



# **Puget Sound National Estuary Program: Tribal Implementation**

Award PA-00J32201: FY10-13

## **Final report**

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## Introduction

On behalf of the federally recognized tribes of Puget Sound, the Northwest Indian Fisheries Commission (NWIFC) developed a program to administer the Environmental Protection Agency (EPA) National Estuary Program award dedicated to tribal restoration and protection projects in the Puget Sound watershed. These funds were awarded under a cooperative agreement (PA-00J32201), under which NWIFC served as the Lead Organization (LO) for the tribal distribution of these funds. This report details the outcomes, successes, and reflections of this first cooperative agreement, which included four awards that spanned federal fiscal years 2010-13 and closed December 31, 2017, and offers a forward looking approach on the continuation of tribal implementation projects for Puget Sound under this program.

## Overview of Approach

As the Lead Organization (LO) for the tribal distribution of the National Estuary Program award for Puget Sound, NWIFC has a unique, non-competitive approach to the allocation of this award. The cooperative agreement between NWIFC and EPA Region 10 recognizes the federal government's trust responsibility to each of the federally recognized Indian tribes within the region. Each sovereign tribe, as the region's longest standing environmental stewards and natural resource co-managers, serve a critical role in the protection and restoration of the Salish Sea. NWIFC worked collaboratively with EPA and the tribes on the best approach to manage this award. As recovery must occur within all reaches of Puget Sound, and treaty rights associated with salmon, habitat, and water quality are paramount to each tribe, it was decided that funds would be allocated through equal distributions to each of the 21 federally recognized tribes and tribal consortia in the Puget Sound basin. This is modeled after the "no watershed left behind" strategy that was an essential cornerstone of salmon recovery plan development in each watershed.

In addition to connecting their projects to the Puget Sound Action Agenda, the tribes must demonstrate how their project is of high tribal priority. There are several ways that high tribal priorities can be identified:

- Each tribe, as a sovereign nation, prioritizes restoration projects and actions consistent with their own initiatives, recovery documents, and processes.
- Puget Sound Salmon Recovery Plans were developed in collaboration with



The 21 federally recognized tribes and tribal consortia within the Puget Sound Basin

the tribes. Each watershed group develops a four-year work program update to describe the watershed's accomplishments during the previous year, identify the current status of recovery actions, and to propose future actions in the next four years necessary to implement the Salmon Recovery Plan for each watershed.

- The Treaty Rights at Risk initiative was written and advanced by the tribes and released in 2011. It sets forth a strategy and specific actions that should be taken by the federal government to remedy the erosion of treaty-reserved rights. A central tenant of the initiative is protecting existing habitat from further decline and encouraging the use of restoration techniques where protection alone will not achieve ecosystem recovery goals.
- The Tribal Habitat Strategic Initiative was included in the 2012 Puget Sound Action Agenda, endorsing a statement of priority actions necessary to take to protect and restore salmon habitat in Puget Sound.

As this work continues, the tribes continue to collaborate to further strategize and develop a regional recovery plan with the Tribal Habitat Strategy.

### Workplan Objectives and Outputs

For this cooperative agreement, NWIFC developed a workplan that guided the program to administer these funds. The workplan was comprised of tasks, outputs, and outcomes that addressed program development, award cycle, and program management.

#### *Program Development*

The first task in developing the program was to have a communication and outreach plan that would ensure that each tribe received proper notification of the availability of funding, along with the expectations and process for submitting workplans. Because of previous interactions and current relationships with the member tribes of NWIFC, a distribution list of pertinent tribal contacts was already in place. This distribution list was vetted to ensure that the proper contacts were included and has been updated as needed. A communication protocol was established that includes a preliminary communication with a target date for releasing the RFP to all recipients on the established distribution list, followed by a formal transmittal notice for the RFP.

The second task was to develop the RFP, which was done in close consultation with the EPA. The amounts for the subawards for each year were determined by allocating an equal distribution after

#### ***Total for each award***

**FY10:** \$3,000,000

**FY11:** \$5,479,999

**FY12:** \$3,600,000

**FY13:** \$3,620,582

**Total:** \$15,700,581

#### **Award administration:**

\$513,508

(all four years)

#### ***Subaward amounts for each tribe***

**FY10:** \$136,300

**FY11:** \$255,405

**FY12:** \$165,400

**FY13:** \$166,100

administrative costs (average of 3.27%) were deducted. The RFP invited each of the 21 eligible tribes and tribal consortia to submit a proposal for their projects that addressed all required content, including:

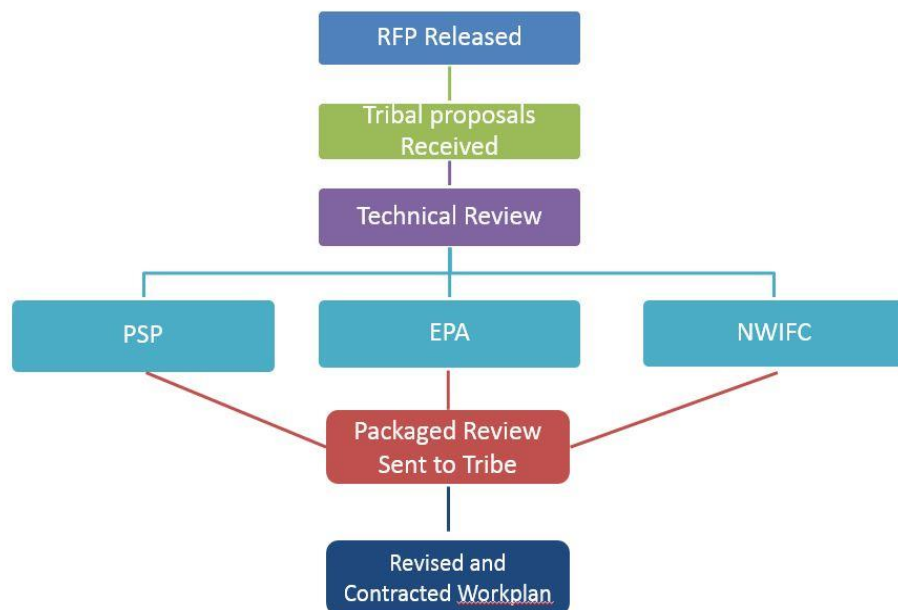
- The need for the project
- Connections to the Puget Sound Action Agenda
- Identification of a high tribal priority
- Climate change considerations
- Project tasks and associated outputs
- Project outcomes and deliverables
- The project timeline
- All project cooperators
- A management plan
- Adherence to terms and conditions
- The budget and budget narrative

In subsequent years for this award, the RFP was further amended to address new developments in the cooperative agreement. This was an ongoing collaborative process between NWIFC and EPA. In FY11 the PSP Ecosystem Recovery Targets were included as eligible activities, the potential impacts of climate change were required to be addressed in the planning and implementation of the project, and the level of budget detail was clarified for both the narrative and a task delineated budget. In FY12 more clarification was provided to distinguish between subcontracts and professional services for the budget narrative. An additional element for the workplan was added to require an explanation of how technical review would occur for major technical products, which satisfied a new term and condition that was introduced by EPA. In FY13 the RFP was amended to incorporate the new riparian buffer term and condition. A request for distinction between outputs (tracked to monitor the progress of a project) versus deliverables (products of the workplan that are submitted to NWIFC before the close of the award) was also included.

NWIFC also developed a coordination plan that included: (1) ensuring that the PSP is aware of tribal Lead Organization funded activities by enlisting them as a key reviewer of these subawards; (2) engaging the EPA Project Officer to discuss the capacity awards that the subrecipient projects are concurrently receiving in order to avoid duplicative funding efforts; (3) engaging in existing processes and groups to disseminate and share subrecipient project information, including the ECB, the Leadership Council, the PSP Salmon Recovery Council, and the PSP/Federal/Tribal Caucus; (4) participating in LO meetings to ensure that other LOs are fully aware of our subrecipient projects and vice versa; (5) updating an [existing NWIFC website](#) that is dedicated to information related to the Puget Sound Partnership and Treaty Tribes of Western Washington.

### *Award Cycle*

After proposals have been received from the tribes, the award cycle consists of the review process, finalizing proposals, and issuing subaward contracts. Each proposed workplan went through a technical review by three separate agencies: NWIFC, EPA, and Puget Sound Partnership (PSP). A uniform set of evaluation criteria is used by each agency and, once all internal and external comments are received, NWIFC provides review comments to the tribes. NWIFC works with the tribes on addressing review comments within a revised workplan. NWIFC is responsible for the administration of all review and approval of the final workplans, as well as compliance with the terms and conditions of the award.



### *Program Management*

Once awards are issued, management of the program includes ongoing support for each subrecipient, project monitoring, biannual reporting, and closing the contracts for all awards. The program is designed to incorporate adaptive management so that the processes can change as needed.

Ongoing support for the subawardees includes assistance with any amendments they need to their contracted workplan. This could include a change in the scope of work because their project has changed, a budget modification to address unforeseen expenses, or contract extensions if their project continues longer than was expected. Major changes to the scope of work were reviewed by both EPA and NWIFC, and all project sheets that provide updates on tribal projects were updated accordingly.



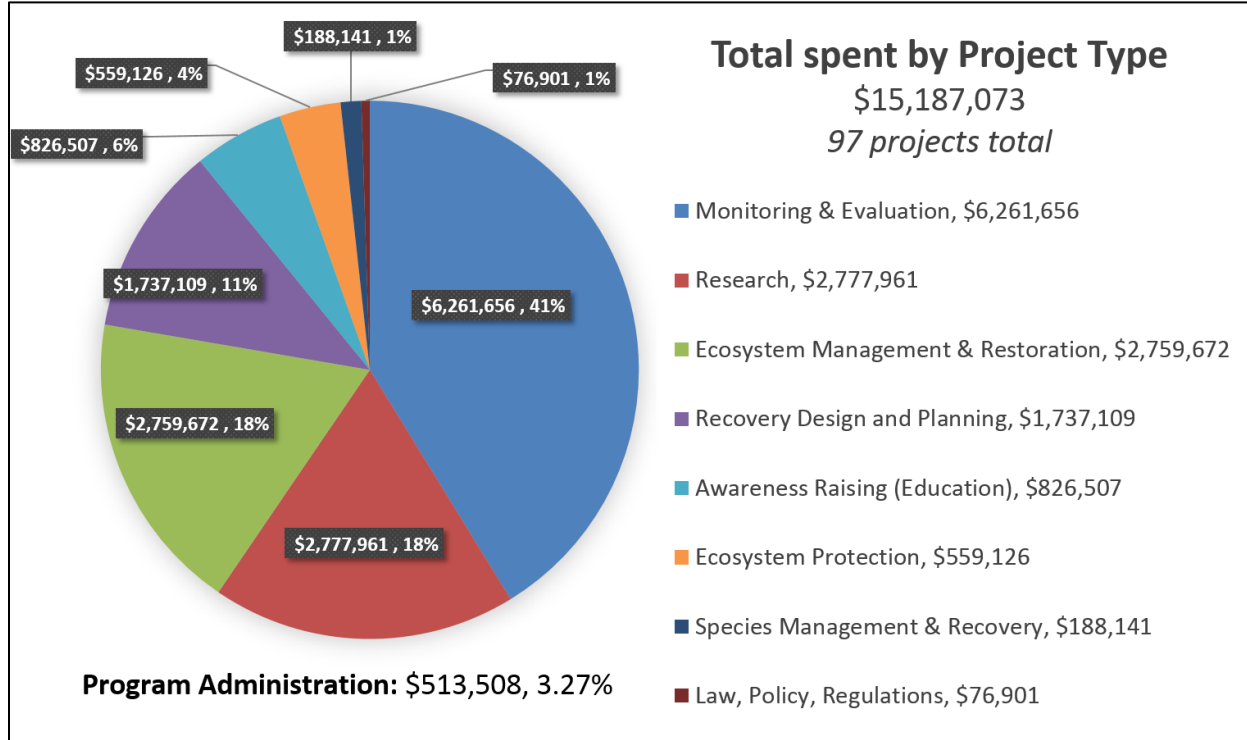
To monitor projects and identify when a tribe might need support or changes to their workplan, NWIFC developed a formal protocol for subrecipient monitoring to be used for all grant programs. A risk evaluation matrix is used to assess project progress and compliance with award requirements, ranking each tribe for project communication, staff turnover and qualifications, reporting, past performance, subcontracts, QAPP compliance, news events, financial communication, invoicing, and contractual document compliance, and A-133 audits. Tribes that are identified as a low risk require diminished subrecipient monitoring. Tribes that are identified as a medium or high risk are assessed to see if technical assistance is needed. Those that are identified as the highest risk are flagged, which prompts a programmatic site visit and an agreed-upon procedure review, i.e. a federal program specific audit.

