and coordination prior to preparing permitting packages of three fish passage barrier correction projects to replace partial fish passage barriers with fish passable structures.

Year	Milestones
2024	Subrecipient Agreement Executed Landowner Outreach Execute Landowner Agreements For Design Work
2025	Engineering Award Draft Conceptual Design Documents Cultural Resources Consultation Complete for Design Work Initiate Partner, Tribal, and Regulatory Consultations
2026	Partner, Tribal, and Regulatory Field Visits and Consultations Complete Draft and Final Preliminary Design Documents Landowner Willingness Forms for Construction Pre-Construction Monitoring
2027	Contingency Year and Close-out

ANDERSON CREEK COUNTY (COUNTY)

a) Project Site Characteristics and Methods: Elliott Road is located just west of State Route 522, within unincorporated Snohomish County. The purpose of the Elliott Road Flood Reduction Project is to both provide connectivity to 1.4 miles of upstream migratory fish habitat, and reduce the frequency of Anderson Creek flooding over Elliott Road and avoid impacts to adjacent properties. The project will remove the existing culverts, construct a 40-foot clear span bridge, raise the road elevation by 2.5 feet, and re-align Anderson Creek. The bridge will meet fish passage criteria and improve flood flow conveyance.

The County identified this culvert as a partial fish passage barrier due to its size and sediment volume within the culvert. Statewide Washington Integrated Fish Distribution identifies chinook, chum, coho, pink, bull trout, and steelhead trout have presumed presence in Anderson Creek. Land cover in the Anderson Creek subbasin is primarily agricultural in the lower reaches, with residential development, roadways, and forested areas predominant in the upper reaches.

b) Project Description and Milestones: This project will consist of design to replace an existing culvert with a fish passable structure.

Year	Milestones
2024	Agreement start, final designs, permitting, landowner agreements
2025	Bid award for construction, construction start, construction completed, riparian restoration completed, as-builts completed

BEECHER 1&2 (Tulalip)

a) Project Site Characteristics and Methods: Beecher Creek is located just west of State Route 522, within unincorporated Snohomish County. The purpose of the project is to replace two adjacent structures at private driveways on Beecher Creek, which will provide up to **0.6 miles** of upstream migratory fish habitat and reduce local flooding impacts. Land cover in the sub basin is primarily agricultural in the lower reaches, with residential development, roadways, and forested areas predominant in the upper reaches. The upstream culvert has large road fill and lies within a channel that is confined to steep valley walls, up to 6% in slope, and has good in stream habitat. The lower culvert lies within a more sinuous unconfined channel, up to 3% in slope, and contains small pools and spawning substrate. The project will remove the existing culverts, construct a bridge on the lower crossing, install an appropriately sized culvert on the upper crossing, address invasive species, and re-align the creek. The bridge and culvert will meet fish passage criteria and improve flood flow conveyance.

The stream segment contains suitable spawning gravels, large woody debris is readily recruited, and is within close proximity to high production habitat for many ESU listed species in the Snohomish River. Washington State Department of Fish & Wildlife identified these culverts as full fish passage barriers due to slope and culvert damage. Statewide Washington Integrated Fish Distribution identifies chinook, chum, coho, pink, bull trout, and steelhead trout have presumed presence in this unnamed tributary.

b) Project Description and Milestones: This project will consist of construction to replace two existing culverts with fish passable structures. Construction will involve mobilization, staging, erosion and water control, road fill removal, culvert and bridge installation, channel construction, channel stabilization, and riparian planting.

Year	Milestones
2024	Agreement start, final designs, permitting, landowner agreements
2025	Bid award for construction, construction start, construction completed, riparian restoration completed, as-builts completed

RILEY SLOUGH WATERSHED

RILEY SLOUGH (SCD)

a) Project Site Characteristics and Methods: This project will build upon the Phase 1 fish passage work currently underway on Riley Slough and the Tualco Valley. SCD will work with an engineer to design two partial barrier culverts on Riley Slough, a tributary to the Snohomish River fish passable culverts or bridges to improve fish access to **5.6 miles** of upstream riparian habitat. Both projects are owned by one landowner. There are modified channel conditions upstream and downstream with degraded riparian buffer. The Tulalip Tribes is leading the effort to address channel conditions, reconnect the floodplain and work with landowners to remove partial barriers upstream from crossing. Our project complements that important work by working with landowners in the Tualco Valley to increase the Tribe’s capacity to remove fish barriers on this important body of water that provides refugia, spawning and rearing habitat for anadromous salmon.