Another tool to monitor the projects of the tribes are the biannual Financial and Ecosystem Accounting Tracking System (FEATS) reports, which are a tool issued by EPA to monitor the progress of tasks and outputs for each project. These reports are submitted to NWIFC twice a year, where they are reviewed for adherence to the scope of work, project timeline, project requirements, and budget invoicing. The FEATS reports are posted to the [NWIFC website](#) dedicated to this program so that they are publicly available.

In addition to the internal work of the program, the Puget Sound Recovery Projects Coordinator is in regular contact with the EPA Project Officer, engaging in regular check-ins to clarify EPA proposal reviews and discuss challenges faced within the review process and management of the program. Frequent communication allowed for greater collaboration, facilitated problem solving, and strengthened the relationship between organizations.

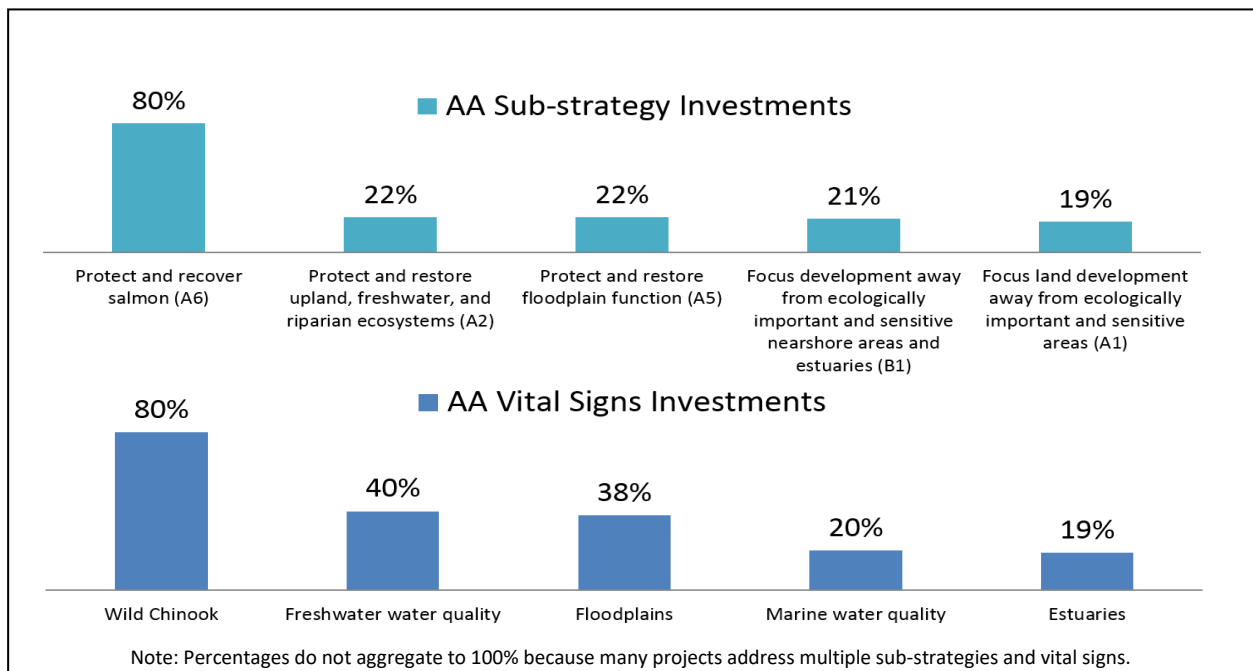
### **Overall Project Composition**

Over the four years of this cooperative agreement, a total of \$15,187,073 funded 97 projects in the Puget Sound watershed. Some tribes did projects that last over multiple award years, and other completed multiple smaller projects within each award year. The overall priorities of the tribes can be seen by looking at how this funding was allocated. The pie chart on the following page shows how these funds were distributed, based off the project types that are used by the Puget Sound Partnership. By far, the most funding was spent on monitoring and evaluation (41%), which should not come as a surprise since opportunities to fund monitoring and post-restoration evaluation are limited. Since this is one of the few sources of Puget Sound restoration funds that allow for this important component of restoration, the tribes saw this as a great opportunity. Both research and ecosystem management and restoration (18% each) were an important use of these funds as well, followed by recovery design and planning (11%).



It should be noted that, although sorting projects by these types can provide a useful analysis, there are many cases where the project types overlap. For instance, every tribe is committed to species management and recovery, and almost every project was dedicated to the recovery of salmon. However, this project type ranked among the lowest (1%). This is because it was more useful to determine what type of project was being funded *within* the overall goal of salmon recovery. There are also projects that included both the acquisition of land, as well as restoration on that land. Since projects must be sorted into one type, we cannot accurately reflect both the protection and restoration aspects of these projects.

This point is drawn out more in the distribution of projects as they relate to the Puget Sound Action Agenda (see chart on the following page). Because each project could be assigned as addressing multiple factors within the Action Agenda, it became abundantly clear that the major priority of tribes is to protect and recover salmon populations. The following charts identify the top five sub-strategies and vital signs that were addressed through the investments that were made by the tribes through this program. In both charts, salmon recovery and wild Chinook are at 80%.



### Outcomes from the Logic Model

As part of the workplan that NWIFC submitted to EPA for the management of these funds, a logic model was included to outline each task, output and outcome. The tasks and outputs are described in detail in the above sections on the development and management of the program. The outcomes from the logic model include longer range goals that have been determined by tribes to be of high priority. The ongoing funding and management of this program will continue to sustain these tribal priorities. Some of the long-term outcomes in the workplan include:

- The development of appropriate indicators and benchmarks of the health of the Puget Sound ecosystem, including the linkages to recovery goals established by resource managers.
- The development of better management and monitoring systems for toxics, and to identify sources and reduction methods so that tribal rates of fish and shellfish consumption are safe.
- Identification of existing land-use regulations that fail to provide adequate protection for natural resources. Identified failures will be targeted for reform.
- Implementation of on-the-ground projects that maintain natural hydrologic processes and flows.

To highlight some of the work that has been carried out by the tribes, these outcomes have been address below.



*The development of appropriate indicators and benchmarks of the health of the Puget Sound ecosystem, including the linkages to recovery goals established by resource managers.*

**Point No Point Treaty Council**  
*Indian Island Baitfish Monitoring Study*  
 FY10-13, \$723,205

The goal of this project was to develop field sampling methods that can be used to efficiently assess spawn deposition by Pacific sand lance and surf smelt on Puget Sound beaches. The data collected has been used to develop indices of spawn deposition abundance for these two important forage fish species. During the initial years of the



project, protocols for field sampling and lab processing of field samples were established. For the third and subsequent years of this project, the goal has been to continue intertidal forage fish surveys for spawn deposition of surf smelt and Pacific sand lance using these protocols, and to produce quantifiable measures of the annual spawn deposition for both species. Stock assessment and analysis techniques developed during this project can be applied by other resource management agencies to confirm the presence and relative abundance of these species within their respective areas of authority. Local and regional jurisdictions can subsequently use the results of expanded forage fish monitoring to inform decisions regarding shoreline development. Point No Point Treaty Council is continuing this work with each year of funding through this award.

*The development of better management and monitoring systems for toxics, and to identify sources and reduction methods so that tribal rates of fish and shellfish consumption are safe.*

**Jamestown S’Klallam Tribe**  
*Nutrient Monitoring and Analysis in Sequim and Dungeness Bays*  
 FY10-13, \$316,696

Shellfish are an important natural resource for the Jamestown S’Klallam Tribe. Clams and oysters are harvested for commercial, ceremonial, and subsistence purposes. To ensure the shellfish is safe for consumption, samples are collected prior



to harvest and sent to the Washington State Department of Health (WDOH) Office of Shellfish and Water Protection, where they are tested for toxins associated with Paralytic Shellfish Poisoning (PSP), Amnesiac Shellfish Poisoning (ASP) and Diarrhetic Shellfish Poisoning (DSP). As research and monitoring are also essential parts of managing and protecting this resource, the Tribe partners with the SoundToxins program [coordinated by the National Oceanographic and Atmospheric Administration's (NOAA) Northwest Fisheries Science Center (NWFSC) and Washington State Seagrant] to monitor for phytoplankton in Sequim Bay to provide advanced warning of locally-occurring harmful algal bloom (HAB) events that may ultimately impact shellfish and human health. The Tribe worked with the biotoxin group to understand some of the more basic and fundamental aspects of DSP in the Pacific Northwest. Some of the progress over the past several years includes developing an early warning system based on algal cell density, understanding the relative uptake rates of diarrhetic shellfish toxins (DSTs) in commercially important shellfish and figuring out which species of *Dinophysis*, of the several in the northwest, are toxic.

*Identification of existing land-use regulations that fail to provide adequate protection for natural resources. Identified failures will be targeted for reform.*

#### **Squaxin Island Tribe**

*Instream Flow Protection: Preparation for Negotiation  
and Adoption of Summer Minimum Flows*  
FY10, \$41,939

Based on data from the Squaxin Island Tribe, Department of Ecology listed the Deschutes for low flows on the 1996 and 1998 Clean Water Act 303d lists, although they declined to address that impairment in the 2008 Total Maximum Daily Load (TMDL) Technical Report. However, the TMDL did report on an analysis of historical change and found a drop of 4-5 cubic square feet during the summer months over the last 50 years. That drop has diminished available habitat for both spawning and rearing coho and contributed to increased water temperatures, which ultimately led to coho production declines. In 1980, the state promulgated minimum flows for the Deschutes River in WAC 173-513 to protect instream resources. This WAC only set minimum flows from December 15th to April 15th. This lack of numeric summer minimum flows was a challenge in evaluating the success of future restoration efforts. Three impacted cities, through their water rights mitigation plans and as part of an ambitious reclaimed water program, have been taking action to increase flows in the Deschutes. This project collected field data and populated the Physical Habitat Simulation software to complete the standard Instream Flow Incremental Methodology analysis. The end result was the calculation of the relationship between summer streamflows, usable fish habitat, and the period of hydrologic record in preparation for negotiation and adoption of summer minimum flows through rulemaking by the Department of Ecology.



*Implementation of on-the-ground projects that maintain natural hydrologic processes and flows.*

### **Lummi Nation**

*South Fork Nooksack River Larson's Bridge Reach Phase 2  
Restoration Project  
FY13, \$166,100*



In 2001, the first engineered log jams were constructed in the Nooksack watershed at Larson's Bridge. Over 35 were originally planned for, but due to funding limitations, the remainder of the log jams were never completed. A recent effectiveness monitoring analysis completed in 2011 by the Nooksack Tribe found that the Larson's Project Phase 1 log jams had the greatest effect on the formation of low-flow pools. The Larson's Reach Phase 2 in-stream project was designed to address habitat factors which are limiting the recovery of South Fork Nooksack River Chinook salmon, bull trout, steelhead trout, and other salmonid species. These factors include elevated water temperatures, lack of key habitats, and low habitat diversity. The project constructed 28 engineered log jams (ELJs) in the mainstem South Fork Nooksack River, which is anticipated to benefit endangered early spring Chinook salmon and bull trout through the creation of deep primary pools with woody cover. In addition, juveniles will benefit from at least 1.68 miles of off-channel rearing habitat by increasing connectivity with floodplain and side channels.

## **Reflections on the Program**

### *Successes*

In addition to the individual successes of the 97 projects funded by this award, there have been synergistic successes that have resulted from this program. With the consistent source of funding for projects selected by the tribes, tribal priorities have become integrated into the Puget Sound Management Conference. Additionally, these funds have been used to leverage larger scale projects in partnership with other agencies and organizations. For example:

- **Nisqually: Salish Sea Marine Survival Project (FY11, FY13)**

Nisqually used a portion of their awards to support the administrative needs of the Salish Sea Marine Survival project. This involves a partnership with Long Live The Kings, and also supports a much broader partnership with state and federal agencies, universities, tribes, and nonprofits performing a massive research effort in both the US and Canada on the smolt-to-adult survival of salmon in the marine environment. This is identified as a priority for the tribe through their Nisqually Fall Chinook Salmon Recovery Plan. It is also strongly tied to the Puget Sound Action Agenda and the Biennial Science Work Plan.

- **Suquamish: Ocean Acidification and Hypoxia Research, Monitoring, and Education (FY10)**

Suquamish identified this work as a priority because of the importance of the Dungeness crab to the tribal community. They had already established a volunteer monitoring program to better understand the decline in population, which has been linked to pH and low dissolved oxygen. This work is strongly connected to the Puget Sound Action Agenda and the Biennial Science Workplan. The focus was to study, monitor and educate on the impacts that ocean acidification has on the Dungeness Crab. This project involved partnerships with NOAA, the UW School of Oceanography, WDFW, the Marine Conservation Biology Institute, the Port Townsend Marine Science Center, Hood Canal Coordinating Council, Jefferson County Beach Watchers, and the Seattle Aquarium.

- **Lower Elwha Klallam: Elwha Floodplain and Fisheries Monitoring Support (FY10-13)**

This project has been ongoing since the start of this program and builds the overall capacity to provide long term monitoring after the removal of the dams on the Elwha River. It supports a Near Term Action from the 2012 Action Agenda: A6.1 STRT 1, which includes monitoring the Elwha River. A lack of dedicated project dollars for monitoring provided the motivation to develop interagency cooperative agreements and partnerships to pool resources, which is known as the Elwha Fisheries Team. The Tribe is working with USGS, US Fish & Wildlife, WA Fish & Wildlife, Olympic National Park and NOAA. Their work has been mostly focused on monitoring juvenile and adult salmon abundance, spatial distribution and productivity.

These projects offer examples of the many partnerships that have been built by tribes as they work as co-managers in the restoration and protection of Puget Sound.

Another partnership that has been developed through this program is between NWIFC and EPA. There was a lot to be learned to build understanding about the very different cultures of the individual tribes and the institutional culture at EPA. This included issues of cultural sensitivity with tribes, and also understanding the value and reasoning of the processes and requirements at EPA. Over the years, relationships have been developed that allow for a much greater ease in the transactions required to administer these funds and implement the program.

### *Lessons Learned*

Most of the “lessons learned” throughout the creation, implementation and management of this program have revolved around the terms and conditions that are assigned to the cooperative agreement. This work constitutes an ongoing conversation between the tribes, NWIFC, and EPA to find out the best path to achieve compliance with the requirements of the program, while also getting the most funding on the ground for Puget Sound recovery.

The Quality Assurance component of this award took some time and thoughtful consideration to find the best way to manage. While the value and necessity of Quality Assurance Project Plans (QAPPs) is understood, for some tribes they were viewed as unnecessary administrative burden, particularly where other protocols had been developed to ensure data quality. There was some confusion as to the role that EPA played in reviewing QAPPs that guided projects for fisheries. QAPPs were also initially required to be reviewed annually, even if they were for the same ongoing project. NWIFC took on a role of helping tribes assemble their QAPPs to fit the content requirements in the template provided by EPA. The QAPP process was adjusted so that they did not need to be reviewed each year unless an amendment was needed. NWIFC and EPA worked well together to resolve the obstacles with this issue.

The riparian buffer term and condition was adopted after the onset of the program, and integrating it into the program provided some challenge. The new term and condition was developed at the policy level between NWIFC, EPA, and other Lead Organizations (LOs), and then provided to grant staff to interpret and implement. Because NWIFC was the first LO to release the RFP for this award year, the first interpretation fell on NWIFC grant staff. There was some miscommunication and disagreement about the interpretation. In the following years, grants staff were involved earlier and clear guidance for interpretation was developed, which made the process easier.

Severability was another term and condition that initially created obstacles. While other LOs give large multi-year awards, NWIFC allocates smaller noncompetitive awards to each tribe on an annual basis. Because the longevity of this funding was uncertain at the beginning, there was concern over the continuity of funding and the issue of severability. Tribes are not comfortable bringing on new positions without a guarantee of future funding. And some long-term projects (such as 5-year monitoring projects) were a challenge under 1-year contracts. But, 2-3 years into the program, tribes felt more confident that Puget Sound recovery was a national priority and started bringing forth longer term projects.

An ongoing conversation with Puget Sound recovery is how to best collaborate when some priorities are a source of great conflict between various stakeholders involved in the Management Conference. A term and condition of collaborative intent is included for all of the National Estuary Program awards, and ongoing dialogue will be needed to address issues as they arise. The tribal implementation program was designed to allow for many points of collaboration, especially during the review process and with regular communication with the EPA project officer.

## **Conclusion**

This award for tribal implementation of restoration and protection projects in Puget Sound has been a crucial component in ongoing recovery efforts. We are now into our eighth

year of the program with FY17 funding, and continue to adaptively manage the program to maximize the benefit for Puget Sound. Tribes have proven to be integral co-managers of natural resources, and this program allows them the opportunity to fund projects that are of highest tribal priority. We are grateful to the federal funders and the staff at EPA who have continued this opportunity over the years. Continued funding under this model will support the ongoing success of this program, including the development of long-term partnerships that are essential to the recovery goals for the Puget Sound watershed.



## Appendix A

Year 1: FY10 Tribal Implementation Projects (award amount: \$136,300)

*This appendix provides a summary of each project for FY10. For deliverables and progress reports, please go to <http://blogs.nwifc.org/psp/>*

<i>Tribe/Tribal Consortium</i>	<i>Project Title</i>
<b>Nooksack Indian Tribe</b>	Nooksack Tribe Implementation of High Priority Salmon Recovery Projects
<b>Lummi Nation</b>	Development of a Strategy to Address Sediment Impacts in the South Fork Nooksack River
<b>Samish Indian Nation</b>	Secret Harbor Estuary and Salt Marsh Restoration Monitoring of Fresh and Marine Ecosystems
<b>Upper Skagit Indian Tribe</b>	Evaluating Spatial and Seasonal Distribution of Stream Dwelling Juvenile Salmonids Chinook and Steelhead and Determining Habitat Preferences of those Juveniles
<b>Swinomish Indian Tribe</b>	Non-Point Pollution Public Information and Education Initiative & Tribal Journey Water Quality Project
<b>Skagit River System Cooperative</b>	Assessment of the Geomorphological and Ecological Consequences of Dike Breaching vs. Dike Removal for Estuarine Habitat Restoration
<b>Sauk-Suiattle Indian Tribe</b>	Sauk-Suiattle Knotweed Eradication and Sediment Research
<b>Stillaguamish Tribe of Indians</b>	Studies on the Sources and Potential Treatment of Land-Based Pollutant Runoff
<b>Tulalip Tribes</b>	Pilchuck Watershed Protection Strategy; Baseline Budgets and Goals to Increase Carbon, Nitrogen and Water Storage in the Snohomish River Basin; A Comparative Analysis of Resource Management and Restoration Policies and Authorities of the Tulalip Tribes and Adjacent or Overlapping Jurisdictions; and Building Healthy Soils in the French Creek Watershed through Community Engagement and Stewardship
<b>Snoqualmie Indian Tribe</b>	Snoqualmie Tribe McElhoe-Pearson Levee Setback Partnership Project
<b>Muckleshoot Indian Tribe</b>	Investigation of fine sediment loading and effect on salmon spawning habitat quality in the Green River
<b>Puyallup Tribe of Indians</b>	Stormwater Monitoring and Sediment Oxygen Demand Investigation on Clarks Creek To Support the Use of Stormwater Flow as a Surrogate for Determining TMDL Waste Load Allocations
<b>Nisqually Indian Tribe</b>	Managing Eatonville's Stormwater to Protect Salmon & Nisqually Sustainable
<b>Squaxin Island Tribe</b>	Biological Recovery of Coho in the Deschutes Watershed
<b>Skokomish Tribal Nation</b>	Monitoring and Adaptive Management of the Skokomish Estuary after Restoration
<b>Suquamish Tribe</b>	Assessing and Preparing for Impacts of Ocean Acidification and Hypoxia on Dungeness Crab in the Pacific Northwest
<b>Port Gamble S'Klallam Tribe</b>	Nearshore Early Marine Juvenile Salmonid, Forage Fish, and Marine Biodiversity Study
<b>Point No Point Treaty Council</b>	Indian Island Baitfish Monitoring Study
<b>Jamestown S'Klallam Tribe</b>	Jimmycomelately Creek and Estuary Restoration: A Five Year Report & Determining the magnitude, extent, contributing sources, and possible impacts of elevated nutrients in Sequim and Dungeness Bays.
<b>Lower Elwha Klallam Tribe</b>	Monitoring the movements of adult salmonids and wild steelhead in the Elwha River during dam removal.
<b>Makah Tribe</b>	Consistent and Vocal Policy Presence on Freshwater/Terrestrial Issues and Integration of Regional Research/Recovery Priorities

*Appendix A Year 1: FY10 Tribal Implementation Projects***Nooksack Indian Tribe**

Nooksack Indian Tribe proposes to construct historic-scale log jams in three reaches in the Nooksack River Forks, including Hardscrabble, Wildcat, and Farmhouse Reaches. Log jams will be designed to address factors most limiting Nooksack early Chinook and other salmonid populations in each reach and will ultimately lead to restored habitat conditions and habitat-forming processes in project reaches, with associated improvements in abundance and productivity of Nooksack early Chinook. These funds will match SRFB funding and will support construction, supplies, replanting, and monitoring costs.

**Lummi Nation**

Lummi Nation, in developing a strategy to address sediment impacts in the South Fork Nooksack River, will: (1) assess the physical conditions of active, abandoned, and orphaned forest roads by collaborating with private and public forest owners; and (2) update a recent master's thesis on measuring the amount of sediment input by source, focusing on updating landslide and streambank erosion data.

**Samish Indian Nation**

Samish Indian Nation will work with Washington Department of Natural Resources to collect baseline environmental data of prior to, during, and post restoration activities related to the removal of a tidal dike to restore salt marsh, mudflat and tidally-influenced stream habitat at Cypress Island. This data will be a critical component to overall restoration goals at the Cypress Island site, a culturally and historically significant area to the Samish Indian Nation.

**Upper Skagit Indian Tribe**

The Upper Skagit Indian Tribe will determine the seasonal and spatial distribution of yearling (stream-type) life history salmonids in the Skagit River, WA, with an emphasis on Chinook salmon and steelhead trout. The results of this investigation are intended to fill data gaps necessary for effective recovery planning of Chinook salmon and steelhead in the Skagit River basin and inform similar efforts in the Puget Sound basin.

**Swinomish Indian Tribe**

The Swinomish Indian Tribe will engage in two projects: (1) a public education effort that will be directed at decision makers and stakeholders to improve the standards and implementation of best management practices, and to increase the level of regulatory certainty that instream resources will be protected, consistent with the Skagit Chinook Recovery Plan; and (2) the Tribal

*Appendix A Year 1: FY10 Tribal Implementation Projects*

Water Quality Project, an ongoing project to gather water quality data across the Salish Sea during the Tribal Canoe Journey, in order to map out spatial patterns at multiple scales to detect large-scale oceanographic/climate and site-scale land-use influences.

**Skagit River System Cooperative**

The Skagit River System Cooperative will quantify and contrast the geomorphological, hydrological, and ecological consequences of various approaches to tidal marsh restoration for 12 historical and 8 current sites in the Skagit and Snohomish deltas, using reference marshes in both deltas as controls. This proposal, analyzing both dike breaching and dike removal sites, is necessary in order to facilitate better restoration planning that accounts for the degree to which differing restoration approaches recover ecological function.

**Sauk-Suiattle Indian Tribe**

The Sauk-Suiattle Indian Tribe will engage in two projects: (1) reinforcement of a multiagency partnership to eradicate knotweed from the Skagit River watershed and its major tributaries, focusing its efforts on the Sauk and Suiattle rivers, both of which feature key spawning and rearing habitat for Puget Sound salmonids; and (2) engaging in a partnership with the U.S. Geological Survey (USGS) to determine how the timing, quantity, and sources of sediment in the Sauk and Suiattle rivers are impacting sensitive fish runs.

**Stillaguamish Tribe of Indians**

The Stillaguamish Tribe will engage in two projects to reduce the impacts of stormwater to aquatic ecosystems: (1) monitoring of stormwater outfalls in the Lower Stillaguamish River for the presence of a wide range of pollutants, leading toward the implementation of improved best management practices; and (2) employment of mycoremediation techniques to test if polluted land-based runoff can be treated prior to its entering conveyance systems.

**Tulalip Tribes**

The Tulalip Tribes will engage in four projects: (1) identifying protection priorities based on benefits to Chinook salmon recovery by utilizing Watershed Characterization results and current subbasin data, including known impairments, zoning information, and resource management plans and ecosystem service information; (2) providing additional support for an FY11-supported project conducting comparative analysis of resource management and restoration policies and authorities of the Tulalip Tribes and adjacent or overlapping jurisdictions; (3) providing additional support for an FY11-supported project creating an integrated model of the Snohomish Basin that provides carbon and nitrogen budgets and identifies a carbon augmentation goal for the Basin; and (4) providing a targeted outreach

campaign in the French Creek Watershed to build a sense of communal and comprehensive environmental stewardship.