Mapped and observed species include Chinook, Coho, Chum, Pink Salmon, Steelhead, and Bull Trout. A preferred alternative to maintain access and restore fish passage will be determined upon a stream survey and consultation with a fish passage engineer. The removal of the barrier and replacement structure

installation will improve public safety, reduce flooding, protect infrastructure and create a more resilient floodplain.

b) Project Description and Milestones: This project will consist of planning/design, landowner and partner engagement to replace two partial fish passage barrier culverts with fish passable structures. Archeological and hydraulic permits will be required to correct these barriers. The planning phase will include outreach, final designs and permitting.

Year	Milestones
2024	Subrecipient Agreement Executed Landowner Agreement Executed Engineering Award Draft Conceptual Design Documents
2025	Cultural Resources Consultation Complete for Design Work Initiate Partner, Tribal, and Regulatory Consultations and Permit Applications Draft and Final Preliminary Design Documents Pre-Construction Monitoring Initiated Permit Applications Submitted
2026	Final designs Permit Secured

SORGENFREI CREEK WATERSHED

SORGENFREI CREEK (AASF)

a) Project Site Characteristics and Methods: Sorgenfrei Creek is a tributary to the productive Woods Creek, and part of the Snohomish river watershed and within the tribes’ U&A. AASF has identified two complete barriers and one 33% passable stream crossing, that when replaced with fish passable structures, will **open 1.7** miles of pristine fish habitat in rural Snohomish County for anadromous salmon. AASF obtained landowner amenability, and proposes working with the landowners of the respective barriers to replace them with 40-foot span bridges. The project will improve fish passage, reduce flooding, decrease infrastructure risk on adjacent properties, and make the stream and crossings more resilient to climate change. These crossings are the most downstream crossing on this system and no upstream barriers are present. Tulalip has identified the barriers as some of their priority fish barriers to be addressed on private land.

b) Project Description and Milestones: This project will consist of planning, permitting, pre and post project monitoring, and construction to design 3 and replace 1 (3 total crossings) fish barriers with a fish passable structures (likely bridged. Archeological survey and hydraulic permitting, and other permits will be required to correct this barrier. The planning phase will include landowner outreach, final designs and permitting. Construction will involve mobilization, staging, erosion and water control, road fill removal, abutment and bridge installation, channel construction, channel stabilization, and planting.

Year	Milestones
2024	Agreement Outreach Engineering Prelim designs Cultural Permit Apps.
2025	Final designs Permit complete Landowner Agreement executed Pre-project Monitoring
2026	Construction Implementation monitoring Riparian restoration As-built designs complete

COASTAL STREAMS

BIG GULCH CREEK (BNSF)

a) Project Site Characteristics and Methods: The BNSF Railway crosses Big Gulch Creek at its outfall to the Puget Sound. The nearly 9-foot-wide creek channel currently flows through a 60-inch-diameter corrugated metal pipe (CMP) for 81 feet. This pipe constrains the bankfull flow of the creek, which creates a velocity and depth barrier for juvenile salmonids. The habitat above the project site is complex and consists of mature riparian forest vegetation and urban development patterns. Adult and juvenile salmonid presence has been documented in the lower portion of the creek. Tulalip Tribes and Washington Department of Fish and Wildlife identified Big Gulch as one of the top 17 highest priority streams for restoration in a [2019 report](#) based on existing conditions and rearing opportunities for the Listed Puget Sound Chinook Salmon. The culvert on BNSF Railway right-of-way is the most downstream barrier on the tributary stream. There are no upstream fish passage barriers. BNSF Railway will remove the undersized CMP and design a fish passable replacement structure, restoring access to **3.76 miles** of upstream spawning and rearing habitat.

b) Project Description and Milestones: This project will consist of stream analysis, planning, engineering design, environmental review & permitting, and construction. The existing fish barrier culvert will be replaced with a fish passable structure. The preferred alternative will be selected based on the stream analysis and coordination with stakeholders. Archeological and hydraulic permits will be required to correct this barrier. The planning phase will include outreach, final designs, and permitting. Construction will involve mobilization, staging, erosion and water control, road fill removal, abutment, bridge, and track installation, channel construction, streambed restoration, channel stabilization, and planting.