### **Snoqualmie Indian Tribe**

The Snoqualmie Tribe will partner with King County in the design and setback of the McElhoe-Pearson Levee and revetment in order to restore floodplain habitat by reconnecting the Snoqualmie River with its floodplain. Project tasks include: (1) developing the McElhoe-Pearson Levee 100% engineered plans; (2) conducting baseline monitoring of time-lapse video, water level loggers, stream cross sections, tree regeneration quadrant sampling, and basic water quality parameters; and (3) engaging in partnering and outreach with the local landowners and community.

### **Muckleshoot Indian Tribe**

The Muckleshoot Indian Tribe will examine fine sediment loading and intra-gravel quality in Middle Green River salmon spawning habitat areas to assess potential effects on salmon life stage survival and production. Project tasks include: (1) the collection and analysis of gravel samples; (2) a geology/geomorphology characterization of the landslide activity and future potential fine sediment supply to the river; (3) developing a plan to estimate fine sediment loading rates from the landslide, reservoir, and upriver sources; and (4) comparing intra-gravel quality within the sampled spawning habitat areas.

### **Puyallup Tribe of Indians**

The Puyallup Tribe of Indians will conduct a sediment oxygen demand and stormwater monitoring investigation on Clarks Creek, an ESA designated critical habitat for salmon spawning and rearing, in order to complete and implement a Total Maximum Daily Load (TMDL) for dissolved oxygen. This TMDL project is the first in Puget Sound to use storm flow volumes as surrogate waste load allocations and is considered a pilot project that can be applied to other impaired, urban streams in the Puget Sound to improve stormwater management.

### **Nisqually Indian Tribe**

Nisqually Indian Tribe will conduct two projects: (1) partnering with the Town of Eatonville to update its plan for managing stormwater in Eatonville, focusing on identifying ways to incorporate retrofits and low impact development to infiltrate and treat a greater portion of stormwater; and (2) extending Nisqually Sustainable, a project that provides an economic incentive for watershed businesses to conserve water, reduce wastewater, reduce pollution, and manage stormwater sustainably.

*Appendix A Year 1: FY10 Tribal Implementation Projects***Squaxin Island Tribe**

The Squaxin Island Tribe seeks to contribute to the recovery of lost Coho productivity in the Deschutes Watershed by (1) identifying high priority habitat restoration actions, based on existing information and identification of heavily used reaches by supplemented Coho fry; (2) developing the technical basis for DOE to set summer minimum flows in WAC 173-513 and enable the use of high level indicators to evaluate summer streamflow achievement; and (3) designing and engineering a restoration project to enhance the off-channel connection where Lake Lawrence tributary drains into the Deschutes River.

**Skokomish Tribal Nation**

The Skokomish Tribal Nation will conduct research and monitoring efforts focused on assessing the effectiveness of the Skokomish Estuary Restoration Project (SERP). Project tasks include: (1) monitoring of relative abundance, distribution, residence time, feeding behavior, and species diversity of salmonids and other fish species; (2) monitoring of vegetation colonization and succession; (3) monitoring of sediment transport and estuarine mixing; and (4) monitoring of insect community response.

**Suquamish Tribe**

The Suquamish Tribe will focus on how to continue long term sustainable management by analyzing how waters with low dissolved oxygen (DO) and low pH threaten many aquatic species including Dungeness crab. Project tasks include: (1) in vitro assessment of low pH and dissolved oxygen effects on crab larvae; (2) collaboration with agencies involved with regional water quality monitoring and creating improved pH monitoring and zooplankton sampling capacity; (3) development of a flow through zooplankton imaging system to automate counting and measuring crab larvae in different treatments; (4) building Suquamish youth capacity to develop outreach and education materials; and (5) collection, review, and distribution of curriculum materials on ocean acidification.

**Port Gamble S’Klallam Tribe**

The Port Gamble S’Klallam Tribe will document and analyze size, condition, growth factor, predation, and other constraining environmental mechanisms that affect the early marine life history of juvenile salmon and forage fish in outer Hood Canal. This project will help describe nearshore nodal habitats, track juvenile salmonid out migration timing, and characterize juvenile salmonid condition factors.

*Appendix A Year 1: FY10 Tribal Implementation Projects***Point No Point Treaty Council**

The Point No Point Treaty Council seeks to develop an efficient procedure for surveying and analyzing intertidal substrate samples for the presence of forage fish spawn, primarily surf smelt spawn, and secondarily Pacific sand lance spawn. This project will also develop a quantifiable measure of the annual spawn deposition around Indian Island that can be compared among several years to indirectly assess trends in the target forage fish spawning population abundance.

**Jamestown S’Klallam Tribe**

The Jamestown S’Klallam Tribe will conduct two projects: (1) collating, analyzing, and distributing Jimmycomelately Creek and Estuary Restoration project results, in order to better understand the project elements that succeeded and that failed; and (2) determining the magnitude, extent, contributing sources, and possible impacts of elevated nutrients in Sequim and Dungeness Bays.

**Lower Elwha Klallam Tribe**

The Lower Elwha Klallam Tribe will use radio telemetry to track the movements of adult steelhead and adult salmonids in the Elwha River Basin during and immediately following the removal of the lower Elwha Dam and the upper Glines Canyon Dam. This study will inform basic fish behavior in response to the largest scale dam removals on the west coast, providing information to any future restoration efforts involving dam removal and recolonization of previously (or long since) unseeded areas.

**Makah Tribe**

The Makah Tribe will conduct four projects: (1) providing a consistent and vocal presence on freshwater/terrestrial issues for the Western Strait of Juan de Fuca; (2) re-establishing long-term streamflow monitoring stations on the Clallam and Sekiu Rivers; (3) establishing a real-time meteorological station in the Hoko river drainage for increased accuracy of Western Strait of Juan de Fuca climatic patterns; and (4) restoring the degraded Pysht river floodplain habitat through the removal of noxious weeds, derelict structures, and partial funding for design of engineered log jams to create temperature refugia and holding areas for migrating adults.



**Appendix B**

Year 2: FY11 Tribal Implementation Projects (award amount: \$255,405)

*This appendix provides a summary of each project for FY11. For deliverables and progress reports, please go to <http://blogs.nwifc.org/psp/>*

<i>Tribe/Tribal Consortium</i>	<i>Project Title</i>
<b>Nooksack Indian Tribe</b>	Nooksack Tribe Implementation of High Priority Salmon Recovery Projects
<b>Lummi Nation</b>	Development of a Strategy to Address Sediment Impacts in the South Fork Nooksack River & South Fork Nooksack River Cavanaugh Island Restoration Project
<b>Samish Indian Nation</b>	Secret Harbor Estuary and Salt Marsh Restoration Monitoring of Fresh and Marine Ecosystems & Nearshore Circulation Model to Examine Nearshore Habitat and Water Quality Impacts in Fidalgo Bay
<b>Upper Skagit Indian Tribe</b>	Freshwater Production Evaluation of Skagit River Steelhead Using Mark-Recapture Methodology
<b>Swinomish Indian Tribe</b>	Non-Point Pollution Public Information and Education Initiative & Tribal Journey Water Quality Project
<b>Skagit River System Cooperative</b>	Assessment of the Geomorphological and Ecological Consequences of Dike Breaching vs. Dike Removal for Estuarine Habitat Restoration
<b>Sauk-Suiattle Indian Tribe</b>	Sauk-Suiattle Restoration and Research
<b>Stillaguamish Tribe of Indians</b>	Sources and Potential Treatment of Land-Based Pollutant Runoff
<b>Tulalip Tribes</b>	A Comparative Analysis of Resource Management and Restoration Policies and Authorities of the Tulalip Tribes and Adjacent or Overlapping Jurisdictions; Baseline Budgets and Goals to Increase Carbon, Nitrogen and Water Storage in the Snohomish River Basin; Using Beaver as an Ecosystem Service Provider on Forestlands in the Snohomish River Basin; & The Snohomish Senior Leadership Conference
<b>Snoqualmie Indian Tribe</b>	Snoqualmie River Fall City Reach Floodplain Restoration Design
<b>Muckleshoot Indian Tribe</b>	Investigation of Fish Usage and Predation in Artificial and Natural Large Woody Debris Structures in the Green-Duwamish and Cedar Rivers
<b>Puyallup Tribe of Indians</b>	Wade Residence Property Acquisition; and Clarks Creek Riparian and Uplands Planting Project on the Puyallup Tribe's Hunting and Wildlife Department Property
<b>Nisqually Indian Tribe</b>	Funding Mechanisms to Restore the Nisqually River Basin; Engaging the Eatonville Community in Saving Salmon through Managing Stormwater; & Marine Survival of Salmon and Steelhead in the Salish Sea
<b>Squaxin Island Tribe</b>	Biological Recovery of Coho in the Deschutes Watershed
<b>Skokomish Tribal Nation</b>	Mapping and Monitoring of the Skokomish Estuary to Assess Change and Restoration Performance
<b>Suquamish Tribe</b>	Chico Creek Riparian Acquisition and Protection
<b>Port Gamble S'Klallam Tribe</b>	Hood Canal and Admiralty Inlet Nearshore Assessment Project
<b>Point No Point Treaty Council</b>	Indian Island Baitfish Monitoring Study
<b>Jamestown S'Klallam Tribe</b>	Jamestown S'Klallam Tribe's Priority Projects for the Restoration and Protection of Treaty Resources Dependent upon Puget Sound
<b>Lower Elwha Klallam Tribe</b>	Elwha Floodplain Revegetation and Fisheries Monitoring Support
<b>Makah Tribe</b>	Consistent and Vocal Policy Presence on Freshwater/Terrestrial Issues and Integration of Regional Research/Recovery Priorities

*Appendix B Year 2: FY11 Tribal Implementation Projects***Nooksack Indian Tribe**

The Nooksack Indian Tribe will construct historic-scale log jams in three reaches in the Nooksack River Forks, including the Farmhouse Reach, South Fork of Hardscrabble, and North Fork of Wildcat through a combination of this funding and SRFB. Log jams will be designed to address factors most limiting Nooksack early Chinook and other salmonid populations in each reach and will ultimately lead to restored habitat conditions and habitat-forming processes in project reaches, with associated improvements in abundance and productivity of Nooksack early Chinook.

**Lummi Nation**

The Lummi Nation will engage in two projects: (1) the construction of 6 engineered log jams (ELJs) in the mainstem South Fork Nooksack River, consisting of three Type I ELJs, three Type II ELJs, and 10 habitat log structures (2 key pieces) in order to restore salmon habitat in WRIA 1. Endangered early spring Chinook salmon and bull trout will benefit from at least 6 new scour pools; more pools may develop indirectly as increased roughness causes dynamic equilibrium; and (2) the continued development of a strategy to address sediment impacts in the South Fork Nooksack River (expanded to the Elk Flats area) to assess the physical conditions of active, abandoned, and orphaned forest roads by collaborating with private and public forest owners; and update a recent master's thesis on measuring the amount of sediment input by source, focusing on updating landslide and streambank erosion data.

**Samish Indian Nation**

The Samish Indian Nation will engage in two projects: (1) continuing to partner with Washington Department of Natural Resources to collect baseline environmental data prior to, during, and post restoration activities related to the removal of a tidal dike to restore salt marsh, mudflat and tidally-influenced stream habitat at Cypress Island. Project tasks include vegetation surveys, water quality and temperature monitoring, meteorological data monitoring, clam surveys, avian surveys, amphibian surveys, and beach seining; and (2) partnering with the USGS to collect time-series and synoptic measurements of nearshore hydrodynamics and water properties to support construction of a numerical circulation model. The initial model will help inform where data are needed to reduce uncertainties in processes and environmental conditions and where threats of contaminant runoff and impaired water quality exist.

**Upper Skagit Indian Tribe**

The Upper Skagit Indian Tribe will develop a basin-wide abundance estimate of outmigrating

*Appendix B Year 2: FY11 Tribal Implementation Projects*

steelhead smolts from the Skagit River through the use of a multiple-trap design, which will mark and release steelhead smolts from tributary traps and use the captures and recaptures of marked smolts at the Burlington main stem Skagit trap to estimate total outmigration of smolts. Analysis of such information will be used to investigate freshwater and marine survival rates, with an emphasis on detecting and utilizing information on annual differences in survival for restoration evaluation and abundance forecast purposes, and developing recovery goals.

**Swinomish Indian Tribe**

The Swinomish Indian Tribe will continue to engage in two projects: (1) implementing a public education effort that will be directed at decision makers and stakeholders to improve the standards and implementation of best management practices, and to increase the level of regulatory certainty that instream resources will be protected, consistent with the Skagit Chinook Recovery Plan; and (2) engaging in the 2012 Tribal Water Quality Project, an ongoing project to gather water quality data across the Salish Sea during the annual Tribal Canoe Journey, in order to map out spatial patterns at multiple scales to detect large-scale oceanographic/climate and site-scale land-use influences.