Year	Milestones
2024	Agreement Outreach Engineering Award Prelim designs Cultural Award Permit Apps.
2025	Final designs Permit complete Construction Award Landowner Agreement executed
2026	Construction Implementation monitoring Riparian restoration As-built designs complete

MERRILL AND RING CREEK (BNSF)

a) Project Site Characteristics and Methods: The BNSF Railway crosses Merrill and Ring Creek at its outfall to the Puget Sound. The nearly 7-foot-wide creek channel currently flows through a 48-inch-diameter corrugated metal pipe (CMP) for 66 feet. This pipe constrains the bankfull flow of the creek, which creates a velocity and depth barrier for juvenile salmonids. WDFW reports that two additional CMPs at this site have no flow at low water levels. The habitat above the project site is complex and consists of mature riparian forest vegetation and urban development patterns. Adult and juvenile salmonid presence has been documented in the lower portion of the creek.

This barrier has been identified as one of 17 high priority for restoration on coastal streams in the Puget Sound by Tulalip Tribes and WDFW in [2019 Report](#). Mapped and observed species at the project site include chum, Listed Puget Sound Chinook, coho, steelhead, resident coastal cutthroat trout, and sea run cutthroat trout. The culvert is on BNSF Railway right-of-way and is the most downstream barrier on the tributary stream. BNSF Railway will remove the undersized CMP and design a fish passable replacement structure, restoring access to **1.12 miles** of upstream intact spawning and riparian habitat.

A preferred alternative to maintain access and restore fish passage will be determined upon a stream survey and consultation with a fish passage engineer. The removal of the barrier and replacement structure installation will improve safety, maintain access, and increase resiliency.

b) Project Description and Milestones: This project will consist of stream analysis, planning, engineering design, environmental review & permitting, and construction. The existing fish barrier culvert will be replaced with a fish passable structure. The preferred alternative will be selected based on the stream analysis and coordination with stakeholders. Archeological and hydraulic permits will be required to correct this barrier. The planning phase will include outreach, final designs, and permitting. Construction will involve mobilization, staging, erosion and water control, roadbed fill removal, abutment, bridge and track installation, channel construction, streambed restoration, channel stabilization, and planting.

Year	Milestones
2024	Agreement Outreach Engineering Award Prelim designs Cultural Award Permit Apps.
2025	Final designs Permit complete Construction Award Landowner Agreement executed
2026	Construction Implementation monitoring Riparian restoration As-built designs complete

FISH BARRIER REMOVAL CAPACITY

TULALIP FISH BARRIER REMOVAL CAPACITY

a) Project Site Characteristics and Methods: The Tulalip Tribes will work with project partners (including those in this proposal) to identify, design and remove/replace 2-4 priority fish passage barriers within the Snohomish and/or Stillaguamish Watersheds on and off the Tulalip Reservation. This includes barrier identification, inventory, landowner outreach, coordination, assessment, design, and construction. The intent of this work is to facilitate the establishment of a project pipeline that can be implemented by Tulalip or project partners, with 2-4 of these projects being completed within the performance period. Projects will be selected based on their benefit to migratory fish species including barrier severity, upstream habitat quantity/quality, cost effectiveness, willing landowners, and benefits to Tulalip Tribal Members/resilience.

b) Project Description and Milestones: This project includes barrier identification, inventory, assessment, coordination, and design and construction of 2-4 priority fish passage projects.

Year	Milestones
2024	Agreement Outreach Coordination Inventory Assessment
2025	Engineering Award Cultural Award Preliminary Designs Permit Apps.
2026	Final Designs Construction Implementation monitoring Riparian restoration As-built designs complete

TROUT UNLIMITED CULVERT BARRIERS ASSESMENT, INVENTORY, AND OUTREACH PROJECT

a) Project Site Characteristics and Methods: Trout Unlimited (TU) will complete culvert barrier field surveys within the Tulalips Tribes' Usual and Accustomed Fishing Areas using WA Dept. of Fish and Wildlife (WDFW) Fish Passage Inventory, Assessment, and Prioritization Manual and protocol, 2019. TU staff and volunteers will be trained in WDFW fish passage protocol and complete Level A and Level B surveys as needed to identify barriers status at each site.

b) Project Description and Milestones: TU will provide culvert barrier assessment, inventory, outreach, and project development support in collaboration with Tulalip Tribe and other project partners. TU will complete field work to survey and assess a minimum of 50 culverts to identify barrier status via WDFW’s Fish Passage Manual. This culvert data will be incorporated into Tulalip Tribes’ fish passage database and barrier inventory. As part of this effort, TU will also provide outreach to landowners, stakeholders, and partners to complete the field assessments and data collection. Where appropriate, TU will provide fish passage project development and implementation support.

Year	Milestones
2024	Agreement; Hire TU Project Manager; Outreach; Barrier assessments and inventory
2025	Outreach; Assessments and inventory; Fish passage project support
2026	Outreach; Assessments and inventory; Fish passage project support

SOUND SALMON SOLUTIONS CULVERT BARRIERS ASSESMENT, INVENTORY, AND OUTREACH PROJECT

a) Project Site Characteristics and Methods: Sound Salmon Solution (SSS) will complete culvert barrier field surveys within the Tulalips Tribes’ Usual and Accustomed Fishing Areas using WA Dept. of Fish and Wildlife (WDFW) Fish Passage Inventory, Assessment, and Prioritization Manual and protocol, 2019. The barrier assessments will be informed by Tulalip Tribes from ongoing culvert coordination efforts as high priority for inventory. Landowner outreach will be performed to gain access on private property for assessment purposes, develop landowner relationships and future projects in watersheds vital to treaty reserved resources.

b) Project Description and Milestones: SSS will provide culvert barrier assessment, inventory, outreach, and project development support in collaboration with Tulalip Tribe and other project partners. SSS will hire a project manager and technicians to complete field surveys and assess a minimum of 150 (stream crossings) over three years to identify barrier status. This culvert data will be incorporated into Tulalip Tribes’ fish passage database and barrier inventory to inform future fish habitat restoration efforts. As part of this effort, Sound Salmon Solutions will provide outreach to landowners, stakeholders, and partners to complete the field assessments and data collection. Where appropriate, SSS will provide fish passage project development and implementation support, to develop, secure funding for and implement at least one barrier removal project identified by Tulalip as a priority upon assessment. SSS will consult with the Tulalip Tribes for prioritization of the assessment areas as well as implementation to coordinate efforts.

Year	Milestones
2024	Agreement/Hire Staff/Secure Equipment/Outreach /Assessments
2025	Landowner Agreements/Assessments /Barrier Removal Project Development
2026	Landowner Agreements/ Assessments /Barrier Removal Project Development

3) OVERALL QUALIFICATIONS OF APPLICANTS

The Tulalip Tribes and project partners have more than adequate education, experience, training, facilities, and administrative resources to support this proposal. All project collaborators have implemented many fish passage barrier removal projects and other salmon enhancement projects

throughout the region. This includes relatively small fish barrier culvert removal projects to dam removal restoration projects and other multimillion-dollar habitat connectivity projects.

a) Fish Passage and Conservation Background (5 points): Tulalip and project partners have all managed several large restoration/barrier removal projects including stakeholder collaboration, planning, design, engineering, construction, and monitoring. The Tulalip Tribes recently removed two dams in the Snohomish Basin in 2020 ([Pilchuck River Dam](#)) and 2021 ([Haberzetle dam](#)) along with a bridge installation project. Tulalip has conducted many other fish passage barrier removal/replacement projects and large-scale restoration projects such as the ~\$20 million-dollar 350-acre [Qwuloolt Estuary Restoration Project](#) with the same key staff who will be working on projects in this proposal. We are accustomed to completing difficult projects in the face of adverse conditions including challenging site conditions, inclement weather, and contracting challenges, and successfully completed several projects on time during the COVID pandemic.

Over the past 23 years, Snohomish County has designed and constructed more than 200 fish passage culverts. The cost estimates, design and implementation of culverts to be completed by the County relies on the extensive experience the County has designing fish passage culverts.

Since 2013, Snohomish Conservation District has designed and constructed over 15 fish passage barrier correction or removal projects on both public and private land. Their fish passage project team includes three engineers and two project managers with a combined 55 years-experience designing and constructing stream crossing and fish passage projects. SCD's project team has demonstrated success in developing cost estimates, designing projects, obtaining permits, managing construction, and working cooperatively with private landowners to construct fish passage barrier projects in this landscape.

The City of Marysville has designed and constructed many fish passage barrier replacement projects including a [large recent project on Quilceda Creek](#). Marysville will use this experience while implementing the proposed next two upstream barrier replacement projects.