**Skagit River System Cooperative**

The Skagit River System Cooperative will continue to quantify and contrast the geomorphological, hydrological, and ecological consequences of various approaches to tidal marsh restoration for 12 historical and 8 current sites in the Skagit and Snohomish deltas, using reference marshes in both deltas as controls. One product of this three-year project will be the development of rapid assessment monitoring metrics relating easily measured planform channel metrics to more challenging evaluation of ecological patterns and processes—thereby enabling more efficient and economical monitoring of estuarine habitat restoration projects and their interplay with local land use patterns.

**Sauk-Suiattle Indian Tribe**

The Sauk-Suiattle Indian Tribe will engage in three projects: (1) continued reinforcement of a multiagency partnership to eradicate knotweed from the Skagit River watershed and its major tributaries, focusing its efforts on the Sauk and Suiattle rivers, both of which feature key spawning and rearing habitat for Puget Sound salmonids; (2) continued partnership with the U.S. Geological Survey (USGS) to determine how the timing, quantity, and sources of sediment in the Sauk and Suiattle rivers are impacting sensitive fish runs; and (3) conducting a multidisciplinary study to assess the potential ecological impacts of climate warming on fishery restoration and human community infrastructure in the Sauk and Suiattle watersheds.

*Appendix B Year 2: FY11 Tribal Implementation Projects***Stillaguamish Tribe of Indians**

The Stillaguamish Tribe will engage in three projects: (1) the continued monitoring of stormwater outfalls in the Lower Stillaguamish River for the presence of a wide range of pollutants, and the implementation of an on-the-ground project directed at reducing stormwater impacts to surface water; and (2) the continued employment of mycoremediation techniques to test if polluted land-based runoff can be treated prior to its entering conveyance systems in order to reduce the impacts of stormwater to aquatic ecosystems; and (3) a partnership with Snohomish County to manage and operate an Inmate Riparian Enhancement Crew, which will expand and enhance floodplain riparian vegetation communities on Tribal and private land in priority sub-basins identified in the Stillaguamish Watershed Chinook Salmon Recovery Plan through riparian plantings of native vegetation and elimination of invasive and non-native weeds.

**Tulalip Tribes**

The Tulalip Tribes will engage in four projects: (1) conducting a comparative analysis of resource management and restoration policies and authorities of the Tulalip Tribes and adjacent or overlapping jurisdictions, resulting in a report that will identify potential areas of conflict and make recommendations for potential resolution, where appropriate; (2) determining carbon and nitrogen budgets in the Snohomish Basin and identifying a carbon augmentation goal for the Basin, utilizing an integrated model of the Snohomish Basin that will have the ability to inform the development of funding mechanisms for investment in natural infrastructure restoration and conservation; (3) investigating the ecological benefits of beaver in the Snohomish River Basin through identification of the current beaver population, monitoring ecological benefits, and evaluating the feasibility of relocation strategies; and (4) holding a two-day Snohomish Senior Leadership Conference to identify and move projects forward that benefit all sectors across the Snohomish basin: farms, the environment, forestry and business.

**Snoqualmie Indian Tribe**

The Snoqualmie Tribe will partner with King County to design the Snoqualmie River Fall City Reach Floodplain Restoration project to restore natural floodplain processes that will improve salmonid habitat conditions, especially for threatened Chinook salmon and steelhead trout. The design may include various elements such as setting back levees and revetments, planting native plants, installing large wood, and enhancing off-channel habitat. Project tasks include: (1) developing Snoqualmie River Fall City Reach Floodplain Restoration project design; and (2) engaging in partnering and outreach with the local landowners and community.

*Appendix B Year 2: FY11 Tribal Implementation Projects***Muckleshoot Indian Tribe**

The Muckleshoot Indian Tribe will investigate the use of artificial and natural LWD and woody stem structures by juvenile Chinook, sockeye, coho, and steelhead to confirm how these structures affect predation rates in the lower Cedar and Green rivers for the purpose of improving the design of artificial wood structures in mitigation projects and to confirm the role of woody vegetation in reducing predation for the levee maintenance policy. Understanding how fish and their predators use these structures and the factors influencing fish survival in these urban, highly altered river corridors is a high priority for Muckleshoot as they will be able to provide input to local governments and permitting agencies on the design of such mitigation in the future.

**Puyallup Tribe of Indians**

The Puyallup Tribe of Indians will acquire 5.7 acres of privately owned land in lower South Prairie Creek that has substantial ecological benefits including: spring fed tributary, riparian corridor, wetland habitat, and flood prone channel migration zone (CMZ). The purchase will include acquisition, site clean-up, and invasive species management/riparian restoration in cooperation with the Pierce County Conservation District. Protection of South Prairie Creek is a high priority to the Puyallup Tribe of Indians as it is the primary spawning grounds for Fall Chinook salmon in the basin. The Tribe will also conduct riparian and uplands planting on a recent acquisition of a parcel on Clarks Creek.

**Nisqually Indian Tribe**

Nisqually Indian Tribe will conduct three projects: (1) identifying one or more funding mechanisms that will provide a robust, sustainable and sufficient funding base for the successful implementation of the Nisqually Chinook Recovery Plan; (2) partnering with the Nisqually River Foundation to conduct demonstration low impact development retrofit projects in Eatonville, while organizing a focused public outreach and involvement campaign to engage and educate local community members about the importance of managing Eatonville's stormwater – a critical part of salmon habitat restoration and protection in both the Mashel River and Ohop Creek; and (3) partnering with Long Live the Kings as the lead to facilitate the development of a joint US/Canada research plan and associated research program to identify the most significant factors affecting salmon survival and productivity in the Salish Sea marine environment, including the estuary and near-shore; and make this information available to inform resource agencies and improve salmon management.

*Appendix B Year 2: FY11 Tribal Implementation Projects***Squaxin Island Tribe**

The Squaxin Island Tribe will contribute to the recovery of lost Coho productivity in the Deschutes Watershed by (1) continuing to identify high priority habitat restoration actions, based on existing information; and supplementation of Coho fry and identification of heavily used reaches by Coho fry; (2) monitoring nutrient levels in the Deschutes River and Budd Inlet to identify and remediate drivers of low dissolved oxygen, a significant stressor for salmonids; and (3) designing and engineering the restoration of the 3 acre delta of Schneider Creek, located along the primary migratory corridor for both returning spawners and outmigrating salmonids into and out of Capital Lake.

**Skokomish Tribal Nation**

The Skokomish Tribal Nation will continue to conduct research and monitoring efforts focused on assessing the effectiveness of the Skokomish Estuary Restoration Project. Project tasks include: (1) monitoring the relative abundance, distribution, residence time, feeding behavior, and species diversity of salmonids and other fish species; (2) monitoring the colonization and succession of vegetation, including expanded nearshore surveys to include an eelgrass bed inventory; (3) monitoring sediment transport and estuarine mixing; (4) monitoring the insect community response; and (5) engaging in a new partnership with the USGS to map the bathymetry and substrate to produce a digital elevation model (DEM) and classify substrate and vegetation distribution across the nearshore.

**Suquamish Tribe**

The Suquamish Tribe will acquire and permanently protect for conservation 70 acres of stream and riparian lands adjacent to highly productive salmonid spawning and rearing habitat in the Chico Creek Watershed. Funds from this award will be used to assist the non-profit Mountaineers Foundation to exercise purchase options on three forested parcels totaling 70 acres, which will increase the Mountaineers Foundation's current ownership in the Chico watershed to a total of 414 acres. The Foundation will manage this land for conservation in perpetuity.

**Port Gamble S'Klallam Tribe**

The Port Gamble S'Klallam Tribe will continue to map nearshore nodal habitats, track juvenile salmonid out migration timing, and characterize juvenile salmonid condition factors within Hood Canal and Admiralty Inlet. Project tasks include: (1) surface trawling to capture site-specific size class distributions, juvenile salmonid condition factor, relative abundance by site, date, and species composition; (2) conducting hydroacoustic surveys in concert with the surface



*Appendix B Year 2: FY11 Tribal Implementation Projects*

trawling events in order to cover significantly greater spatial areas, and collect data from multiple depths simultaneously; and (3) beach seining to allow sampling of nearshore areas that are inaccessible to either surface trawling or hydroacoustic equipment due to depth limitations.

**Point No Point Treaty Council**

The Point No Point Treaty Council will continue the Indian Island Baitfish Monitoring Study by commencing intertidal forage fish surveys for spawn deposition of surf smelt and Pacific Sand Lance, and producing quantifiable measures of the annual spawn deposition for both species. This project will develop a quantifiable measure of the annual spawn deposition around Indian Island that can be compared among several years to indirectly assess trends in the target forage fish spawning population abundance. Project tasks include: (1) identify/mark potential spawning beaches around Indian Island for Pacific Sand Lance; (2) modify final survey and sample analysis protocols as necessary to accommodate Pacific Sand Lance; (3) develop/install larval surf smelt/Sand Lance collector traps; (4) collect data to establish spawn locations, confirm spawn timing and quantify spawn deposition of surf smelt and Pacific Sand Lance; and (5) collect data on surf smelt/Sand Lance incubation and larval emergence.

**Jamestown S’Klallam Tribe**

The Jamestown S’Klallam Tribe will conduct four projects: (1) conducting nutrient monitoring and analysis for Sequim and Dungeness Bays and cooperative investigations of biotoxins associated with illness through shellfish consumption in Sequim Bay, resulting in a statistical analysis that will aid in the determination of the highest contributing reaches, allowing a thorough investigation of non-point sources; (2) conducting analysis to understand the erosion rates and vulnerability of bluff sub-reaches, in order to better manage shoreline development (prevent future armoring), and to assist in the development of a comprehensive drift cell conservation plan; (3) engaging in a comprehensive Dungeness River habitat survey to identify present conditions, compare conditions with 1994 recorded conditions to analyze change, evaluate changes with respect to restoration and human-cause disturbance, and provide data from which future management decisions can be based; and (4) creating two salmon habitat education videos to engage and inform private stakeholders.

**Lower Elwha Klallam Tribe**

The Lower Elwha Klallam Tribe will engage in floodplain revegetation and fisheries monitoring activities during the historic removal of the two mainstem hydroelectric dams on the Elwha River. Project tasks include: (1) moving 1000 pieces of large wood from the rim of the

*Appendix B Year 2: FY11 Tribal Implementation Projects*

dewatered reservoirs to positions on the newly exposed floodplain in order to reduce erosion rates from the exposed reservoir surfaces and provide an increased number of safe planting sites that improve micro-climate (moisture) and retarding herbivory by grazing ungulates; and (2) evaluating rates of recolonization and stock rebuilding for the overall Elwha restoration project through the fishing of smolt traps on Indian Creek and Little River, inserting PIT tags into outmigrating smolts and juveniles collected, conducting juvenile snorkel surveys in the middle Elwha habitats, and conducting adult surveys in newly accessible habitat of the middle Elwha.

**Makah Tribe**

The Makah Tribe will conduct three projects: (1) continuing to provide a consistent and vocal presence on freshwater/terrestrial issues for the Western Strait of Juan de Fuca to further the Puget Sound Action Agenda; (2) developing construction-ready designs and flood risk analysis and preparing permits for the construction of engineered log jams in 1.3 miles of the mainstem Pysht River, designed to improve stream habitat complexity, floodplain connectivity, and flood risk attenuation; (3) supporting the Lyre River and Nelson Creek North Olympic Land Trust acquisition and restoration project to assist in bridge reconstruction that will allow restoration of the nearshore habitat and improve habitat conditions at the road crossing and (4) maintaining the long-term Washington Department of Ecology streamflow monitoring stations on the Clallam and Sekiu Rivers. Flow data obtained from these monitoring stations is used to develop relationships of streamflow magnitude, duration, and frequency with other drainages; continue drainage trend analysis; and relate changes in suspended sediment concentration to fluctuations in stream discharge.

## Appendix C

Year 3: FY12 Tribal Implementation Projects (award amount: \$165,400)

*This appendix provides a summary of each project for FY12. For deliverables and progress reports, please go to <http://blogs.nwifc.org/psp/>*

<i>Tribe/Tribal Consortium</i>	<i>Project Title</i>
<b>Nooksack Indian Tribe</b>	Nooksack Tribe Implementation of High Priority Salmon Recovery Projects: North Fork Farmhouse Reach Phase 1
<b>Lummi Nation</b>	Smuggler's Slough Fish Passage Barriers & Development of a Strategy to Address Sediment Impacts in the South Fork Nooksack River – Year 3
<b>Samish Indian Nation</b>	Secret Harbor Estuary and Salt Marsh Restoration Monitoring of Fresh and Marine Ecosystems & Nearshore Circulation Model to Examine Nearshore Habitat and Water Quality Impacts in Fidalgo Bay
<b>Upper Skagit Indian Tribe</b>	Freshwater Production Evaluation of Skagit River Steelhead Using Mark-Recapture Methodology
<b>Swinomish Indian Tribe</b>	Non-Point Pollution Public Information and Education Initiative – Year 3 & Tribal Journey Water Quality Project – Year 3
<b>Skagit River System Cooperative</b>	Assessment of the Geomorphological and Ecological Consequences of Dike Breaching vs. Dike Removal for Estuarine Habitat Restoration – Year 3
<b>Sauk-Suiattle Indian Tribe</b>	Sauk-Suiattle Restoration and Research – Year 3
<b>Stillaguamish Tribe of Indians</b>	Sources and Potential Treatment of Land-Based Pollutant Runoff
<b>Tulalip Tribes</b>	Monitoring Ecosystem Response to Restoration and Climate Change in the Snohomish River Estuary
<b>Snoqualmie Indian Tribe</b>	Rasmussen Creek Fish Barrier Removal at Cherry Valley Dairy
<b>Muckleshoot Indian Tribe</b>	Soos Creek Juvenile Salmonid Outmigration Monitoring
<b>Puyallup Tribe of Indians</b>	Greenwater River Steelhead Acclimation Pond
<b>Nisqually Indian Tribe</b>	Nisqually Salmon Recovery Monitoring and Evaluation Field Assistance & Nisqually Usual and Accustomed Area Derelict Gear Removal
<b>Squaxin Island Tribe</b>	Biological Recovery of Coho in the Deschutes Watershed – Year 3
<b>Skokomish Tribal Nation</b>	Mapping and Monitoring of the Skokomish Estuary to Assess Change and Restoration Performance – Year 3; Fish Consumption Survey for the Skokomish Tribe
<b>Suquamish Tribe</b>	Keta Park Floodplain Restoration Design & Curley Creek Watershed Protection and Restoration Plan
<b>Port Gamble S'Klallam Tribe</b>	Hood Canal and Admiralty Inlet Nearshore Assessment Project – Year 3
<b>Point No Point Treaty Council</b>	Indian Island Baitfish Monitoring Study – Year 3
<b>Jamestown S'Klallam Tribe</b>	Continued Nutrient Monitoring and Analysis for Sequim and Dungeness Bays; Implementing the WA Harbor Restoration Monitoring Plan; & Planning and Grant Development on Priority Salmon Recovery Projects.
<b>Lower Elwha Klallam Tribe</b>	Elwha Floodplain and Fisheries Monitoring Support
<b>Makah Tribe</b>	Consistent and Vocal Policy Presence on Freshwater/Terrestrial Issues and Integration of Regional Research/Recovery Priorities – Year 3

*Appendix C Year 3: FY12 Tribal Implementation Projects***Nooksack Indian Tribe**

The Nooksack Indian Tribe will construct historic-scale log jams in Farmhouse reach on the North Fork Nooksack River through a combination of this funding and Pacific Coastal Salmon Recovery Funding. Log jams will be designed to address factors most limiting Nooksack early Chinook and other salmonid populations in the Farmhouse reach and will ultimately lead to restored habitat conditions and habitat-forming processes in project reaches, with associated improvements in abundance and productivity of Nooksack early Chinook. These populations are essential for ESU delisting and recovery to sustainable harvest levels is the highest natural resources priority for the Nooksack Tribe.

**Lummi Nation**

The Lummi Nation will engage in two projects: (1) the design for the removal and replacement of two undersized culverts on Smuggler's Slough on the Lummi Nation Reservation. This project will also control invasive plants and install a 2.0 acre riparian buffer adjacent to the two culverts. Endangered juvenile Chinook salmon and other salmonids will benefit from access to an additional 1.45 miles of habitat and improved passage through these two culverts; and (2) the continued development of a strategy to address sediment impacts in the South Fork Nooksack River. A feasibility and alternatives analysis will be developed for a bridge replacement and landslide stabilization project on a road crossing on upper Skookum Creek. The feasibility study will include initial consultation with road owner, land owner, and regulatory agencies, pre-project monitoring to characterize existing riparian and aquatic habitat conditions, and development of an alternatives analysis report for bridge replacement and landslide stabilization structures.

**Samish Indian Nation**

The Samish Indian Nation will engage in two projects: (1) continuing to partner with Washington Department of Natural Resources to collect baseline environmental data prior to, during, and post restoration activities related to the removal of a tidal dike to restore salt marsh, mudflat and tidally-influenced stream habitat at Cypress Island. Project tasks include vegetation surveys, water quality and temperature monitoring, meteorological data monitoring, clam surveys, avian surveys, amphibian surveys, and beach seining; and (2) a feasibility study on the Tribe's inner bay tidelands to determine and provide preliminary planning and design of a salt marsh in this location. Salt marshes provide many ecological functions including: habitat and food sources for insects, marine invertebrates, fish and birds, as well as sedimentation control, wave energy attenuation, and carbon sequestration.

*Appendix C Year 3: FY12 Tribal Implementation Projects***Upper Skagit Indian Tribe**

The Upper Skagit Indian Tribe will continue to develop a basin-wide abundance estimate of outmigrating steelhead smolts from the Skagit River through the use of a multiple-trap design, which marks and releases steelhead smolts from tributary traps and uses the captures and recaptures of marked smolts at the Burlington main stem Skagit trap to estimate total outmigration of smolts. Analysis of such information will be used to investigate freshwater and marine survival rates, with an emphasis on detecting and utilizing information on annual differences in survival for restoration evaluation and abundance forecast purposes, and developing recovery goals.

**Swinomish Indian Tribe**

The Swinomish Indian Tribe will continue to engage in two projects: (1) implementing a public education effort that will be directed at decision makers and stakeholders to improve the standards and implementation of best management practices, and to increase the level of regulatory certainty that instream resources will be protected, consistent with the Skagit Chinook Recovery Plan; and (2) engaging in the 2013 Tribal Water Quality Project, an ongoing project to gather water quality data across the Salish Sea during the annual Inter-tribal Canoe Journey, in order to map out spatial patterns at multiple scales to detect large-scale oceanographic/climate and site-scale land-use influences.

**Skagit River System Cooperative**

The Skagit River System Cooperative will continue to quantify and contrast the geomorphological, hydrological, and ecological consequences of various approaches to tidal marsh restoration for 12 historical and 8 current sites in the Skagit and Snohomish deltas, using reference marshes in both deltas as controls. The most common approach to tidal habitat restoration is dike breaching, where one to several breaches are made in dikes to allow tidal inundation of the restoration site. Critics of this approach suspect tidal channel drainage networks, other important flow paths, hydrodynamic processes, and associated ecological processes are not fully restored or effective unless dikes are completely removed, not merely breached. This continued project seeks to resolve this controversy.

**Sauk-Suiattle Indian Tribe**

The Sauk-Suiattle Indian Tribe will continue to engage in three projects: (1) reinforcement of a multiagency partnership to eradicate knotweed from the Skagit River watershed and its major tributaries, focusing its efforts on the Sauk and Suiattle rivers, both of which feature key spawning and rearing habitat for Puget Sound salmonids; (2) partnership with the U.S.

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Geological Survey to determine how the timing, quantity, and sources of sediment in the Sauk and Suitttle rivers are impacting sensitive fish runs; and (3) conducting a multidisciplinary study to assess the potential ecological impacts of climate warming on fishery restoration and human community infrastructure in the Sauk and Suitttle watersheds.

**Stillaguamish Tribe of Indians**

Stillaguamish Tribe of Indians will engage in three projects: (1) support of the Tribe's education-outreach program that is designed to educate local residents and youth on the life history and habitat requirements of salmon and watershed health. It provides stewardship opportunities for the public, workshops, educational field trips, and permits the Tribe to participate in regional outreach events; (2) monitoring of water quality related to shellfish and human health with the operation and maintenance of a marine buoy in Port Susan, surveys of Harmful Algal Bloom plankton, and continued water collection for the WA State BEACH program; and (3) investigation of emergent contaminants in estuarine habitat of Port Susan through the deployment of four passive sampling devices (POCIS) in the Stillaguamish delta, two distributary channels and one blind tidal channel. This sampling effort will provide baseline data on the presence of emergent contaminants in critical estuarine habitat used by juvenile salmon.

**Tulalip Tribes**

The Tulalip Tribes will utilize this funding to continue and extend Snohomish River estuary-wide biological monitoring with particular emphasis on juvenile Chinook salmon and avian use; and initiate long-term monitoring of hydrology (temperature, salinity, and water levels), elevation, and sediment dynamics at selected sites across the estuary. The Snohomish River estuary is an important part of the Tulalip Tribes' natural heritage, and improvement in the condition of this and other estuaries is a major component of Puget Sound ecosystem management, including the Puget Sound Partnership Action Agenda and the Snohomish River Basin Salmon Recovery Plan. Scientific information that provides foundational understanding of this ecosystem and its response to management actions (e.g., restoration) and anthropogenic alteration (e.g., climate change) is critical for adaptive management.

**Snoqualmie Indian Tribe**

The Snoqualmie Tribe will partner with Stewardship Partners to remove three impassable, anthropogenic rock cascades on Rasmussen Creek near Duvall WA, and establish a fish-friendly, complex and stable stream channel. The project will re-establish uncompromised access for anadromous fish to an additional 1000 feet of high-quality spawning and rearing habitat. Above this newly opened reach, another 0.25-0.4 miles of potential habitat lies above a partial barrier



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(67% passable culvert). Successful completion of this project will be a major step in making the case for priority status to replace this King County culvert under Cherry Valley Road. Additional project tasks include installing a cattle crossing over the stream where there is currently a ford and supporting the installation of riparian set-back fencing and an enlarged stream buffer.

**Muckleshoot Indian Tribe**

The Muckleshoot Indian Tribe will engage in the installation and operation of a rotary screw trap in lower Soos Creek (also called Big Soos Creek), the largest sub-basin in the Middle Green-Duwamish River. Project objectives include: (1) estimating the juvenile abundance and productivity of out-migrant Chinook and coho salmon in the Soos Creek basin; (2) describing the timing, health, and condition of salmonids emigrating from the Soos Creek basin; (3) obtaining baseline data to help assess the cumulative effects of habitat trends and recovery actions on juvenile salmon abundance, health, and productivity over time; and (4) completing an inventory of the spawning habitat available for Chinook in the Soos Creek sub-basin and a Chinook spawning survey in 2014.

**Puyallup Tribe of Indians**

The Puyallup Tribe of Indians will identify a site and build an acclimation pond for winter steelhead on Midnight Creek, a tributary to the Greenwater River, White River, in King County, Washington. Winter steelhead are listed under the Endangered Species Act in the White River watershed and currently have a Hatchery Genetic Management Plan in place, which continues to direct recovery efforts. As part of the plan, each year wild returning adults are spawned, juveniles are reared and then released the following year as smolt into the mainstem White River from the Muckleshoot Indian Tribe's spring Chinook hatchery. The Greenwater River is a major spawning tributary to the White and an acclimation pond is needed in the upper watershed to acclimate steelhead to a more natural rearing environment, rather than rearing in the lower river in artificial ponds.

**Nisqually Indian Tribe**

Nisqually Indian Tribe will conduct two projects: (1) implementing the 2011 Nisqually Chinook Stock Management Plan by conducting mainstem weir efficiency rate based on mark recapture; hatchery and natural Chinook composition on spawning grounds; hatchery and natural composition in fishery; hatchery and natural composition in hatchery; and adult and juvenile Chinook life history diversity, age, and growth through otolith analysis. Successful implementation of the Plan, which integrates habitat, harvest, and hatchery actions in order to move towards developing a locally adapted natural population of Chinook salmon, depends on

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robust hatchery and natural stock monitoring information; and (2) identifying and removing derelict fishing gear in prioritized areas in South Puget Sound. Derelict gear continues to cause mortalities of all marine life in South Sound, from salmon and rockfish to marine birds and mammals, and its removal is critical to the health and recovery of the regions ecosystem.