BNSF is a large entity that is extremely capable of efficiently and effectively replacing fish passage barriers on their railway. Efforts in the Pacific Northwest are designed to accommodate fish habitat. This includes the recently completed [restoration project at Meadowdale Beach](#), and [Little Squalicum Estuary](#) near Bellingham Bay in a watershed to the north.

[Sound Salmon Solutions](#) is one of 14 Regional Fisheries Enhancement Groups (RFEG) in the state of Washington. For 30 years, they have supported salmon recovery in the Stillaguamish, Snohomish, and South Island County watersheds by connecting people to their watersheds through interactive education, hands-on stewardship and state-of-the-art habitat restoration.

[Adopt a Stream Foundation](#) is a 501(c)3 non-profit organization, and was established to ensure that Pacific Northwest streams continue to provide healthy spawning and rearing habitat for salmon, trout, steelhead, and other wildlife. They are experience fish passage practitioners that are adept at removing barriers effectively at a low cost.

[Trout Unlimited](#) has a mission "To bring together diverse interests to care for and recover rivers and streams so our children can experience the joy of wild and native trout and salmon." Founded in Michigan in 1959, Trout Unlimited today is a national non-profit organization with 300,000 members and supporters dedicated to conserving, protecting and restoring America's coldwater fisheries and their watersheds.

their staff and volunteers work from coast to coast to protect, reconnect, restore and sustain trout and salmon habitat on behalf of today’s anglers and coming generations of sportsmen and women who value the connection between healthy, intact habitat and angling opportunity.

b) Management Capacity: The Tulalip Tribes is a large, well-managed and successful organization that has managed large federal, state and other grants in the past. Tulalip has approximately 1,200 employees including large Natural Resources, Grants and Self Governance, and Finance Departments. In collaboration with our project partners, we have the necessary experience, qualifications, facilities, equipment, and administrative resources available to successfully fulfill the responsibilities associated with managing this federal grant award. We have demonstrated the ability to manage the requested amount of funds, maintain financial and administrative records, and fulfill reporting requirements.

The Capital group within Snohomish County Surface Water Management has a team of 11 engineers, including 3 dedicated to fish passage, available to complete fish passage barrier removal projects throughout the County. Additional engineers can be pulled in from our Floodplain Services group. SCD and the City of Marysville similarly have in-house engineering staff and the capacity to contract with experienced design and implementation contractors. BNSF has significant internal capacity for design and implementation. We are confident that our project team has the capacity to implement the proposed projects.

4) PROJECT COSTS:

See PDF 2. Budget Narrative for the full project budget and a budget for each project phase to place the funding request in spatial and temporal context.

a) Budget Detail: Please see PDF 2. Budget Narrative for a clear outline of the NOAA funding request and other funding sources for each project in this proposal over the 3-year performance period.

b) Funding Allocation and Cost-effectiveness: Please see PDF 2. Budget Narrative. All requested direct federal funds will support the proposed fish passage projects with the great majority of funding allocated on-the-ground implementation.

c) Cost-sharing and Leveraging Federal Funds: Projects in this proposal will build off of highly coordinated substantial previous/current efforts to fund and implement these and related projects. There are many related habitat restoration and salmon recovery projects that this proposal will build upon. Leverage for this proposal will primarily come from WSDOT, Marysville, and Snohomish County. Related projects include many culverts in the 4 project watersheds that are being removed/replaced by the Washington State Department of Transportation (WSDOT) as part of a federal court injunction for fish passage (no barriers in this proposal are part on this injunction).

Match/Leverage/Other Related Funding Source Table:

Funder	Amount	Type	Org Type	Status	Watershed
WSDOT	\$26,750,000	Leverage	State	Secured/ Pending	Portage, Quilceda, Anderson, Skykomish
County	\$2,204,835	Leverage	Local	Secured/ Pending	Portage, Anderson
Marysville	\$5,350,000	Leverage	Local	Secured	Quilceda
Total	\$34,304,835	Leverage			

Because the proposed leverage dollar amount is greater than the NOAA request, we propose greater than a 1:1 ratio in request to leveraged contributions.