**Squaxin Island Tribe**

The Squaxin Island Tribe will contribute to the recovery of lost Coho productivity in the Deschutes Watershed and the support of Treaty Rights through the creation of a comprehensive biological recovery plan for the Deschutes Watershed. The recovery plan will analyze existing data on riparian conditions, fine sediment sources, channel morphology, floodplain connectivity, habitat preferences of coho, etc. to systematically identify reach-by-reach the site-specific remedies to all known limiting factors to permit recovery of the Deschutes coho stock. Reviewing and synthesizing this Deschutes data to define strategic priorities will lead to a more efficient and effective implementation of watershed-wide restoration actions

**Skokomish Tribal Nation**

The Skokomish Tribal Nation will engage in two projects: (1) continued research and monitoring efforts focused on assessing the effectiveness of the Skokomish Estuary Restoration Project. Project tasks include: monitoring the relative abundance, distribution, residence time, feeding behavior, and species diversity of salmonids and other fish species; monitoring the colonization and succession of vegetation, including an eelgrass bed inventory; monitoring sediment transport and estuarine mixing; and conducting a beach survey to provide a delayed baseline of the shellfish habitat as reference in future studies; and (2) conducting an accurate survey of finfish and shellfish consumption by Skokomish Tribal members within Mason County. Washington has one of the highest fish-consuming populations in the nation, but it currently uses the lowest fish consumption rate in determining water quality standards. This project will contribute data toward the ongoing effort to update Washington State's fish consumption rate.

**Suquamish Tribe**

The Suquamish Tribe will support two projects: (1) providing partial match funding for the Keta Park Floodplain Restoration project, an ongoing, multi-party effort to restore habitat conditions and habitat forming processes in a degraded reach of the lower mainstem of Chico Creek, Kitsap County. Funds will contribute to completing the design and permitting for the replacement of the Golf Club Hill Road culvert and restoration of floodplain, riparian, and instream habitat; and (2) completing the Curley Creek Watershed Protection and Restoration

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Plan, including synthesis of existing data, studies, and documents; assessment of habitat conditions and watershed processes; and smolt trapping to estimate coho, steelhead, and cutthroat trout production in the watershed.

**Port Gamble S’Klallam Tribe**

The Port Gamble S’Klallam Tribe will map nearshore nodal habitats, track juvenile salmonid out migration timing and habitat utilization in relation to seawater characteristics and prey abundance within Hood Canal and Admiralty Inlet. Project tasks include: (1) continuing to conduct beach seining and hydroacoustic surveys in order to provide site-specific timing and size class distributions of juvenile salmonids and forage fish inhabiting the nearshore, and estimations of relative abundance by site and species composition; (2) deploying a conductivity, temperature, depth (CTD) buoy and collecting water quality data at four sites; and (3) conducting plankton and neuston net tows at each buoy site monthly. Water quality and prey abundance data will be coupled with salmonid condition factor matrices and acoustic abundance calculations to determine whether there is a positive correlation between nearshore habitat types and population dynamics.

**Point No Point Treaty Council**

The Point No Point Treaty Council will continue the Indian Island Baitfish Monitoring Study by commencing intertidal forage fish surveys for spawn deposition of surf smelt and Pacific Sand Lance, and producing quantifiable measures of the annual spawn deposition for both species. This project will develop a quantifiable measure of the annual spawn deposition around Indian Island that can be compared among several years to indirectly assess trends in the target forage fish spawning population abundance. Project tasks include: (1) sample beach index sites to confirm location and spawn timing and analyze samples to quantify spawn deposition of surf smelt and Pacific sand lance; (2) expand spawning survey coverage to areas outside of Indian Island; (3) collect data on surf smelt/sand lance incubation and larval emergence using sampling procedure developed during the second year of study; and (4) disseminate project results to professional forums.

**Jamestown S’Klallam Tribe**

The Jamestown S’Klallam Tribe will conduct four projects: (1) continuing to conduct nutrient monitoring and analysis for Sequim and Dungeness Bays. This will include augmenting sampling to find linkages between nutrients and reoccurring HABs, sharing the technical report results with local groups and landowners, and providing technical assistance regarding nutrient and bacteria; (2) implementing the WA Harbor restoration monitoring plan through the monitoring

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of juvenile fish use, tidal hydrology, and water quality. The WA Harbor restoration project is currently replacing 6-foot culverts and 600 feet of road with a 600-foot bridge to provide unrestricted fish access and restore tidal hydrology and habitat forming processes; (3) planning and grant development for priority salmon recovery projects, including: landowner outreach and willingness assessment, work group establishment, preliminary design, and grant proposal development; and (4) maintenance of floodplain restoration plantings in the lower Dungeness.

**Lower Elwha Klallam Tribe**

The Lower Elwha Klallam Tribe will engage in floodplain and fisheries monitoring activities during the historic removal of the two mainstem hydroelectric dams on the Elwha River. Project tasks include: (1) continuing to evaluate rates of recolonization and stock rebuilding for the overall Elwha restoration project through the fishing of smolt traps on Indian Creek, Little River, and middle reach side channels; inserting PIT tags into outmigrating smolts and juveniles collected; conducting juvenile snorkel surveys in the middle Elwha habitats; and conducting adult surveys in newly accessible habitat of the middle Elwha; and (2) supporting sediment sampling of mainstem spawning gravels initiated by the Tribe, NOAA and USFWS in 2011 and 2012. Spawning gravel quality assessments will be conducted at 40 sites in the mainstem Elwha River during low flow periods of 2013 in order to determine the long term effects of dam removal and sediment release on this important habitat type.

**Makah Tribe**

The Makah Tribe will engage in three projects: (1) continuing to provide a consistent and vocal local and regional Makah presence on freshwater/terrestrial issues for the Western Strait of Juan de Fuca to further the Puget Sound Action Agenda; (2) removal of the Hake Plant Above-ground Storage Tank (AST) associated with the EPA Emergency Response Units identified Brownfields site on the Makah Reservation; (3) continuing to maintain the long-term Washington Department of Ecology streamflow monitoring stations on the Clallam and Sekiu Rivers. Flow data obtained from these monitoring stations is used to develop relationships of streamflow magnitude, duration, and frequency with other drainages; continue drainage trend analysis; and relate changes in suspended sediment concentration to fluctuations in stream discharge; and (4) maintenance of the real-time meteorological station in the Hoko river drainage for increased accuracy of Western Strait of Juan de Fuca climatic patterns.

**Appendix D**

Year 4: FY13 Tribal Implementation Projects (award amount: \$166,100)

*This appendix provides a summary of each project for FY13. For deliverables and progress reports, please go to <http://blogs.nwifc.org/psp/>*

<i>Tribe/Tribal Consortium</i>	<i>Project Title</i>
<b>Nooksack Indian Tribe</b>	Nooksack Tribe Implementation of High Priority Salmon Recovery Projects: Farmhouse Reach Phase 1 & Downstream of Hutchinson Reach Phase 2
<b>Lummi Nation</b>	South Fork Nooksack River Larson's Bridge Reach Phase 2 Restoration Project
<b>Samish Indian Nation</b>	Secret Harbor Estuary and Salt Marsh Restoration Monitoring of Fresh and Marine Ecosystems – Year 4; San Juan Island Creosote Removal and Beach Clean Up Project
<b>Upper Skagit Indian Tribe</b>	Freshwater Productivity and Diversity of Skagit River Steelhead – Year 3
<b>Swinomish Indian Tribe</b>	Swinomish Shellfish Program; Tribal Journey Water Quality Project – Year 4
<b>Skagit River System Cooperative</b>	Skagit Recovery Plan Stewardship Project
<b>Sauk-Suiattle Indian Tribe</b>	Sauk-Suiattle Restoration and Research – Year 4
<b>Stillaguamish Tribe of Indians</b>	Stillaguamish Tribe Restoration and Protection Priorities
<b>Tulalip Tribes</b>	Monitoring Ecosystem Response to Restoration and Climate Change in the Snohomish River Estuary; Evaluating the Use of Beaver Relocation as an Ecosystem Tool in Headwater Steams of the Snohomish River Basin; Support and Analysis of Pilot Study for EPA Triple Value Simulation Project for the Snohomish and Stillaguamish Basins.
<b>Snoqualmie Indian Tribe</b>	Fall City Park Phase III Riparian Restoration and Traditional Knowledge Project
<b>Muckleshoot Indian Tribe</b>	Monitoring Salmon Smolt Outmigration Survival in Lake Washington
<b>Puyallup Tribe of Indians</b>	Clarks Creek Channel and Tributary Bank Stabilization Projects; and Raceway Shade Project for 16 Raceways at PTI Clarks Creek Hatchery
<b>Nisqually Indian Tribe</b>	Salish Sea Marine Survival Project & Nisqually Usual and Accustomed Area Derelict Gear Removal
<b>Squaxin Island Tribe</b>	Biological Recovery of Coho in Skookum Creek
<b>Skokomish Tribal Nation</b>	Skokomish Estuary Monitoring and Adaptive Management – Year 4
<b>Suquamish Tribe</b>	East Kitsap Eelgrass Monitoring Project
<b>Port Gamble S'Klallam Tribe</b>	Hood Canal and Admiralty Inlet Nearshore Assessment Project – Year 4
<b>Point No Point Treaty Council</b>	Indian Island Baitfish Monitoring Study – Year 4
<b>Jamestown S'Klallam Tribe</b>	Continued Nutrient Monitoring and Analysis for Sequim Bay; and Project Development, Support, and Implementation of Lower Dungeness River Floodplain and Three Crabs Estuarine Restoration
<b>Lower Elwha Klallam Tribe</b>	Elwha Floodplain and Fisheries Monitoring Support – Year 4
<b>Makah Tribe</b>	Pysht River Engineered Log Jam (ELJ) Implementation

*Appendix D Year 4: FY13 Tribal Implementation Projects***Nooksack Indian Tribe**

The Nooksack Indian Tribe will construct historic-scale log jams in the North Fork Nooksack Farmhouse Reach Phase 1 and South Fork Nooksack Downstream of Hutchinson Reach Phase 2. Log jams will be designed to address factors most limiting Nooksack early Chinook and other salmonid populations and will ultimately lead to restored habitat conditions and habitat-forming processes in project reaches, with associated improvements in abundance and productivity of Nooksack early Chinook. These populations are essential for ESU delisting and recovery to sustainable harvest levels is the highest natural resources priority for the Nooksack Tribe. These funds will match SRFB funding and will support construction, supplies, replanting, and monitoring costs.

**Lummi Nation**

The Lummi Nation will construct up to 29 engineered log jams (ELJs) in the mainstem South Fork Nooksack River, consisting of at least nine Type I, nine Type II, three Type III, and five Type IV ELJs. Endangered early spring Chinook salmon and bull trout will benefit from 23 primary pools and more pools may develop indirectly as increased roughness causes dynamic equilibrium. Scour pools provide thermal refugia (holding pools) from elevated South Fork water temperatures during summer spawning months, in addition to pools for juvenile overwintering (rearing pools). All features are focused on enhancement of endangered Spring Chinook habitat by maximizing natural habitat-forming processes inherent in this reach of river.

**Samish Indian Nation**

The Samish Indian Nation will engage in two projects: (1) continuing to partner with Washington Department of Natural Resources (WDNR) to collect baseline environmental data prior to, during, and post restoration activities related to the removal of a tidal dike to restore salt marsh, mudflat and tidally-influenced stream habitat at Cypress Island. Project tasks include vegetation surveys, water quality and temperature monitoring, meteorological data monitoring, clam surveys, avian surveys, amphibian surveys, and beach seining; and (2) a new partnership with WDNR to provide transportation to remote San Juan Island Beaches for the purpose of creosote removal and trash removal from those beaches. In addition to transporting Puget Sound Corps Crews to these locations, Samish will also be conducting additional creosote piling removal efforts with WDNR and Friends of the San Juans to provide location and photo documentation of creosote piling removal sites for the purpose of allowing contractors to effectively bid on piling removal activities. Samish will also perform marine debris surveys and clean-up activities on state owned beaches throughout the San Juan Archipelago.

*Appendix D Year 4: FY13 Tribal Implementation Projects***Upper Skagit Indian Tribe**

The Upper Skagit Indian Tribe will continue research on the freshwater abundance, age-class composition, juvenile growth and survival of steelhead smolts by operating rotary screw traps in two tributaries of the Skagit River, Illabot and Hansen creeks. Based on results from the first two years of study, USIT plans to refocus their primary objectives to the tributary scale, and add an adult return component designed to enumerate steelhead encountered in the Skagit River that were tagged as smolts in their initial years of study. USIT's long term vision is to build a monitoring program focused in tributaries of the Skagit River that draws relationships between adult abundance, juvenile production, and habitat metrics, thereby promoting a watershed scale estimate of steelhead population dynamics that are critical to both harvest management and recovery planning.

**Swinomish Indian Tribe**

The Swinomish Indian Tribe will continue to engage in two projects: (1) build upon existing shellfish restoration and research programs at Swinomish through the advancement of shellfish habitat and population dynamics research. They will examine the hydrodynamics that drive larval transport and post-settlement survival of shellfish species and target future shellfish restoration based on survey results; and (2) engaging in the 2014 Tribal Water Quality Project, an ongoing project to gather water quality data across the Salish Sea during the annual Inter-tribal Canoe Journey, in order to map out spatial patterns at multiple scales to detect large-scale oceanographic/climate and site-scale land-use influences.

**Skagit River System Cooperative**

The Skagit River System Cooperative, in supporting implementation of the Skagit Chinook Recovery Plan, will engage in habitat conservation, protection and restoration measures designed to recover wild Skagit Chinook. Specific objectives include: (1) advancing keystone Recovery Plan projects through scoping, analysis, and new partnerships; (2) evaluating changes in natural resources processes resulting from restoration projects implemented in the first five years of the Chinook recovery workplan as well as their stewardship and maintenance needs; (3) development of a stewardship workplan and gap analysis; and incorporation of such into the Skagit Monitoring and Adaptive Management Plan; (4) assessment and evaluation of implemented actions relative to supporting tribal access and control of food system inputs; and (5) development of a community food system policy recommendation report.

*Appendix D Year 4: FY13 Tribal Implementation Projects***Sauk-Suiattle Indian Tribe**

The Sauk-Suiattle Indian Tribe will continue to engage in three projects: (1) reinforcement of a multiagency partnership to eradicate knotweed from the Skagit River watershed and its major tributaries, focusing its efforts on the Sauk and Suiattle rivers, both of which feature key spawning and rearing habitat for Puget Sound salmonids; (2) partnership with the U.S. Geological Survey to determine how the timing, quantity, and sources of sediment in the Sauk and Suiattle rivers are impacting sensitive fish runs; and (3) conducting a multidisciplinary study, including establishing baseline salmon habitat data, to assess the potential ecological impacts of climate warming on fishery restoration and human community infrastructure in the Sauk and Suiattle watersheds.

**Stillaguamish Tribe of Indians**

Stillaguamish Tribe of Indians will continue to engage in three projects: (1) support of the Tribe's education-outreach program that is designed to educate local residents and youth on the life history and habitat requirements of salmon and watershed health. It provides stewardship opportunities for the public, workshops, educational field trips, and permits the Tribe to participate in regional outreach events; (2) monitoring of water quality related to shellfish, salmon, and human health with the operation and maintenance of a marine buoy in Port Susan and Harmful Algal Bloom surveys; (3) investigation of emergent contaminants in estuarine habitat of Port Susan through the deployment of four passive sampling devices (POCIS) in the Stillaguamish delta, two distributary channels and one blind tidal channel. This sampling effort will provide baseline data on the presence of emergent contaminants in critical estuarine habitat used by juvenile salmon; and (4) controlling 72 acres of non-native, invasive vegetation on tribally-owned and private land at 18 sites throughout the Stillaguamish Basin.

**Tulalip Tribes**

The Tulalip Tribes will continue to engage in three projects: (1) engaging in Snohomish River estuary-wide biological monitoring with particular emphasis on juvenile Chinook salmon and avian use; and initiate long-term monitoring of hydrology (temperature, salinity, and water levels), elevation, and sediment dynamics at selected sites across the estuary; (2) identifying optimal sites for the relocation of nuisance beavers in the Snohomish River Watershed and monitoring the effects of these relocated beavers to assess observed ecological benefits and identify the value of reintroducing beavers into unoccupied forested areas; and (3) providing staff support, research, and analysis for a partnership with EPA to conduct a pilot study on the application of EPA's Triple Value (3V) simulation model as a tool to inform management and policy initiatives to improve sustainability and resilience in the Snohomish and Stillaguamish basins.



## **Snoqualmie Indian Tribe**

The Snoqualmie Tribe will engage in the third phase of the Fall City Park riparian restoration project by removing invasive species; restoring riparian function through native species reforestation and revegetation; creating a new traditional ecological knowledge (TEK) trail to educate the public on water quality, native plants, and salmon habitat; and monitoring the planting success, invasive species presence/absence, and surrounding water quality. Project outcomes include enhanced salmon-bearing capacity of a major Puget Sound tributary, reduced risk from climate change impacts, improved temperatures in a 303(d)-listed waterbody, restored and enhanced ecosystem function in an important floodwater storage area within the Whidbey Action Area, and a reduction in NPS pollution inputs due to individual stewardship.

## **Muckleshoot Indian Tribe**

The Muckleshoot Indian Tribe compare the survival of coho yearling smolts from three release locations in the Lake Washington basin to assess the effect of migration along the urban shorelines of Lake Washington, Lake Sammamish, and the Sammamish River on smolt outmigration timing, mortality, and subsequent adult return rate. Project tasks include: (1) raise, monitor, transport, and release coded wire tagged marked fish groups for release; (2) implant a representative number of coho from each release group with ultrasonic tags; (3) sample adult returns at the Chittenden (Ballard) Locks, on spawning grounds in Issaquah Creek and other WRIA 8 tributaries, and at two hatcheries; (4) monitor timing and survival of ultrasonically tagged yearly smolts; and (5) produce final report.

## **Puyallup Tribe of Indians**

The Puyallup Tribe of Indians will develop 100% level plans, specifications, and cost estimates that prescribe the best engineering methods for the two bank stabilization projects that are the first and second ranked highest sources of sediment from in-channel processes contributing to the sediment impairment in Clarks Creek. Source control and non-point runoff is a major threat to the recovery of anadromous salmon, steelhead, and bull trout in the Puyallup River basin and a leading cause of impairment. Implementing innovative bank stabilization projects at key transects in urban basins will result in reducing pollutants loads entering Clarks Creek and prevent them from eventually entering Puget Sound. The Tribe will also install aluminum covers and frames at their newly constructed bank of 16 raceways at the Clarks Creek Hatchery. These shades will cover over 8,000 square feet and provide 100% cover of the 84-foot by 16-foot concrete raceways that were just built near the mouth of Clark's Creek.

*Appendix D Year 4: FY13 Tribal Implementation Projects***Nisqually Indian Tribe**

Nisqually Indian Tribe will fund two ongoing projects: (1) partnering with Long Live the Kings (LLTK), the lead in coordinating the development and implementation of research activities within Puget Sound that are part of the Salish Sea Marine Survival Project, a U.S.-Canada research effort to identify the most significant factors affecting juvenile salmon and steelhead survival in the Salish Sea marine environment. LLTK will provide facilitation support for coordinating, technical, and research teams; maintain links between the project and other Puget Sound-region initiatives; and conduct a zooplankton retrospective study to inform the development of a Puget Sound-wide zooplankton monitoring program; and (2) identifying and removing derelict fishing gear in prioritized areas in South Puget Sound utilizing methods prescribed by National Marine Fisheries Division of NOAA and WA State Department of Fish and Wildlife . Derelict gear continues to cause mortalities of all marine life in South Sound, from salmon and rockfish to marine birds and mammals, and its removal is critical to the health and recovery of the regions ecosystem.

**Squaxin Island Tribe**

The Squaxin Island Tribe will contribute to the recovery of lost Coho productivity through the support of three projects: (1) continued field identification of rearing reaches with highest density of coho fry; and overlay of coho spawning density with existing water quality and habitat information to produce prioritization of aquatic and riparian habitat protection and restoration actions; (2) designing and engineering of large woody debris for 2100 feet of lower Skookum Creek below Highway 108 to increase quality and quantity of salmonid rearing habitat; and (3) assembling all available information and water quality information and conducting analysis of data gaps to create a comprehensive conservation and restoration strategy for Skookum Creek.

**Skokomish Tribal Nation**

The Skokomish Tribal Nation will continue to support the research and monitoring efforts to assess the effectiveness of the Skokomish Estuary Restoration Project, as well engage in new tasks to further restore the estuary and disseminate data and information. Continuing project tasks include: monitoring the relative abundance, distribution, residence time, feeding behavior, and species diversity of salmonids and other fish species; monitoring the colonization and succession of vegetation, including an eelgrass bed inventory adjacent to the restoration area; and monitoring sediment transport and estuarine mixing. New project tasks include: designing, mapping, and implementing the removal of remnant pieces of dike that were left in the project area; and developing a technical report to aid in identifying the next adaptive management actions and disseminating results of the monitoring efforts to date.

*Appendix D Year 4: FY13 Tribal Implementation Projects***Suquamish Tribe**

The Suquamish Tribe will develop and implement a monitoring plan to survey and document the status of eelgrass beds in the East Kitsap nearshore. In addition to documenting the current status (distribution and abundance) of eelgrass, the monitoring plan will prescribe methods to complete periodic surveys for documenting trends in distribution and abundance of eelgrass at both a site and regional (East Kitsap) scale. This project is a highly prioritized project and near-term action within the Puget Sound Partnership 2012 Action Agenda.

**Port Gamble S’Klallam Tribe**

The Port Gamble S’Klallam Tribe will continue to map nearshore/neritic nodal habitats, track juvenile salmonid out migration timing, and habitat utilization in relation to seawater characteristics and prey abundance within Hood Canal and Admiralty Inlet. Project tasks include: (1) conducting beach seining and hydroacoustic surveys in order to provide site-specific timing and size class distributions of juvenile salmonids and forage fish inhabiting the nearshore, and estimations of relative abundance by site and species composition; (2) monitoring water quality (temperature/conductivity, pH, dissolved oxygen, and total algae) at four sites; and (3) conducting plankton tows at each water quality site monthly to determine primary productivity in relation to water quality conditions and varying spatial settings. Water quality and prey abundance data will be coupled with salmonid condition factor matrices and acoustic abundance calculations to determine whether there is a positive correlation between nearshore habitat types and population dynamics.

**Point No Point Treaty Council**

The Point No Point Treaty Council will continue supporting this multi-year project to develop field sampling methods that can be used to efficiently assess spawn deposition by Pacific sand lance and surf smelt on Puget Sound beaches, conduct intertidal forage fish surveys for spawn deposition of surf smelt and Pacific sand lance using these protocols, and then produce quantifiable measures of the annual spawn deposition for both species. Year four’s project tasks include: (1) continue sampling beach index sites at Indian Island to confirm location and spawn timing and analyzing samples to quantify spawn deposition of surf smelt and Pacific sand lance; (2) sampling established beach index sites on Marrowstone Island/Port Townsend Bay to confirm location and spawn timing outside of Indian Island; (3) collecting data on surf smelt/sand lance incubation and larval emergence using sampling procedure developed during the second year of study; and (4) disseminating project results to professional forums.

*Appendix D Year 4: FY13 Tribal Implementation Projects***Jamestown S’Klallam Tribe**

The Jamestown S’Klallam Tribe will conduct three projects: (1) continuing to conduct nutrient source investigation and determination for the Sequim Bay watershed and research into ameliorating harmful algal blooms and preventing illnesses from shellfish biotoxins in Sequim Bay; (2) providing project development and support for the Lower Dungeness River Floodplain and Three Crabs Estuarine Restoration projects through collaboration with North Olympic Salmon Coalition, WDFW, Clallam County and the ACOE to review alternatives, provide public outreach, guide the process, assist with permitting, retain contracts, provide data, and satisfy landowner concerns; and (3) engaging in noxious weed control of 85 acres of Lower Dungeness floodplain plantings, an integral part of jumpstarting a riparian canopy and providing root cohesion to improve channel stability following setback.

**Lower Elwha Klallam Tribe**

The Lower Elwha Klallam Tribe will engage in floodplain and fisheries monitoring activities during the historic removal of the two mainstem hydroelectric dams on the Elwha River. Project tasks include: (1) continuing to evaluate rates of recolonization and stock rebuilding for the overall Elwha restoration project through the fishing of smolt traps on Indian Creek, Little River, and middle reach side channels; conducting juvenile snorkel surveys in the middle Elwha habitats; inserting PIT tags into outmigrating smolts and juveniles collected; and conducting adult and spawning site surveys in Little River, Indian Creek, and side-channels when visibility allows; and (2) collecting data on habitat conditions at each study reach, including width, length, depth, and velocity, wood accumulations, boulder cover, and overhead cover.

**Makah Tribe**

The Makah Tribe will continue to take steps to improve floodplain reconnection through wood supplementation in wood deficient rivers of the WSJF. They will advance the Pysht River restoration and implementation and continue as described in the NOPL 3-year workplan. The engineering design goal is to create log jams to address the need for habitat complexity including flood flow attenuation and dispersal, and increase in number of depth and pool habitats and thermal refugia and holding habitat. With increased temperatures documented downstream of this proposed project area, implementation of the ELJ's will create habitat features that will contribute to thermal refugia in the immediate area and downstream.