<i>Funding</i>	<i>Amount</i>
NOAA Request	\$20,958,778
Leverage	\$34,304,835
Leverage:NOAA	1.6:1

5) OUTREACH AND EDUCATION:

This collaborative proposal has broad community support, and we will be implementing a focused and effective outreach strategy to protect the nation’s natural resources through restoration.

a) Stakeholder Support: This proposal has broad stakeholder support, including from the 8 primary project collaborators (Tulalip, County, Marysville, BNSF, TU, AASF, SSS, and SCD), and many others. Please see the support letters included in PDF 4. Supplemental Materials including letters from: Snohomish County, Snohomish Conservation District, BNSF, Marysville, Snohomish County Marine Resources County, Adopt A Stream Foundation, Trout Unlimited, WA State Department of Natural Resources, Snohomish-Stillaguamish Local Integrating Organization, Snohomish Basin Salmon Recovery Forum, Washington State Department of Transportation, Representative Pramila Jayapal (WA-07). Representative Rick Larsen (WA-02), Representative Suzan DelBene (WA-01), and Senator Maria Cantwell are also supportive of this proposal, and intend to provide letters of support.

b) Inclusive Planning and Engagement: The Tulalip Tribes will be the primary sponsor for this proposal working collaboratively with project partners. Therefore, underserved communities will be leading this effort, in collaboration with other entities and the local community. Barrier owners are supportive of projects in this proposal. We will continue to engage with the urban and rural community associated with these projects, and project outcomes will include increased access, safety, and reduced flood risk to the rural community.

Many culverts in the Snohomish Basin are being removed/replaced by the Washington State Department of Transportation (WSDOT) as part of a federal court injunction for fish passage. This proposal is occurring in conjunction with WSDOT efforts in a coordinated fashion including collaborative review and data sharing. Snohomish County maintains HSPF hydrologic modeling for most basins within the County. Data is shared with the WA Dept. of Transportation (WSDOT) for use in their analyses of injunction culvert replacements. Project data has been shared with WSDOT and they have been involved in the review of proposed projects. BNSF is coordinating construction with WSDOT in order to reduce impacts to the stream and community as well as exploring construction efficiencies.

We are working closely with permitting agencies including Snohomish County, the Washington Department of Fish and Wildlife, the Washington State Department of Natural Resources, the Washington Department of Ecology, the Washington Department of Archaeology and Historic Preservation, NOAA, and the Army Corps of Engineers. We intend to utilize a streamlined Fish Habitat Enhancement Project or Forest Practices Hydraulic Project permitting process for these projects.

c) Community Outreach and Education: The Tulalip Tribes has a very engaged and active Media and Marketing Department with the ability to produce and distribute outreach content including high quality videos, physical outreach materials, and web content. These will be shared on Tulalip TV, other media

outlets, Tulalip websites, social media, and other avenues to show the benefits of collaboration on fish passage barrier removal projects. Tulalip, SCD, and project partners also have Washington Conservation Corps (AmeriCorps program) crews that will be part of implementing these projects, which will provide education and outreach opportunities.

Snohomish County has [a Fish Passage Culvert Program](#) website, which includes a one-pager describing the program, highlights individual fish passage projects, and has a new interactive map of county-owned fish passage culverts. The Surface Water Management Division at the County also sends out a monthly newsletter, which often features fish passage projects completed by the County.

SCD and Tulalip Tribes, along with several partners (including NOAA Restoration Center) have completed extensive community outreach and engagement. Beginning in 2014, SCD and NOAA Restoration Center completed a series of community meetings to discuss landowner barriers to conservation incentive programs and gather input into community needs. SCD completed additional outreach about climate resilience needs for landowners to develop the Snohomish County Agriculture Resilience Plan (2019). Drainage improvements, including drainage improvements through fish passage barrier corrections, was identified by community members as the highest priority climate resilience need. In summer 2022, SCD and Tulalip Tribes began a coordinated landowner outreach initiative to outreach to landowners with stream crossings with the goal secure landowner permission to inventory, assess, and prioritize stream crossings. Tulalip is expanding this effort on and off the reservation with partners including Trout Unlimited, Sound Salmon Solutions, Adopt a Stream Foundation, SCD, the Washington Conservation Corps, and others. The work that SSS and Trout Unlimited propose in their projects has direct community outreach and education component, by supporting hiring staff to expand capacity.

Snohomish Conservation District has completed extensive community outreach in the project watersheds. SCD maintains a robust project website where fish passage and other project information is shared with the community and stakeholders. Examples of SCD's community engagement project website includes the [Kristoferson Creek Fish Passage Project](#) and the [Haystack Creek Fish Passage Project](#). SCD also sends out a [newsletter](#) every other month to share highlight projects, partners, funders, and landowner stories.